Establishment Report

***UNESCO chair** on "Renewable and Clean Energy for Sustainable Development" established in UNESCO Madanjeet School of Green Energy Technologies (UMSGET) 2024 - 2028*

unesco
Chair

Host Institution: Pondicherry University
UNESCO Chairholder : Professor Ramaswamy ARUN PRASATH

UNSESCO CHAIR

Establishment Report

unesco
Chair

***UNESCO chair** on "Renewable and Clean Energy for Sustainable Development" established in UNESCO Madanjeet School of Green Energy Technologies (UMSGET) 2024 - 2028*

Date of Inauguration
10th December 2024

Host Institution: Pondicherry University
UNESCO Chairholder : Professor Ramaswamy ARUN PRASATH

Acknowledgements

This Establishment Report for the UNESCO Chair on Renewable and Clean Energy for Sustainable Development at Pondicherry University is a testament to the collaborative efforts of Ministry of Education, Government of India, UNESCO, SAF-India, MSF, and support from national and international hosts dedicated to developing sustainable energy technologies.

We extend our heartfelt gratitude to Pondicherry University for its unwavering support and commitment to fostering a research environment that promotes innovation and sustainability. The university's vision aligns perfectly with the objectives of the UNESCO Chair, emphasizing the importance of education and research in addressing global energy challenges.

Our sincere appreciation also goes to the South Asia Foundation (SAF) and Madanjeet Singh Foundation (MSF) for the pivotal role in facilitating educational initiatives and strengthening regional cooperation in sustainable development. We recognize their dedication to fostering knowledge exchange and capacity building across South Asia.

We are grateful to UNESCO, an organization that champions educational, scientific, and cultural cooperation. Its support has been instrumental in establishing this Chair, highlighting the critical need for clean energy solutions to combat climate change.

Finally, we wish to acknowledge the invaluable contributions of all partners and stakeholders involved in this initiative. Together, we strive to create a sustainable future through research and innovation in renewable energy technologies.

Roadmap of the Report


SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS


7
AFFORDABLE AND CLEAN ENERGY

Foreword

புதுவைப் பல்கலைக்கழகம்
(மத்திய பல்கலைக்கழகம்)
पांडिच्चेरी विश्वविद्यालय
(केंद्रीय विश्वविद्यालय)
PONDICHERRY UNIVERSITY
(A Central University)

பேராசிரியர் க. தரணிக்கரசு
துணை வேந்தர் (பொ.)
आचार्य क. तरणिक्करसु
कुलपति (प्र.)
Prof. K. THARANIKKARASU
Vice - Chancellor (i/c)

டாக்டர். அம்பேத்கர் நிர்வாக கட்டிடம்,
ஆர். வெங்கட்ராமன் நகர்,
डॉ. अंबेडकर प्रशासनिक भवन
आर.वेंकटरामन नगर,
Dr. Ambedkar Administrative Building
R. Venkataraman Nagar,
காலாப்பட்டு, புதுச்சேரி,
कालापेट पुदुच्चेरी,
Kalapet, Puducherry - 605 014.

December 3, 2024

FOREWORD

Dear Participants,

I welcome you all to the inauguration of the UNESCO Chair on "Renewable and Clean Energy for Sustainable Development" at Pondicherry University. This significant milestone marks a new chapter in our commitment to advancing sustainable energy solutions and fostering a greener future. Along with this prestigious event, we host the "One-Day National Workshop on "Green Hydrogen: Technology and Applications." This workshop aims to bring together leading experts, researchers, and practitioners to discuss the latest advancements and innovative applications of green hydrogen technology. As we navigate the challenges of climate change and energy sustainability, the insights and collaborations fostered here will be invaluable in shaping a sustainable energy landscape. I am confident that the discussions and knowledge shared during this workshop will inspire new ideas and drive impactful actions toward a cleaner and progress towards a sustainable world. Let us seize this opportunity to learn, collaborate, and contribute to global efforts promoting renewable and clean energy to address UN SDG 7, *i.e.*, ensure access to affordable, reliable, sustainable, and modern energy. I took this opportunity to express my appreciation to Prof. Ramaswamy Arun Prasath and his team for his dedication to promoting sustainability and making this event successful. Thank you for your participation and support. Let us pave the way for a brighter and more sustainable future together.

(K. THARANIKKARASU)

Tel : + 91 - 0413 - 2655175 (off.) 0413 - 2656454(Per.) Fax : 0413 - 2655033 E-mail : vc@pondiuni.edu.in

The Energy-Paradox

It is with great pleasure that I extend my warmest congratulations on the inauguration of the UNESCO Chair in Renewable and Clean Energy for Sustainable Development at Pondicherry University. The Chair is the 16th in India and Professor Ramaswamy Arun Prasath is the holder for four years until 2028. I thank Professor Tharanikkarasu, Acting Vice-Chancellor of Pondicherry University and Professor Rajneesh Bhutani, Registrar for their support.

The collaboration between UNESCO and Pondicherry University begins now and will undoubtedly pave the way for groundbreaking advances in clean energy technologies.

Currently, we are living in times of an 'Energy Paradox' !

We are aware that our global fossil fuel consumption is accelerating climate change. Through the ecological sciences we know that climate change has an impact on agriculture and food security, at least since 1953, when ecophysiologist Heinrich Walter and ecologist Erna Walter jointly formulated the law of relative constancy of habitat, which states: *'If the climate in the habitat or range of a plant species changes in a certain direction, that species will migrate to a habitat or biotope that compensates for the climate change.'*

We continue to burn fossil fuels at increasing rates, instead of trying harder to achieve a more balanced situation first, until eventually we can only use clean energy. We should do this much faster, by applying our current knowledge of clean energy with wisdom and priority, and by increasing the mobilization of science, technology, engineering and education.

Together with this Chair, UNESCO aims to make significant contributions to promoting the production and consumption of clean forms of energy. Currently, about 80% of global energy consumption is based on fossil fuels, including coal, oil and gas, and about 20% is met by biofuels, hydropower and nuclear fuels, although we understand that fossil fuel emissions are among the main anthropogenic causes of climate change.

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https://en.unesco.org/fieldoffice/newdelhi

UNESCO and this new UNESCO Chair work with governments, schools, colleges, universities, industries, NGOs, businesses, researchers, technology developers and environmentally conscious individuals to advance the development of clean energy technologies at regional, state, national and international levels.

The Chair advocates for a rapid and comprehensive transformation towards cleaner energy generation including solar, wind, hydro, marine, waste-to-energy, geothermal, hydrogen and clean biofuels, and the development of efficient technologies such as fuel cells, hydrogen, electrolysers, electromobility, more efficient energy storage systems, carbon capture, utilization and storage technologies, green construction and green chemistry technologies to address the issues of the 'energy paradox' by promoting SDG 7, affordable and clean energy.

The tireless efforts of UNESCO Chair holder Professor Arun, such as the various sustainable campus campaigns, are commendable. I very much hope that more meaningful activities will be planned and implemented under his leadership in the next four years.

I wish Professor Arun, his colleagues and students, and network partners in India and abroad every success and look forward to seeing measurable and far-reaching positive impacts.

Tim Curtis
Director and Representative
UNESCO Regional Office for South Asia

Madanjeet Singh Foundation
France Marquet
Principal Trustee, MSF

Paris, 11June 2024

On May 13th, 2024, Mr. Timothy Curtis, Director, UNESCO South Asia Regional Office and UNESCO Representative to Bangladesh, Bhutan, India, the Maldives, and Sri Lanka, announced the appointment of the new UNESCO Chair in India, joining the existing network of 19 other Chairs across South Asia.

Established in 1992, the UNITWIN/UNESCO Chairs Programme is an inter-sectoral network of higher education institutions which share their expertise to address complex interdependent development challenges. The Programme promotes international inter-university cooperation and networking to enhance institutional capacities through knowledge sharing and collaborative work.

The UNESCO Chair on "**Renewable and clean Energy for Sustainable Development**" was launched in the **Madanjeet School of Green Energy Technologies in Pondicherry University,** India, for four years period (2024-2028) on a renewable basis.

With the support of the Madanjeet Singh Foundation, The Chair aims to prioritize developing innovative training programs for promoting renewable and clean energy technologies for graduate/post-graduates/scholars and also to provide intensive courses for industries/professional audiences from international, national, and regional levels.

The UNESCO Chair aims to serve society on a more socially responsible scale.

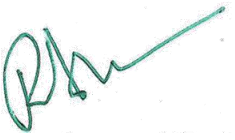
We congratulate and warmly welcome **Profesor Arun Prasath Ramaswamy**, **Chair Holder** of the newly established **"UNESCO chair on Renewable and clean Energy for Sustainable Development"** (Pondicherry University), to our UNESCO family in South Asia.

France Marquet
Trustee Madanjeet Singh Foundation
Representative South Asia Foundation to UNESCO
madanjeetsaf@gmail.com
+33647478293
www.southasiafoundation.org

Preface

Professor R. Arun Prasath
Chairholder, UNESCO Chair on Renewable and Clean Energy for Sustainable Development
Pondicherry University

I, R. Arun Prasath present this establishment report about the UNESCO Chair on "Renewable and Clean Energy for Sustainable Development" at Pondicherry University with immense pride and excitement. This initiative marks a significant milestone in our commitment to advancing renewable energy technologies and promoting sustainable development. The establishment of this UNESCO Chair is a testament to our dedication to addressing the global challenges of energy security, environmental sustainability, and climate change. The Chair will work towards the adoption of clean energy technologies, enhancing energy efficiency, and supporting policy frameworks that encourage sustainable practices by fostering education, research, and collaboration in renewable energy technology. Our efforts are aligned with the United Nations' 17 Sustainable Development Goals (SDGs), particularly Goal 7, which focuses on ensuring access to affordable, reliable, sustainable, and modern energy for all. The activities of UNESCO chair are committed to empowering students, researchers, and industry stakeholders with the knowledge and necessary tools to drive the transition to renewable energy technologies. As a chairholder, I would like to express my deepest gratitude to Pondicherry University, the Ministry of Education, Govt. of India, South Asia Foundation, Madanjeet Singh Foundation, UNESCO Regional, New Delhi and UNESCO, France, along with intellectual support letters from national and international groups of my esteemed collaborators for their unwavering support and commitment to this endeavor. Together, we can make a meaningful difference in the quest for sustainable development. I invite you all, to join us on this transformative journey towards a greener and cleaner future for generations to come.



Professor R. Arun Prasath

Establishment Ceremony

The Inauguration of the UNESCO Chair on Renewable and Clean Energy for Sustainable Development at Pondicherry University took place on 10th December 2024 marking a significant milestone in our commitment to advancing sustainable energy technologies. This momentous occasion showcased the dedication of various stakeholders to address pressing global energy challenges through innovation and collaboration.

The event was honored by our Chief Patron, Prof. K. Tharanikkarasu, Vice Chancellor (i/c) of Pondicherry University, who delivered an inspiring inaugural address. In his speech, he highlighted the transformative impact of the Chair in promoting research and education that aligns with sustainable development goals. His support emphasizes the university's strategic commitment to fostering a research culture that prioritizes renewable energy.

The ceremony also featured distinguished Patrons: Prof. Clement S. L, Director of the Center for Climate Research, Prof. Rajneesh Bhutani, Registrar (i/c), and Prof. Subramania. A, Dean of the Madanjeet School of Green Energy Technologies. They shared insights on the importance of interdisciplinary approaches in tackling energy-related challenges.

Notable Guests of Honour included Madam France Marquet, Trustee of the South Asia Foundation, emphasizing the necessity of international cooperation, and Dr. Timothy Curtis, Director of the UNESCO Regional Office in New Delhi, who spoke about the critical role of clean energy in global sustainability. Their presence underscored the collaborative spirit of this initiative and the commitment to forge a sustainable energy future.

https://www.pondiuni.edu.in/department/unesco-chair-on-renewable-and-clean-energy-for-sustainable-development/

UNESCO CHAIR ON
Renewable and Clean Energy for Sustainable Development
in UNESCO Madanjeet School of Green Energy Technologies (UMSGET)
Pondicherry University
2024 - 2028

https://sites.google.com/pondiuni.ac.in/unesco-chair-inauguration/home

https://www.youtube.com/watch?v=nc-pSm4NP9A

https://youtu.be/1InziNQkg3U?si=vl8G4yw2LmxV2PJj

Introduction :

About the UNESCO Chair

The establishment of the UNESCO (United Nations Educational, Scientific and Cultural Organization) Chair on "Renewable and Clean Energy for Sustainable Development" at the UNESCO Madanjeet School of Green Energy Technologies (UMSGET) within Pondicherry University marks a significant initiative aimed at advancing green and clean energy technologies from 2024 to 2028. This Chair is a collaborative effort involving esteemed organizations such as UNESCO, the Madanjeet Singh Foundation (MSF), and the South Asia Foundation (SAF-India). Its primary objective is to enhance the understanding and implementation of renewable energy technologies, not only in South Asia but on a global scale, thereby facilitating sustainable development.

Central to the mission of the UNESCO Chair is the provision of intellectual knowledge and professional training tailored to various stakeholders, including governments, educational institutions, industries, non-governmental organizations (NGOs), and environmentally conscious businesses. By fostering a collaborative environment, the Chair aims to integrate diverse perspectives and expertise in the pursuit of renewable energy solutions. This initiative recognizes the vital role that education plays in empowering individuals and organizations to transition toward sustainable energy practices.

The Chair emphasizes the importance of working closely with a variety of entities—ranging from schools, colleges, universities, research institutions and industry leaders. This multifaceted collaboration is designed to create a robust network that collectively addresses the pressing challenges associated with energy production and consumption in the context of climate change and environmental sustainability.

Moreover, the UNESCO Chair is committed to engaging actively with researchers and technology developers to innovate and implement cutting-edge renewable energy technologies. By focusing on knowledge sharing and capacity building, the Chair seeks to cultivate an informed and proactive community that advocates for sustainable energy practices.

In conclusion, the UNESCO Chair on "Renewable and Clean Energy for Sustainable Development" is poised to play a pivotal role in promoting the development and adoption of renewable energy technologies through comprehensive education, training, and collaborative initiatives. Its strategic alliances with various stakeholders reflect a commitment to fostering a sustainable future and addressing global energy challenges in a concerted and impactful manner.

Pondicherry University, established in 1985 is an Indian Central University is one of the most sought-after campuses amongst the students from across the nation as a destination for the Higher Education and Research. Pondicherry University has 15 Schools, 38 Departments, 11 Centres and 1 Chair offering over 144 PG, PG-Diploma/ certificate & Research programmes with a student strength of 7000 including foreign students. Currently the University has more than 130 funded research projects including SAP & FIST Projects from various agencies like UGC, DST, CSIR and DBT. The University has two-off campuses, one located in Port Blair (Andamans) with two Departments viz., Ocean Studies and Marine Biology and Coastal Disaster Management and another Post-Graduate Centre at Karaikal. Fresh green sprawling campus spread over 880 acres, features great Instrumentation & Resource facility, 100% Wi-Fi connectivity with 100% power back-up, 24x7 Library facility, 22 well-furnished hostels, Round the clock medical facility, Placement Cell, Community Radio (Puduvai Vaani) and Study India Programme.

About Pondicherry University

About the Department of Green Energy Technology (DGET)

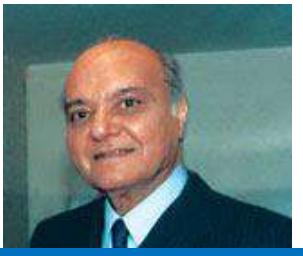
Established in 2010 under the Madanjeet School of Green Energy Technologies, the DGET aims to advance education and research in clean energy production, conservation, and utilization. The department offers **B.Tech** (Energy Science and Technology), **M.Tech** (Green Energy Technology) and **Ph.D.** & Postdoc Research

Recognized by the Ministry of New & Renewable Energy as a Nodal Centre and as a Centre of Excellence by South Asia Foundation (SAF), DGET focuses on diverse clean energy sources, including solar photovoltaic, solar thermal, energy storage, fuel cells, biofuels, wind, ocean, and chemical energy, along with nanotechnology applications for energy conversion.

Our trained faculty provide education, consultancy, and research across these core areas. The department also engages in quality assurance testing and has established MOUs with firms specializing in various Renewable and Clean energy Technologies, with additional agreements in progress focusing on solar thermal devices and power plant engineering.

About South Asia Foundation

South Asia Foundation (SAF) was founded by UNESCO Goodwill Ambassador Madanjeet Singh in 2000. The South Asia Foundation (SAF) is a secular, non-profit and non-political international organization that promotes education, healthcare and cultural exchange, comprising eight autonomous chapters: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. SAF supports a range of initiatives, including scholarships, research programs, and community development projects. The organization also fosters cultural exchange, literary programs, and educational partnerships



Shri. Madanjeet Singh

SOUTH ASIA FOUNDATION-SAF

The UNESCO Chair: Goals & Objectives

OBJECTIVES

The UNESCO Chair on "Renewable and Clean Energy for Sustainable Development" is established at the UNESCO Madanjeet School of Green Energy Technologies (UMSGET), Pondicherry University (2024–2028). The initiative seeks to enhance research and disseminate knowledge on renewable and sustainable energy in higher education institutions. By focusing on the environment, climate change, and the circular economy, it serves the following objectives to address global energy and environment challenges and promote sustainability.

1.Training: The UNESCO Chair prioritizes the development of comprehensive training programs in higher education institutions. These include public awareness initiatives and specialized certification courses for graduate and postgraduate students. All training activities emphasize active pedagogy, focusing on practical and operational skills to address national and regional energy challenges.

2.Research: Research activities focus on materials, devices, and systems to maximize the utilization of renewable energy technologies. This includes advancements in solar energy technologies, wind energy, ocean and wave energy, green hydrogen and fuel cell technology, energy storage systems, and biofuels and bioenergy. Additionally, efforts are directed toward energy efficiency, energy conservation, green building technologies, and other innovations to promote sustainability and address pressing global energy needs.

3.Network creation: The Chair seeks to establish robust regional, national, and international networks to facilitate collaboration and innovation in renewable energy technologies. It aims to foster partnerships with governments, schools, colleges, universities, industries, NGOs, businesses, researchers, technology developers, and environmentally conscious individuals, creating a multidisciplinary platform to accelerate the development, promotion, and deployment of renewable energy technologies for sustainable development.

4.Information collection & sharing: The Chair seeks to gather comprehensive renewable and sustainable energy data from global sources. This knowledge will be consolidated into an accessible platform for students, researchers, and policymakers, fostering informed decision-making and innovation.

PROPOSED ACTIVITIES

Education

- Launch certification courses in Sustainable Energy for students, researchers and industry professionals.
- Offer structured academic programs including:
  - ✓ Bachelor's in Energy Science and Technology (B.Tech)
  - ✓ Master's in Green Energy Technology (M.Tech)
  - ✓ Doctoral Programs (Ph.D.) focusing on Green Energy and their related interdisciplinary areas.
- Integrate hands-on laboratory experience to complement theoretical understanding.
- Create short courses and online modules for communities and stakeholders, promoting awareness of the UN Sustainable Development Goal (SDG) 7.

Training

- Short-term skill-building programs in collaboration with State, Central, and Private Universities.
- Specialized training on energy technologies in partnership with National and International Organizations.
- Training modules co-developed with industries for practical exposure to clean energy technologies such as solar, wind, hydrogen energy, energy storage systems, and biofuels.

Research

- Advance research aligned with the UN SDGs focusing on:
  - ✓ Renewable energy production (solar photovoltaic, solar thermal, wind energy, and ocean energy).
  - ✓ Clean energy storage solutions and applications of nanotechnology in energy conversion.
  - ✓ Sustainable biofuels and green hydrogen technologies.
- Faculty experts to provide consultancy and collaborative research for industries and academia.
- Establish partnerships with SAF chapters, IITs, NITs, and global institutions to foster innovative projects.

Conferences/Meetings:

- Organize National and International Conferences, Symposiums, and Webinars based on SDGs of Sustainable Energy and Climate action.
- Promote partnerships with institutions to exchange knowledge, research ideas, and best practices for clean energy innovations.
- Host special lectures and internships featuring participation from national and international experts.

Project beneficiaries

- Primary Beneficiaries: Students of B.Tech, M.Tech, and Ph.D. programs, particularly from South Asian countries, fostering regional benefits.
- Secondary Beneficiaries: Industries, professionals, and networking institutions at national and international levels through certification programs and consultancy services.
- Community Outreach: Local and regional populations will benefit from awareness and outreach programs promoting clean energy adoption.

Training/ Teaching

Capacity Building

Advocacy & Outreach

Sustainable Research

Skill Sharing

UNESCO Chair on "Renewable and Clean Energy for Sustainable Development“

This comprehensive plan aligns with the mission of the UNESCO Chair to enhance global sustainability and create tangible impacts in renewable energy education, training, and research.

Chairholder Profile

Dr. R. Arun Prasath
Professor, Department of Green Energy Technology
Pondicherry University, Puducherry - 605 014
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Professor. R. Arun Prasath is an active member in promoting renewable energy and sustainability at the Pondicherry University campus. Among his landmark achievements is the "Solar Campus Master Plan" report for Pondicherry University, initiated in 2012 under the Ministry of New and Renewable Energy (MNRE), and very recently, the promotion of sustainability @ Pondicherry University campus by installing UNSDGs spots aimed to foster awareness and education on 17 UNSDGs. As Chairman of the green campus auditing committee covering Sustainability, Environment, Water, Waste, and Energy Management, he scored 92.11% compliance for Pondicherry University in 2024. His vision goes beyond research, focusing on engaging communities and inspiring sustainable living practices. Campaigns like "Invest in Our Planet Earth" and "Sustainable Sticker Campaigns" have incited the university community to embrace eco-friendly practices. His committed efforts to make Pondicherry University a model of sustainability, featuring initiatives such as carbon-neutral targets, grid-connected solar power, and green mobility, are commendable.

Education:

PhD: Anna University (DAAD student at Max-Planck Institute for Polymer Research, Germany, 1999-2001), Polymer Chemistry (2002),
MPhil: Anna University, Polymer Chemistry, (1996).
MSc: Bharathiar University, Chemistry, M.Sc. (1995).
BSc: Bharathiar University, Chemistry, B.Sc. (1993).

Achievements:

- 60 peer-reviewed journal articles published (National - 7 & International -53)
- 9 full paper published in the proceedings
- 12 Book Chapters
- International patents published -3
- European patents published -2
- Above 80 oral presentations in various conferences/seminars/courses/invited talks
- 60 invited talks after joining Pondicherry University (from June 2010 onwards)
- h-index-22, i10index-39
- Raman postdoctoral fellowship, University Grants Commission (UGC) of India 2014-15
- DST Fast-track young scientist award, (2012)
- BOF Fellowship, Senior Researcher, Ghent University, Ghent, Belgium, (2008-2009).
- DAAD Fellowship from German Academic Exchange service, Germany (1999-2001).

Professional Research Experience:

USA: UGC-RAMAN postdoctoral fellowship (2014-2015), University Of Wyoming, Laramie.
Belgium: Senior Researcher (2008-2010), Ghent University, Ghent.
Australia: Postdoctoral Fellow (2006-2008), University of New South Wales, Sydney.
United Kingdom: Postdoctoral Fellow (2004-2006), University of Strathclyde, Glasgow.
India: Research Associate (2002-2004), Indian Institute of Science, Bangalore.
Germany: DAAD Fellow (1999-2001), Max-Planck Institute for Polymer Research, Mainz.

Collaborations with international researchers:
Prof. Bruce Parkinson & Prof. Carrick Eggleston, University of Wyoming (USA),
Prof. Martina Stenzel, Prof. Vicki Chen and CRC Polymers (Australia),
Prof. Filip Du prez (Belgium),
Prof. K. Muellen, Dr. M. Klapper at MPIP (Germany),
Prof. Peter Cormack, Prof. W. E. Smith, Prof. D. Graham and Oxonica Ltd., Oxford (United Kingdom).

Journal publications (last 5 years) *

- Pharmaceutical Research and Environment", 2024, 12, 25 269-302.
- Frontiers in Materials, 2024, 11, 1457325
- Journal of Electroanalytical Chemistry, 2024, 968, 118492.
- Materials Today: Proceedings, 2023, 93 (2), 21-27
- Energy & Fuels, 2023, 37 (8), 6186-6196
- Energy, 2023, 263, 126058
- Solar Energy, 2022, 240, 435-442
- Environ. Prog. Sustainable Energy, 2021; 1-10, e13767
- Materials Today Energy, 2021, 21 100836
- Sustainable Development, 2021, 1-18
- Inorganic and Nano-Metal Chemistry, 2020, 51 (7), 995-1004
- International Journal of Strategic energy and environmental Planning, 2020, 2 (2), 55-79
- Springer Nature Applied Sciences, 2019, 1:859-
- Land Use Policy 2019, 87, 104065
- Biocatalysis and Agricultural Biotechnology, 2019, 22, 101390.

Patents Published/ Filed:

International - 3 and European - 2

- US 9029473 B2, Publication type grant- PCT number- PCT GB2007/004038, Published May12, 2015, EP 2078045 A1 PCT/GB2007/004038, Jul 15, 2009, Pub. number:WO2008050109, 2008.
- WO2009047154, PCT/EP2008/063000, April 2009. CN101820984 A, PCT/EP2008/063000, Sept 2010. EP2217358 A1, PCT/EP2008/063000, Aug 2010. US20110024355 A1, PCT/EP2008/063000, Feb 2011, US20140091031 A1, April 2014.
- WO2009098161, 2009, Feb. 2008 EP08151051
- European Patents: EP 2160946 A1 20100310, 2010; EP 2160945 A1 20100310, 2010.

Projects completed and ongoing:

- ✓ High Energy Density Lithium Battery with Polymer Garnet Nanocomposite Electrolyte, International Cooperation, Department of Science and Technology, DST/INT/HUN/P-20/2020 Budget: 37 L dated 08-02-2021 Co-PI.
- ✓ Novel approaches in biofuel production and processing, Scheme for Promotion of Academic and Research Collaboration Co-PI, MHRD, New Delhi, SPARC/2018-2019/P1221/SL Budget: 76 L dated 15-03-2019.
- ✓ Hybrid plasmonic nanoparticles for application in solar cell, 2013-2015, SERB, DST New Delhi.(PI), 26 L, Completed
- ✓ Solar campus project for Pondicherry University Silver Jubilee Complex, 2012, MNRE, New Delhi.(PI). 10 L.
- ✓ Developing a Sustainable Business Model to Discharge Corporate Social Responsibility (CSR) by SMEs, 12 L.

Conferences/Seminars-

Organizing committee member (2018 onwards)

- National conference on Green Energy Technology for Sustainbaility NCGETS-2024 21-22 March 2024 -Convener
- Workshop & Hands-On Training on Electrochemical Techniques, 1st September 2023-Convener
- Workshop and hands-on Material Charactersation using XRD and PS, 28th Nov 2023 -Convener
- Indo-Brazil SPARC International virtual workshop on "Biofuel Production & Processing" Feb 22-25, 2021 as Co-convener
- International Workshop on Energy Materials and Devices IWEMD-2018, CGET, Pondicherry University 3-4 May 2018 as Organizing secretary.

* Ref . Appendix II

Documentation

AGREEMENT

BETWEEN

THE UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION

AND

PONDICHERRY UNIVERSITY

CONCERNING

A UNESCO CHAIR ON RENEWABLE AND CLEAN ENERGY FOR SUSTAINABLE DEVELOPMENT

AT

PONDICHERRY UNIVERSITY

(PUDUCHERRY, INDIA)

Agreement

concerning the
UNESCO Chair on Renewable and Clean Energy for Sustainable Development at Pondicherry University,
Puducherry, India

The United Nations Educational, Scientific and Cultural Organization (hereinafter referred to as "UNESCO"), 7 Place de Fontenoy, 75352 Paris 07 SP, France, represented by its Director-General, Ms Audrey Azoulay,

and

Pondicherry University (hereinafter referred to as the "Host Institution "), R.V Nagar, Kalapet, Puducherry -605014, represented by its Registrar (i/c). Dr. Rajneesh Bhutani,

Considering that one of the essential factors favouring development in UNESCO's fields of competence is the exchange of experience and knowledge between universities and other higher education institutions for the common good;

Convinced that joint work by teachers, researchers and administrators in higher education from regions all over the world will provide important benefits for the entire academic community and beyond;

Bearing in mind UNESCO's mission and objectives as set forth in its Constitution, especially its role in promoting international collaboration through education, science and culture, including inter-university cooperation for the promotion of intellectual and moral solidarity;

Taking into account the experience of the UNITWIN/UNESCO Chairs Programme as a stimulus for academic mobility and the rapid sharing of knowledge through partnership, networking and other cooperation arrangements;

Have agreed as follows:

Article 1 The Host Institution shall, in cooperation with UNESCO, establish a UNESCO Chair on Renewable and Clean Energy for Sustainable Development (hereinafter referred to as the "Chair") at Pondicherry University.

Article 2 The purpose of the Chair shall be to promote an integrated system of research, teaching and training, as well as community engagement and communication. It will facilitate collaboration between high-level, internationally recognized researchers and teaching staff of the Host Institution and other institutions in the country, as well as elsewhere in the region and in other regions of the world.

The specific objectives of this Chair are to:

- strengthen the capacities of the department and higher education professionals through training programmes on affordable renewable and clean energy for sustainable development;
- foster collaborative research activities in the region, including through the creation of operational guidelines, with a view to promoting energy efficiency, sustainable building technologies, gender parity and income generation for marginalized people;

- promote and disseminate research and findings from development projects on renewable and sustainable clean energy through an open access knowledge platform, in line with the Recommendation on Open Science; and
- cooperate closely with UNESCO, other UNESCO Chairs and UNITWIN Networks on relevant programmes and activities.

Article 3 The Host Institution shall appoint the Chairholder, and if deemed appropriate a co-Chairholder, with the approval of UNESCO.

Article 4 In case of departure of the Chairholder or Co-Chairholder, the Host Institution shall propose an alternate, to be approved by UNESCO.

Article 5 The Chair's Team shall consist of the Chairholder, and if appropriate a Co-Chairholder, and the necessary personnel, researchers and students required to carry out the specific research, teaching and training, community engagement and communication activities of the Chair.

Article 6 The Host Institution shall grant the Chair the facilities necessary to conduct research, teaching and training, community engagement and communication activities.

Article 7 The Host Institution shall arrange for the Chair to participate in UNESCO programmes and activities with a view to strengthening international academic cooperation. Wherever possible, the Host Institution shall arrange for the Chair to engage in the exchange of professors, teachers, researchers and students with other higher education institutions within the framework of the UNITWIN/UNESCO Chairs Programme.

Article 8 In conducting its research, teaching and training, community engagement and communication activities, the Chair's Team shall ensure an appropriate protection of any information relating to an identified or identifiable individual ("Personal Data") in accordance with UNESCO's Principles on Personal Data Protection and Privacy (https://www.unesco.org/en/privacy-policy) as well as any applicable regulations and rules.

Article 9 Under no circumstances may the Chair issue certificates or diplomas to individuals participating in the activities of the Chair. Such diplomas or certificates may be issued by the Host Institution.

Article 10 The Host Institution shall assume all expenses linked to the implementation of activities undertaken by the Chair.

Article 11 In order to demonstrate its link with UNESCO, the Chair is invited to use the generic logo designed for the UNESCO Chairs referred to as the "UNESCO Chair logo" under the following conditions:

- The conditions for the use of the logo will be determined by UNESCO and cannot be modified. UNESCO shall provide the Chair with the UNESCO Chair logo in high definition and in line with UNESCO's graphical rules;
- The UNESCO Chair logo must be cautiously used with a view to avoid misinterpretation by the general public, notably concerning the respective status of the Chair, the Host Institution and UNESCO, as

specified under the provisions of Article 12 of this Agreement. The UNESCO Chair logo shall not, under any circumstances, be used for commercial purposes, either by the Chair or by the Host Institution;

- All promotional and information materials published by the Chair or the Host Institution, bearing the UNESCO Chair logo (example: pamphlets and other electronic documents) should bear the disclaimer:

  The designations employed and the presentation of material throughout this publication do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

  The ideas and opinions expressed in this publication are those of the authors; they are not necessarily those of UNESCO and do not commit the Organization.

- The Host institution will assume full responsibility for any legal consequences stemming from the use of the logo;

- The Host institution can use its own logo at the same time as the UNESCO Chair logo. However, the UNESCO Chair logo must be used as it is. No graphical elements or texts should be inserted into the logo. The protection zone around the UNESCO chair logo, which is equal to the height of the letter "n" in the UNESCO acronym, must always be respected; and

- The UNESCO Chair logo can only be used during the period of validity of the Agreement and any extension thereafter.

Article 12 Neither the Host Institution nor any member of its staff employed for the implementation of the activities linked to the Chair shall be considered an agent, representative or member of UNESCO's staff, nor shall they enjoy any benefit, immunity, remuneration or reimbursement if not clearly foreseen in this Agreement. Moreover, they shall not be authorized to present themselves as being part of UNESCO, or make statements on UNESCO's behalf, or commit UNESCO to any expense of any nature or to any other obligation.

Article 13 The Host Institution shall be entirely responsible for taking any measures it deems necessary to insure itself against loss, injury or damage incurred during the implementation of these activities.

Article 14 The present Agreement shall enter into force on the date of its signature by the Parties and shall remain in force until 30 June 2028. If the agreement is not signed by the Host institution and returned to UNESCO by 30 June 2024 at the latest, it will be considered null and void.

Article 15 Should the Host Institution wish to request the renewal of the present Agreement, it must submit a request to UNESCO at least six months prior to the expiration of the Agreement, 31 December 2027, as per the instructions in the UNITWIN/UNESCO Chairs Programme guidelines. A report on the activities carried out by the Chair since its establishment, a plan outlining future activities and a letter of support from the Host Institution are mandatory for the renewal request. The report and future plan must comply with the UNESCO templates provided. Part or all of the activity report and future plans submitted may be used and published by UNESCO. Should the Host Institution not wish to request the renewal of the present Agreement, it shall notify UNESCO thereof, and prior to the expiration of the agreement.

Article 16 Should the parties decide to renew the designation of the Chair as a UNESCO Chair, they shall sign an agreement.

Article 17 The present Agreement may be terminated by either Party upon 60 (sixty) days' written notice to the other Party.

Article 18 In the event the present agreement expires, is not renewed or is terminated, the Host Institution and the Chair shall no longer be authorized to use the UNESCO name and UNESCO-UNITWIN Programme logo and shall be removed from the UNITWIN/UNESCO Chairs Programme database.

Article 19 Nothing in or relating to the present Agreement shall be deemed a waiver of any of the privileges and immunities of UNESCO. The Host Institution shall hold harmless, defend and indemnify UNESCO against all lawsuits, claims, costs and liabilities resulting from any intellectual property disputes or other disputes occurring under the present Agreement and which arise out of acts or omissions of the Host Institution.

Article 20 In the event of a dispute, the Parties shall make a good faith effort to settle it amicably. If an amicable settlement cannot be reached, any dispute arising out of or relating to this Agreement shall be referred to arbitration in accordance with the UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.

In witness whereof, the undersigned, duly authorized to that effect, have signed 2 (two) copies of the present Agreement in the English language, the two copies being equally authoritative.

For the United Nations Educational, Scientific and Cultural Organization

Audrey Azoulay

Audrey Azoulay
Director-General

Date: 27/02/2024

For Pondicherry University

28/3/24

Rajneesh Bhutani
Registrar (i/c)

Date: .....

REGISTRAR(i/c)
PONDICHERRY UNIVERSITY
PUDUCHERRY - 605 014.

United Nations
Educational, Scientific
and Cultural Organization

Organisation
des Nations Unies
pour l'éducation,
la science et la culture

Organización
de las Naciones Unidas
para la Educación,
la Ciencia y la Cultura

Организация
Объединенных Наций по
вопросам образования,
науки и культуры

联合国教育、
科学及文化组织

منظمة الأمم المتحدة
للتربية والعلم والثقافة

UNITWIN/UNESCO Chairs Programme

Professor Rajneesh Bhutani
Registrar
Pondicherry University
India

Ref: ED/FLI/24/11

26 January 2024

Dear Registrar,

UNESCO is pleased to welcome the UNESCO Chair on Renewable and Clean Energy for Sustainable Development to the UNITWIN/UNESCO Chairs Programme – the Organization's official network for interuniversity cooperation comprised of 1000+ UNESCO Chairs and university networks across 125 countries.

Under your leadership as Chairholder Professor Arun Prasath Ramaswamy, the Chair will contribute to advance UNESCO's ongoing programmes and priorities in the Natural Sciences sector, and more specifically those related to energies for sustainable development.

The Chair's team now joins an outstanding group of over 10,000 academics and researchers, collectively dedicated to advancing scientific progress, open knowledge, and education in a spirit of international cooperation. Additionally, the faculty and students of the relevant department(s) can now benefit from being connected to an interdisciplinary network of higher education institutions committed to advancing research, training and action towards sustainable development.

Recognizing the pivotal role of institutional support in ensuring the success of the UNESCO Chair, we seek your commitment to facilitate the active engagement of the Chair's team in various UNESCO activities and those organized by its partner institutions. Moreover, we encourage you to leverage opportunities for interuniversity collaboration, as well as to champion knowledge sharing and dissemination activities. The Chair's team is equally encouraged to stay abreast of and contribute to UNESCO-driven intellectual and public policy dialogues, ethical reflections and standard setting processes. Your unwavering support in this regard will strengthen the Chair's impact and outreach.

Wishing the UNESCO Chair on Renewable and Clean Energy for Sustainable Development all the success in its first mandate. For any further inquiries do not hesitate to contact us at unitwin@unesco.org.

Yours sincerely,

Lidia Brito
Assistant Director-General for Natural Sciences

7, Place de Fontenoy
75352 Paris 07 SP, France
T : +33 (0)1 45 68 10 00
unesco.org

Welcome Letter from UNESCO

Chair ID	Region	Country	Type	Chair/Network Title	University/Institution	Year of establishment	All keywords	Chairholder(s)	Web Site
2012CN0976	Asia and the Pacific	China	Chair	UNESCO Chair in Comparative Education	University of Hong Kong	2012	Education; Inclusive education; Teachers	Mark Bray	https://web.edu.hku.hk/knowledge-exchange/unesco-chair
2022CN1522	Asia and the Pacific	China	Chair	UNESCO Chair on Asia-Pacific Water-Food-Environment (WFE) Nexus	Wuhan University	2022	Water; Food; Science; Environmentalconservation	Jiesheng Huang; Yufeng Luo	https://en.whu.edu.cn/
2005CN0709	Asia and the Pacific	China	Chair	UNESCO/COUSTEAU Ecotechnie Chair	Yunnan University	2005	Environmental engineering	Xiaokun Ou	https://english.ynu.edu.cn/
1998IN0106	Asia and the Pacific	India	Chair	UNESCO Chair for Human Rights,Democracy and Peace	Academy of Engineering and Educational Research	1998	Democracy; Human rights	Vishwanath D. Karad	https://mitpune.ac.in/
2020IN1417	Asia and the Pacific	India	Chair	UNESCO Chair on Experiential Learning ForSustainable Innovation and Development	Amrita Vishwa Vidyapeetham	2020	Sustainable development; Climate; Disasterrisk reduction; Education; Environmental conservation	Maneesha V Ramesh	https://www.amrita.edu/unesco chair-sustainable-development/
2016IN1177	Asia and the Pacific	India	Chair	UNESCO Chair on Gender Equality andWomen Empowerment	Amrita Vishwa Vidyapeetham	2016	Gender equality	ao Bhavani	http://www.amrita.edu/
2021IN1452	Asia and the Pacific	India	Chair	UNESCO Chair on Inclusive Museums andSustainable Heritage Development	Anant National University	2021	Cultural heritage	Amareswar Galla	\https://inclusivemuseums.org/index.php/executive-director/
2010IN0912	Asia and the Pacific	India	Chair	UNESCO Chair for Peace and InterculturalUnderstanding	Banaras Hindu University	2010	Cultural diversity; Intercultural dialogue;Resilience; Higher education	Priyankar Upadhyaya	http://www.mcpr-bhu.org
2021IN1439	Asia and the Pacific	India	Chair	UNESCO Chair on Experiential Learning,Work Education and Community Engagement	Mahatma Gandhi National Council ofRural Education	2021	Teacher education	W.G. Prasanna Kumar	https://www.mgncre.org/about.html
1999IN0520	Asia and the Pacific	India	Chair	UNESCO Chair for the Promotion of theCulture of Peace and Non-Violence	Manipal Academy of Higher Education	1999	Sustainable development; Peace; Information literacy; Gender equality;Education	Madhav Das Nalapat	https://www.manipal.edu/gir/department-faculty/department-list/centre-for-north-east-studies11.html
2024IN2770	Asia and the Pacific	India	Chair	UNESCO Chair on Renewable and CleanEnergy for Sustainable Development	Pondicherry University	2024	Climate; Education for sustainable development; Environmental conservation; Education for sustainable development; Science	Arun Prasath Ramaswamy	https://www.pondiuni.edu.in/
2012IN1004	Asia and the Pacific	India	Chair	UNESCO Chair in Inclusive Adapted PhysicalEducation and Yoga	Ramakrishna Mission VivekanandaUniversity	2012	Sport	Rangaraj Giridharan	https://rkmvu.ac.in/
2014IN1077	Asia and the Pacific	India	Chair	UNESCO Chair on Culture, Habitat andSustainable Development	Srishti School of Art, Design andTechnology	2014	Cultural heritage; Creativity; Culturaldiversity; Education for sustainable development; Higher education	Neelkanth Hariprasad Chhaya	https://srishtimanipalinstitute.in/
2015IN1108	Asia and the Pacific	ndia	hair	UNESCO/Cardinal Paul Poupard FoundationChair on Interreligious and Intercultural Dialogue	St Andrew's College of Arts, Science and Commerce	2015	Sustainable development; Water; Oceans;Natural resources; Ecosystems	Aniceto Pereira; Giuseppe Musumeci	https://standrewscollege.ac.in/unesco/

Pondicherry University Listed in UNESCO Chairs and UNITWIN Networks

Chair ID	Region	Country	Type	Chair/Network Title	University/Institution	Year of establishment	All keywords	Chairholder(s)	Web Site
2020IN1417	Asia and the Pacific	India	Chair	UNESCO Chair on Experiential Learning For Sustainable Innovation and Development	Amrita Vishwa Vidyapeetham	2020	Sustainable Development; Climate action; Disaster risk reduction and resilience ; Education; Environment Protection	Maneesha Sudhee	https://www.amrita.edu/unesco- chair/about/
2021IN1439	Asia and the Pacific	India	Chair	UNESCO Chair on Experiential Learning, Work Education and Community Engagement	Mahatma Gandhi National Council of Rural Education	2021	Teacher Training	W.G. Prasanna Kumar	
2021IN1452	Asia and the Pacific	India	Chair	UNESCO Chair on Inclusive Museums and Sustainable Heritage Development	Anant National University	2021	World Heritage	Amareswar Galla	https://inclusivemuseums.org/index.php /executive-director/
2021IN1691	Asia and the Pacific	India	Chair	UNESCO Chair on Indigenous Cultural Heritage and Sustainable Development	University of Calicut	2021	Indigenous knowledge; Indigenous peoples	E. Pushpalatha	
2022IN1563	Asia and the Pacific	India	Chair	UNESCO Chair in Vulnerability Studies	University of Hyderabad	2022	Tolerance; Social development; Resilience	Nayar Pramod K	https://indianwritinginenglish.uohyd.ac.i n/
2024IN2770	Asia and the Pacific	India	Chair	UNESCO Chair on Renewable and Clean Energy for Sustainable Development	Pondicherry University	2024	Climate action; Education for Sustainable Development; Environment Protection; Education for Sustainable Development; Science, Technology and Innovation	Arun Prasath Ramaswamy	https://www.pondiuni.edu.in/
2016ID1180	Asia and the Pacific	Indonesia	Chair	UNESCO Chair on Communication and Sustainable Development	Universitas Pancasila	2016	Journalism	Andi Faisal Bakti	http://www.univpancasila.ac.id/
2020ID1419	Asia and the Pacific	Indonesia	Chair	UNESCO Chair on Bioethics	Universitas Gadjah Mada	2020	Bioethics	Yati Soenarto	
2023ID1674	Asia and the Pacific	Indonesia	Chair	UNESCO Chair on Research and Education of Local Natural Dyes	Universitas Gadjah Mada	2023	Science, Technology, Engineering and Mathematics; Health and wellbeing; Sustainable Development	Edia Rahayuningsih	https://indi.lppt.ugm.ac.id/
2024ID2782	Asia and the Pacific	Indonesia	Chair	UNESCO Chair in Heritage Cities Conservation and Management	Universitas Gadjah Mada	2024	Living heritage; Diveristy of heritage; Education for Sustainable Development; Disaster risk reduction and resilience; World Heritage	Laretna T. Adishakti M.Arch; Dwita Hadi Rahmi M.A	http://ft.ugm.ac.id/
2008IR0822	Asia and the Pacific	Iran, Islamic Republic of	Chair	UNESCO Chair in Management, Planning, and Quality Assurance in Higher Education	Institute for Research and Planning in Higher Education	2008	Higher Education; Education for Sustainable Development; Inclusive, equitable and quality education; Science, Technology and Innovation; Skills Development	Mohammad Yamani Douzi Sorkhabi	https://irphe.ac.ir/
2010IR0908	Asia and the Pacific	Iran, Islamic Republic of	Chair	UNESCO Chair in Entrepreneurship	University of Tehran	2010	Global Citizenship Education; Journalism	Seyed Mohammad Moghimi; Reza MohammadKazemi	https://ut.ac.ir/en
2014IR1038	Asia and the Pacific	Iran, Islamic Republic of	Chair	UNESCO Chair on Interdisciplinary Research in Diabetes	University of Tehran	2014	Health and wellbeing; Science, Technology and Innovation; Education for Sustainable Development; Sustainable Development; Higher Education	Ali A. Moosavi-Movahedi	https://ut.ac.ir/en

MILESTONES

1. Ministry of Education, Department of Higher Education, Govt of India, forwarded the selected application to UNESCO, France, on April 26, 2023

2. Registered to UNESCO online platform & Application submission on 28th April 2023

3. UNESCO chair application favorably evaluated by UNESCO Oct 15, 2023

4. UNESCO Chair Draft Agreement received for correction on Oct 22, 2023

5. UNESCO Chair Draft Agreement received for co-signatory on Feb 28, 2024

6. PU MoU Evaluation Committee members' queries answered for co-signatory March 26th 2024

7. UNESCO Chair Agreement signed by co-signatory " Registrar, Pondicherry University" on March 28th 2024

8. UNESCO Chair approval and Web-hosting on May 15th /April 3rd 2024

9. Creation of a Dedicated Web-Page for UNESCO Chair Oct 1st 2024

10. Inauguration and first event of the UNESCO Chair activity on 10th Dec 2024

Initiative Catalysts

- **Madam France Marquet** — Principal Trustee, SAF/MSF
- **Prof. Gurmeet Singh** — Former V.C., PU & Admin
- **Ministry of Education** — HEIs, Govt. of India

Supporting Letters

From International & National Hosts and Collaborators of Prof. R. Arun Prasath

- **Prof. Kalus Muellen** — MPIP, Germany
- **Prof. W.E. Smith** — UniStarth, U.K.
- **Prof. Carrick Eggleston** — WPI, USA
- **Prof. Martina Stenzel** — UNSW, Australia
- **Prof. R. Saiju** — Flensburg Uni, Germany
- **Prof. José Baltazar** — UniSul, Brazil
- **Dr. Sakthivel** — Head Sci. ARCI, Hyderabad
- **Dr. Shamsundar Subbarao** — NIE, Mysore
- **Dr. Dwipen Boruah** — Director, GSES, New Delhi

* Ref . Appendix III

References & Recommendations:

in support UNESCO chair application

पांडिच्चेरी विश्वविद्यालय
PONDICHERRY UNIVERSITY
(केंद्रीय विश्वविद्यालय) (A Central University)

பேராசிரியர் குர்மீத் சிங்
துணைவேந்தர்

आचार्य गुरमीत सिंह
कुलपति

Prof. GURMEET SINGH
Vice-Chancellor

आर.वेंकटरामन नगर,
R. Venkataraman Nagar,
कालापेट / Kalapet,
पुदुच्चेरी -६०५ ०१४.
Puducherry - 605 014.
भारत. India.

LETTER OF SUPPORT

"TO ESTABLISH THE UNESCO CHAIR AT PONDICHERRY UNIVERSITY"

I have the honour to express our support for the establishment of the UNESCO chair under the title "Affordable Renewable and Clean Energy for Sustainable development" in the Department of Green Energy Technology of UNESCO Madanjeet School of Green Energy Technologies at Pondicherry University. The Department of Green Energy Technology was established under the aegis of the South Asia Foundation with a vision from the late UNESCO Goodwill Ambassador Madanjeet Singh to provide high-quality education to South Asian students in renewable and clean energy. The Department offers M.Tech/Ph.D. programmes and planning for B.Tech/B.Sc/integrated programmes under new National Education Policy. The Department's vision overlaps with UNESCO's sustainability goal of SDG4 and thrives to fulfill this goal. Since energy influences the development, the Department's teaching and innovative research focused on addressing the UN's SDG7. Pondicherry University targets nearly every UN's 17 SDGs, particularly SDG13, SDG7, SDG6, and SDG5. I am proud to note that currently, our campus produces almost thirty percent of its energy from the established solar power plant on the main campus from 2021 onwards. The Department's role in the sustainable development activities of the University is commendable in terms of excellent teaching, research and outreach.

The UNESCO Chair aims to prioritize developing innovative training programs for initial education (awareness to the public), specialized certificate courses (for graduate and post-graduates) and provide intensive courses for industries/professional audiences from international, national and regional levels. The global and national events (conferences/seminars/workshops) aimed to increase the collaborative nature by connecting subject experts to promote a knowledge-sharing network through capacity building and dissemination for societal progress. All the training activities are based on an active pedagogy, focusing on operational and practical exercises on renewable and clean energy technologies. The Department aims to increase its visibility and serve society more socially responsibly under the UNESCO Chair.

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Tel. : +91-0413-2655175 (Off.); 2656454 (Per.); Fax : (0413) 2655033; Email: vc@pondiuni.edu.in

The UNESCO Chair activities will be financially supported by the Indian chapter of South Asia Foundation (SAF-India), https://www.southasiafoundation.org/. Pondicherry University and SAF-India have a robust MOU for supporting financially the SAF scholarships for the 16 meritorious students per year comprising eight autonomous chapters: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka to carry out their M.Tech Green Energy Technology courses from 2010 onwards. Currently, SAF-India grants 200000 USD per year and extends support every year. To support the activities of the UNESCO Chair in UMSGET, 60000 USD has been earmarked every year, *i.e.,* 30% of the 200000 USD yearly grant for the Department. Hence for the four-year UNESCO chair, a total of 240000 USD will be provided by SAF-India to utilize for the chair activities.

I am delighted and strongly support for the establishment of the UNESCO chair in the DGET, Pondicherry University. I am confident that the UNESCO chair would bring a wide range of teaching, research, outreach and practice experts in renewable energy for Sustainable Development to care for our mother earth, people, and economy.

Wish you all success.

(GURMEET SINGH)

सत्यमेव जयते

Tele No. : + 91-11-23384442
E-mail : inc.edu@nic.in

INDIAN NATIONAL COMMISSION FOR
COOPERATION WITH UNESCO (INCCU)
MINISTRY OF EDUCATION
DEPARTMENT OF HIGHER EDUCATION
GOVERNMENT OF INDIA
SHASTRI BHAWAN,
RAJENDRA PRASAD ROAD,
NEW DELHI - 110 001

No. 23-15/2023-UU

Dated: 27th April, 2023

To

Ms. Inga Nichanian
UNITWIN/UNESCO Chairs Programme
Future of Learning and Innovation
Education Sector
UNESCO, 7, place de Fontenoy
F-75352 Paris 07 SP
E-mail:i.nichanian@unesco.org

Subject: Proposal for establishment of UNESCO Chair at Pondicherry University, Kalapet, India for Affordable Renewable and Clean Energy for Sustainable Development under the UNESCO Chairs Programme.

Madam,

The Indian National Commission for Cooperation with UNESCO recommends the proposal of Pondicherry University, Kalapet, India for establishment of UNESCO Chair for Affordable Renewable and Clean Energy for Sustainable Development under the UNESCO Chairs Programme for favourable consideration.

Yours faithfully,

27/04/2023

(Saroj Kumar Choudhary)
Under secretary to the Government of India
Tel: +91-11-2338 4442
Email: unesco.edu@nic.in

यूनेस्को के साथ सहयोग के लिये
भारतीय राष्ट्रीय आयोग
INDIAN NATIONAL COMMISSION
For Cooperation With UNESCO (INCCU)

MAX PLANCK INSTITUTE
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MPI for Polymer Research · Postfach 3148 · 55021 Mainz

March 30, 2023

To
In-Charge
UNESCO-Chair
UNESCO

LETTER OF SUPPORT

I hereby confirm the strong interest of my research team at the Max Planck Institute for Polymer Research in collaborating with the Department of Green Energy Technology of UNESCO Madanjeet School of Green Energy Technologies. We anticipate significant advances and mutual benefits from interactions with the proposed UNESCO chair activities in the line of "Affordable Renewable and Clean Energy for Sustainable Development."

My group at Max Planck Institute for Polymer Research, Mainz, Germany is known for excellence in developing macromolecules of advanced carbon-based materials, functional nanoparticles, chromophores, conjugated semiconducting polymers, composite materials and catalysts for various applications. We have published more than 2200 papers in highly distinguished journals, I hold a Hirsch-Index of 180 and have guided more than 280 PhD students. More specifically, we would be pleased to engage with UNESCO chair activities outlined in the proposal by supporting Prof. R. Arun Prasath's team (who was a DAAD fellow under me from 1999-2001). The actual mechanisms would include the exchange of knowledge, samples and results *via* both offline/online through regular conferences/seminars on topics of common interest such as electronic and optoelectronic devices, electrocatalyis, photocatalysis, sensing and theranostics.. Our special attention will be paid to the efficiency of energy conversion mechanisms including not only photovoltaics, but also thermoelectrics and photothermal therapies.

We are convinced that the major societal challenges of our times such as energy, water, healthcare or sustainability will essentially depend on the availability of materials as basis of

technologies. If needed, we jointly seek funding with German/international funding agencies to support our collaborative activities promoting, in particular, renewable energy technology for sustainable development. I am much looking forward to the establishment of the UNESCO Chair and look forward to actively participating in sharing our expertise in energy materials for a sustainable development.

Sincerely,

Prof. Dr. Klaus Müllen

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Carrick M. Eggleston*, Ph.D.
Professor, Civil, Env. & Architectural Engineering
100 Institute Road • Worcester, MA 01609
Phone: 508-831-5421 • Fax: 508 831-5808
E-mail: ceggleston@wpi.edu

March 27, 2023

To Whom It May Concern:

I am happy to be able to write in support of the present application to establish the UNESCO Chair under the title "Affordable Renewable and Clean Energy for Sustainable Development" in the Department of Green Energy Technology within the Madanjeet School of Green Energy Technologies at Pondicherry University. I look forward to collaborating, through my role as head of the Civil, Environmental, and Architectural Engineering Department at Worcester Polytechnic Institute, on joint conferences, seminars, workshops, training opportunities, and certificate courses. I see this chair as an opportunity to promote knowledge-sharing network formation, and I am very familiar with the goals of capacity building and knowledge dissemination for the good of the population.

I am particularly happy to collaborate and support this chair because it has now been just over 10 years since I first met Prof. Prasath and had the honor of working with him while I was on a Fulbright teaching a course at Pondicherry University. Prof. Prasath and I were able to continue our collaboration in 2014-2015 when Prof. Prasath was able to spend a fellowship time with my university and research group. Our goal has always been to explore new renewable energy technologies that are appropriate to sustainable development.

Thank you for your consideration, and if I can provide any further information please do not hesitate to contact me.

Best regards,

Carrick M. Eggleston
Professor and Head
Civil and Environmental Engineering
100 Institute Road • Worcester, MA 01609
Phone: 508-831-5421 • Fax: 508 831-5808
E-mail: ceggleston@wpi.edu

Sydney 29/3/2022

LETTER OF SUPPORT

This letter is to support our collaboration for the proposed UNESCO chair titled "Affordable Renewable and Clean Energy for Sustainable development" at the Department of Green Energy Technology of UNESCO Madanjeet School of Green Energy Technologies of Pondicherry University. In the event of successfully establishing the UNESCO chair, my team and our sister departments, such as the School of Photovoltaic and Renewable Energy from the University of New South Wales, Australia, committed to collaborating for the chair activities. The main activities of the chair are to promote international inter-university cooperation and networking to enhance institutional capacities through knowledge sharing and collaborative work through conferences, seminars, workshops, training, and certificate courses. It is worth to mention that Professor R. Arun Prasath was a postdoc researcher at UNSW worked under me on development of advance materials. His constant interaction makes it possible for future networking with UNSW in advanced material research and its application in renewable energy technology for sustainable development. I am sure we could have an exciting and helpful collaboration under the UNESCO Chair activities to which we are committed. I wish him and his team success in establishing the prestigious UNESCO chair and achieving UNESCO's goals.

Scientia Professor Martina Stenzel – FAA, FRSNSW, FRACI
Co-Director-ARC Training Centre for the Chemical Industries
School of Chemistry
Science and Engineering Building SEB E8
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LETTER OF SUPPORT

I am pleased to express our collaboration with the Department of Green Energy Technology of UNESCO Madanjeet School of Green Energy Technologies at Pondicherry University for the proposed UNESCO chair under the title "Affordable Renewable and Clean Energy for Sustainable development". Considering the UNESCO chair application is successful, my team and I from the University of South Santa Catarina, Brazil, will extend full support in partnering/collaborating with academic-level activities such as conferences, seminars, workshops, training, and certificate courses to support the activities of the proposed chair in our capacity. Our team and Professor Dr. R. Arun Prasath's group have collaborated intensely for the last EIGHT years on renewable energy technologies, climate mitigation action, environmental action, linkages between energy, food and water consumption and related sustainable development activities. We indeed planned to apply for additional funds for our joint chair activities once the chair is established in the Department of Green Energy Technology, Pondicherry University, for our collaborative activities between Brazil and India. The Chair activities could significantly impact both collaborating institutions to promote research/technology knowledge-sharing networks through capacity building. I look forward to our fruitful collaboration under the UNESCO Chair activities to achieve its goal and beyond.

I wish all the best for the successful application with UNESCO

Florianópolis, March 26th, 2023

José Baltazar Salgueirinho Osório de Andrade Guerra
Dean of the Graduate Program in Administration Unisul.
Fellow do Cambridge Centre for Environment, Energy and Natural Resource Governance, Universidade de Cambridge.
Director of the Center for Sustainable Development (Greens)
Diretor do Projeto BRIDGE - Building Resilience In a Dynamic Global Economy: Complexity across scales in the Brazilian Food-Water-Energy Nexus (CONFAP-RCUK).
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UNESCO

Hochschule Flensburg
University of Applied Sciences

Kanzleistraße 91 – 93
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Prof. Rajesh Saiju

Flensburg, 29.03.2023

Letter of Support

To whom it may concern

This letter confirms our interest in collaborating for the proposed UNESCO chair activities titled "Affordable Renewable and Clean Energy for Sustainable development" with the Department of Green Energy Technology of UNESCO Madanjeet School of Green Energy Technologies at Pondicherry University.

The proposed chair activities are planned to promote international inter-university cooperation and networking to enhance knowledge sharing via collaborative work. We and our team from the **Flensburg University of Applied Sciences, Germany**, have vast experience through our course on Renewable Energy Technologies. We have over 20 years of experience in teaching, research, technology development and outreach on various renewable energy technologies (Wind Energy, Photovoltaics, Grid Integration, Hybrid Power Systems and Energy Management Systems). Hence, we would be pleased to actively engage with chair activities such as conducting the international conference, providing technical lectures on advanced renewable energy technologies and training for workshops through professor exchange programs. We jointly would like to seek funding with German/international funding agencies to support our collaborative activities in promoting renewable energy technology for sustainable development to support the SDGs of the United Nations. We wish for success in establishing the UNESCO Chair and look forward to actively participating in sharing our expertise in renewable energy technologies for sustainable development.

Sincerely

Prof. Rajesh Saiju

INTERNATIONAL ADVANCED RESEARCH CENTRE FOR POWDER METALLURGY AND NEW MATERIALS (ARCI)
An autonomous R&D Centre of Department of Science & Technology,
Government of India
Balapur PO, Hyderabad 500 005, India

ARCI

Date: 31.03.2023

LETTER OF SUPPORT

This letter confirms our interest in partnering with the Department of Green Energy Technology of UNESCO Madanjeet School of Green Energy Technologies on the proposal for UNESCO chair activities entitled "Affordable Renewable and Clean Energy for Sustainable development."

The Centre for Solar Energy Materials (CSEM), under the umbrella of the International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), is a leading research Centre globally for developing and demonstrating solar photovoltaic and solar thermal technologies. CSEM is committed to achieving excellence in various key research areas of PV and Solar thermal applications, and it has excellent state-of-the-art facilities for material synthesis from lab to semi-pilot scale and excellent characterization facilities for materials and coatings. Apart from that, the centre has facilities for prototyping, validation, and product durability study. CSEM has successfully developed many technologies and transferred them to a few industries, and a few other technologies are under the commercialization process. Our expertise in solar energy will complement the Department of Green Energy Technology's efforts in teaching, researching and outreach to solar energy technologies. I know Prof. R. Arun Prasath and his team for their work in solar energy technologies for sustainable development. The Centre for Solar Energy Materials team, ARCI has strong expertise in various solar thermal components and PV module developments and various functional coatings development for PV and solar thermal applications and having different validation and characterization facilities for evaluating the laboratory to commercial-size prototypes will be pleased to partner with the UNESCO chair academic activities. We will facilitate the solar energy technology-related workshops and training courses proposed in the chair activities based on vast experiences.

In summary, my team of scientists and I will be able to actively participate in promoting research/technology training courses in-line with proposed UNESCO chair activities. In this regard, I strongly support the establishment of a UNESCO chair at DGET, for which we will extend our full support for success.

Dr. Shanmugasundaram Sakthivel
Scientist-F & Head
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GSES INDIA | global sustainable energy solutions

No. GSES/2023-24/PU

Date 28/03/2023

To,
Dr. R. Arun Prasath
Professor & HOD
Laboratory for Energy Materials and Sustainability
Department of Green Energy Technology
Madanjeet School of Green Energy Technologies
Pondicherry University, Puducherry - 605 014, INDIA

Subject: Collaboration for activities under UNESCO Chair

Dear Dr. Arun Prasath,

I am happy to know that the Department of Green Energy Technology of Madanjeet School of Green Energy Technologies at Pondicherry University is submitting an application to establish the UNESCO Chair under the title "Affordable Renewable and Clean Energy for Sustainable development".

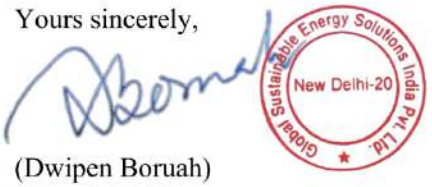
Global Sustainable Energy Solutions India (GSES India) hereby confirms its association/ partnership with academic-level activities such as conferences, seminars, workshops, training, and certificate courses if the application successfully establishes the UNESCO Chair at Pondicherry University. Since this Chair aims to promote a knowledge-sharing network through capacity building and dissemination, for which GSES India is committed to associating with the activities of the Chair. We cherish our association with you for the planning and design of Pondicherry University Silver Jubilee solar campus in 2013-14 and this partnership will get strengthened with UNESCO Chair activities.

Established in 1998, Global Sustainable Energy Solutions (GSES) based out of Sydney, Australia, is a multi-disciplinary organization specializing in professional services and training across the Renewable Energies sector and comprises a team of highly experienced systems engineers, designers and installers and accredited trainers. GSES India has been operating from New Delhi since 2012. GSES actively works with Government organisations, multilateral organisations, private enterprises and NGOs across the globe in facilitating the growth and development of the renewable energy industry.

I wish you all the best with the application and look forward to working together in near future.

Thanking you,

Yours sincerely,



(Dwipen Boruah)
Managing Director
GSES India

NIE - CREST

NIE-Centre for Renewable Energy and Sustainable Technologies

The National Institute of Engineering, Mysuru, India

Ref no: 137

To
In-Charge
UNESCO-Chair
UNESCO

Date:29/03/2023

LETTER OF SUPPORT

This letter confirms our interest in partnering with the Department of Green Energy Technology of UNESCO Madanjeet School of Green Energy Technologies on the proposal for UNESCO chair activities entitled "Affordable Renewable and Clean Energy for Sustainable development."

The Centre for Renewable energy and sustainable Technologies (NIE -CREST) of the National Institute of Engineering in Mysuru is a leading engineering department of the nation. The department's expertise spread in the field of renewable energy, power plant engineering, Biofuels, thermodynamics, microgrid and other thermal-related systems. Professor R. Arun Prasath and I are DAAD alumni who had research experiences from Germany before we joined our respective institutes for teaching, research and outreach on renewable energy technologies. Our team will be pleased to be a partner with the UNESCO chair academic activities. We will facilitate the renewable technology-related workshops and training courses proposed in the chair activities based on our vast experiences. My team and I can actively promote research/technology training courses in line with proposed UNESCO chair activities. I strongly support the establishment of a UNESCO chair at DGET, for which we will extend our full support for success.

Your sincerely

S Shamsundar
Head, CREST
NIE, Mysore

NIE-Centre For Renewable Energy & Sustainable Technologies
NIE-CREST

Research Initiatives & Collaborative Efforts:

Submitted support documents for UNESCO chair application

Solar Energy 240 (2022) 435–442

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One-pot controlled microwave synthesis of Broadband-light absorbing irregular gold nanoparticles for solar cell application

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ARTICLE INFO

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ABSTRACT

Improvement of light-harvesting efficiency using the localized surface plasmon resonance (LSPR) from the metals nanoparticles (MNPs) is a promising approach to boost the efficiency of the solar energy conversion systems. To attain the narrowband SPR, synthesis of the monodisperse MNPs with particular shapes and sizes is cumbersome and has great importance for (surface-enhanced Raman spectroscopy) SERS application. Contrary, broadband SPR is prominent for solar cell applications to absorb maximum sunlight from the solar spectrum. Incorporating polydisperse MNPs of mixed shapes and sizes is a unique approach to realizing the broadband SPR for solar cell application. However, the synthesis of polydisperse MNPs with good reproducibility is challenging. To address this issue, we report facile one-pot microwave synthesis of mixed shapes and sizes of Au nanoparticles (Au-Mx), possessing broadband SPR with decent reproducibility. Microwave-assisted uniform heating provides the control over the reaction parameter to produce identical SPR. Further, the light-harvesting ability of the Au-Mx is demonstrated by incorporating ~ 1% of Au-Mx in photoanode while fabricating the dye-sensitized solar cells (DSSCs). The photoconversion efficiency (PCE) of the Au-Mx loaded DSSCs improved by ~ 30% compared to the reference devices, indicating the effective utilization of broadband SPR for efficient charge generation in plasmonic devices.

1. Introduction

The efficiency of solar energy conversion systems significantly depends on the amount of photon energy converted into electrical/chemical energy (Nayebi et al., 2021; Nguyen et al., 2020b; Zhang et al., 2020). For an efficient photoconversion process, the photon energy needs to be concentrated by a magnitude of several orders, which emphasizes the need to graft a light-concentrating mechanism into the system (Aubry et al., 2010; Lam et al., 2020; Nguyen et al., 2020a; Xia et al., 2021). In this context, Metal nanoparticles (MNPs) have extensively drawn the researchers' attention for an efficient light-harvesting bullet in the last few decades (Aubry et al., 2010; Erwin et al., 2016a). By effective coupling of the light through SPR, MNPs can predominantly concentrate the incident photons by the magnitude of several orders and boost the total absorption coefficient of the adjacent photoactive materials, thereby significantly improving the photon harvesting ability of the system.

The third-generation organic–inorganic solar cells showed great potential to rival the silicon solar cell and have experienced vertical efficiency growth by advancing new materials and technologies in the last decades (Ball et al., 2021; Datt et al., 2022; Zhang et al., 2022; Zhao et al., 2022, 2020, 2019). Among the third-generation solar cell, the dye-sensitized solar cells (DSSCs) have many advantages over silicon and pervoskite solar cells, such as lower production cost, better reproducibility of fabrication in ambient conditions, and elimination of the need of high- end equipment (Chander and Samantaray, 2021). However, the poor light-harvesting of the photoanode is a bottleneck in improving the performance of DSSCs. For instance, the widely used Ru-based dyes (i.e., N719 and N3) are efficient in 400 – 600 nm wavelength regions. However, poor light absorbance at a longer wavelength (>600 nm) makes utilizing the lower energy photon challenging, affecting the device performance. Improving light-harvesting via approaches like the use of hierarchical nanostructure, new sensitizers, and blending of dyes can affect the delicate electrochemical balance of the device and requires the restructuring of the design to maintain the characteristic properties of the devices (Ahmed et al., 2016; Chen et al., 2006; Dutta et al., 2019;

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Polymer-garnet composite electrolyte based on comb-like structured polymer for lithium-metal batteries

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Garnet filler
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ABSTRACT

Polymer-inorganic solid-state electrolyte membranes for lithium-metal batteries have attracted considerable attention among the scientific community because of their flexibility, stability, and better electrodes to electrolyte interaction. This work reports the preparation of polymer-garnet composite electrolyte (PGCE) membranes consisting of polyethylene oxide polymer, LLZA ($Li_{6.28}Al_{0.24}La_3Zr_2O_{12}$) garnet filler, $LiClO_4$ (lithium perchlorate salt), and as-synthesized comb-like structured polymer (CLSP). The CLSP has an ethylene oxide backbone chain with ester/carboxyl/hydroxyl functional groups that smoothly facilitate Li-ion mobility. The polymer-garnet composite electrolyte (PGCE-3, prepared with CLSP) membrane showed an enhancement in the Li-ion conductivity of 1.29×10^{-5} S/cm at 25 °C with a potential stability window > 4.6 V compared with the pristine polymer-garnet blank electrolyte (PGBE—prepared without CLSP). The PGCE-3 membrane exhibited a Li-ion transference number of 0.21 compared with that of 0.13 for the PGBE membrane with superior interfacial compatibility over lithium metal for 300 h at a current density of 0.09 mA/cm^{-1}. The fabricated full cell Li||PGCE-3||LFP resulted in an initial to final discharge capacity of 140 mAh/g to 120 mAh/g at 0.1 C with a coulombic efficiency of 98.30% for 50 cycles. This full cell was stable enough to discharge its power after eight months without recharging. The PGCE membranes containing CLSP architecture as polymer electrolyte show promising results for high energy density lithium-metal rechargeable batteries.

1. Introduction

The depletion of fossil fuel and the ever-increasing energy demand have triggered intensive research on developing renewable energy technologies and suitable energy storage devices [1]. Lithium-ion batteries are considered as a potential contender among various electrochemical energy storage devices because of their high energy density ~100–265 Wh/Kg, lightweight, and extended charge/discharge life cycle [2,3]. However, the use of common conventional liquid electrolytes in a battery system generates several crucial issues such as flammability, leakage, and explosions during charge/discharge cycles, causing serious safety concerns [4–6]. Solid electrolytes are considered a plausible replacement for conventional liquid electrolytes because of their numerous advantages. Among the various solid electrolytes, composite polymer solid-state electrolyte provides excellent chemical and electrochemical stability under chemical redox reaction with superior voltage, high flexibility, and stability [7,8]. The use of solid-state polymer electrolytes also limits the formation of dendrite growth, undesirable side reactions, volume expansion, and thermal runaway [9,10].

A complete solid polymer electrolyte in lithium battery technology has been achieved by using polymers such as poly(ethylene oxide) (PEO) [11], poly(acrylonitrile) [12], poly(methyl methacrylate) [13], poly(vinylidene fluoride) (PVDF) [14], and so on. Although the progress made in solid-state polymer electrolytes is encouraging, it has to go a long way to address the three critical challenges to accomplish a stable solid-state electrolyte for its large-scale commercial application. The essential and challenging properties are to improve its (a) lithium-ion conductivity, (b)

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RESEARCH ARTICLE

Sustainable Development WILEY

Sustainable urban development: Can the balanced scorecard contribute to the strategic management of sustainable cities?

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Abstract

This article aims to present, adapt, and propose the use of the Balanced Scorecard (BSC) as a tool to support strategic management for sustainable cities. To achieve this goal, publications and 27 sustainable cities projects were also consulted, through project reports and programs from the cities themselves on the topic were consulted. A text mining analysis was applied to the results obtained in this literature review to find the main factors related to sustainable cities. To evaluate the findings of this first stage, consultations with specialists were carried out, specifically to assess the main factors. Based on the previous steps, and based on the original BSC, an adaptation of the tool was proposed, where its structure was changed to meet the needs of the strategic management of sustainable cities. It was concluded that creating a sustainable city requires understanding the difficulties faced by urban center managers with the implementation and management of institutional sustainable development practices. The BSC for sustainable cities can assist as a viable management strategic tool to more efficient use of resources in order to develop sustainable cities.

José Baltazar Salgueirinho Osório de Andrade Guerra, Director of the Research Centre on Energy Efficiency and Sustainability (GREENS), Unisul. Fellow at the Cambridge Centre for Environment, Energy and Natural Resource Governance (C-EENRG), Department of Land Economy, University of Cambridge, UK. In UNISUL, he also coordinates three research projects: JELARE and REGSA, both funded by the European Union; Projects LINKS 2015 and BRIDGE, funded by FAPESC and the Research Council of United Kingdom (RCUK) trough Newton Fund. He was a member of the Scientific Committee of the World Symposium on Sustainable Development in Universities (WSSD-U-2012 and WSSD-U-2014), a parallel event to Rio + 20 and the Green Campus Summit 2013.

We would like to submit the enclosed manuscript entitled Can the Balanced Scorecard Contribute to the Strategic Management of Sustainable Cities? Which we would like to be considered for publication in Sustainable Development. No conflict of interest exits in the submission of this manuscript, and this manuscript is approved by all authors for publication. I would like to declare on behalf of my co-author that the work described was original research that has not been published previously and not under consideration for publication elsewhere, in whole or in part. All the authors listed have approved the manuscript that is enclosed.

We deeply appreciate your consideration of our manuscript, and we look forward to receiving comments from the reviewers.

Developing Pondicherry University Silver Jubilee Campus as "Solar Campus"

Dwipen Boruah, R. Arun Prasath, G. Poyyamoli, M. Nandhivarman and Golda A. Edwin

Abstract

Pondicherry University. located at R.V. Nagar, Kalapet, Pondicherry, is a Central University established in 1985 by the Government of India. This is the fastest growing university in India. It is a collegiate university with a jurisdiction spread over the Union Territories of Pondicherry, Lakshadweep and Andaman and Nicobar Islands. It has successfully completed its 25th year of existence. The Silver Jubilee campus of Pondicherry University is a new campus of 110 acres in its 800 acres of campus. This area would soon house 12 buildings and 2,500 students. Prime Minister of India Dr. Manmohan Singh formally inaugurated the Silver Jubilee Campus of Pondicherry University on 30 June 2012. The Department of Ecology and Environmental Sciences and the Madanjeet School of Green Energy Technology of the University jointly have taken the initiative to develop the silver jubilee campus as "Solar Campus" which will be the first of its kind in India. The University is receiving financial assistance from the Ministry of New and Renewable Energy (MNRE), Govt. of India for preparing a master plan and detailed project reports for this purpose.

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POTENTIAL FOR ROOFTOP SOLAR PHOTOVOLTAIC SYSTEM IN PONDICHERRY UNIVERSITY CAMPUS TO PROMOTE SUSTAINABLE DEVELOPMENT

Sujoy Barua[1]
Dwipen Boruah[2]
Dr. R. Arun Prasath[3]

ABSTRACT: This study aims to design and evaluate the grid-connected solar photovoltaic roof-top system for academic campus. A design and feasibility study of rooftop solar photovoltaic system project is conducted using tools; - PVsyst and design software by inspecting project area by utilizing the NASA surface meteorology data through geographical coordinator of project place. The performance of the system was simulated using PVsyst software and the results were analysed. The analyses of the simulation results show that the project yields energy about 590MWh annually which is about 11% of total annual energy consumption in Pondicherry University for the 2013. The process of electricity generation from solar photovoltaic system could saves ~42 tonnes of carbon dioxide. The proposed grid connected system is analyzed for the academic campus.

Keywords: Grid-connected, solar photovoltaic; PV system, PVsyst, roof-top solar PV, greenhouse gases;

1 Graduated in Master of Green Energy Technology from Pondicherry University, India followed by UNESCO Madanjeet group fellowship. He did graduation in Electrical and Electronic Engineer from United international University, Bangladesh. His research project on "Developing Solar Campus" was with GSES India Private Limited, India and worked at Transcom Limited, Bangladesh. Apart this he has done some academic project works on solar energy field. His interested is to continue research in Sustainable Development through solar PV System, Energy and Energy Efficiency, Low Carbon Technology.

2 Graduated in Mechanical Engineer and completed his Post Graduate Programme on Renewable Energy (PPRE) from Oldenburg University, Germany. He has earned more than 22 years of experience in Renewable Energy Engineering design, Planning, Research, Project Management and Training. He has the experience of working with a number of local, regional and national organisations in several countries and has proven knowledge of renewable energy technologies, barriers for deployment, methods and approaches applied in the field of technology road-maps. Dwipen also authored or co-authored books and training manuals on solar PV system design Installation, maintenance and inspection; he has to his credit training manuals on improved cook stoves, more than 60 technical and professional reports and several articles in the technical magazines and journals.

3 PhD (Material science, Anna University, Chennai). He was a recipient of prestigious DAAD fellowship, (1999-2001) for his doctoral research work at Max-Planck Institute for Polymer Research, Mainz, Germany. After his doctoral degree he worked as material researcher in several prestigious institutes; as research associate in Indian Institute of Science, Bangalore, India (2002-2004), as postdoctoral researcher in University of Strathclyde, Glasgow, United Kingdom (2004-2006) and in University of New South Wales, Sydney, Australia (2006-2008), and as senior researcher in Ghent University (2008-2010) with special fellowship called BOF. He has published more than 20 peer-reviewed journal articles, more than 10 published articles in proceedings and book chapters, co-inventor in 3 International patents as well as in 2 European patent applications. For his profession development, he has visited Germany, United Kingdom, Australia, Belgium, Brazil, Italy, and Bangladesh. He has presented more than 45 oral presentations in various conferences/seminars/courses/invited talks. He is actively involved in teaching and research on renewable energy from 2010 onwards.
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Centre for Green Energy Technology, Pondicherry University, Puducherry 605014 India
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Carbon Footprint Assessment and Mitigation Strategies for Sustainable Development

Sujoy Barua, Deepak Acharya, Karthik Kiran, Tika Ram Khadka, Vinayagam Murugavelu, Dharmaligam Singaravelo, Gopal Poyyamoli, Dwipen Boruah and R. Arun Prasath

ABSTRACT

The carbon footprint is a primary tool used to assess the environmental conditions associated with greenhouse gas emissions. It also helps identify the key driving forces that establish appropriate mitigation policies for climate change governance. This study applies a traditional energy analysis to assess the carbon emission of the Silver Jubilee Campus of Pondicherry University, located in Kalaper, Puducherry, India. This assessment establishes the carbon footprint of this campus and offers recommendations regarding the respective scopes of carbon emissions. Our results indicate that the annual carbon footprint of the campus is about 1,387 tons of carbon dioxide equivalent (tCO_2e) and the per capita CO_2 emissions total 0.55 tCO_2e. Electricity consumption, diesel fuel for standby power, commuting transport, goods and liquefied petroleum gas (LPG) for the canteen contribute 83.4%, 2.2%, 13.9% and 0.5% respectively to the carbon footprint. In addition, climate change governance at the campus requires that stakeholders incorporate green practices in their respective areas. This study helps in evolving appropriate mitigation strategies for engaging the university's students, faculty and staff and promotes desirable behavioral changes. Finally, the findings of our study will aid Pondicherry University in implementing policies that support the use of renewable energy technologies to help the university achieve its sustainable development policies.

INTRODUCTION

The term carbon footprint has led engineers to assess and calculate greenhouse gas (GHG) and carbon-related emissions due to the use fossil fuels and other anthropogenic activities. *Carbon footprint* is defined as the quantity of

Rooftop Solar Photovoltaic System Design and Assessment for the Academic Campus Using PVsyst Software

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***Abstract*—This study aims to design and evaluate the grid-connected solar photovoltaic roof-top system for academic campus. A design and feasibility study of rooftop solar photovoltaic system project is conducted using tools- PVsyst and design software by inspecting project area by utilizing the NASA surface meteorology data through geographical coordinator of project place. The performance of the system was simulated using PVsyst software and the results were analysed. The analyses of the simulation results show that the project yields energy about 590MWh annually which is about 11% of total annual energy consumption in Pondicherry University. The process of electricity generation from solar photovoltaic system could saves ~42 tonnes of carbon dioxide. The proposed roof top grid connected system is analyzed for the academic campus.**

***Index Terms*—grid-connected, solar photovoltaic, PV system, PVsyst, roof-top solar PV, carbon dioxide**

I. Introduction

India has taken initiatives for promotion and use of green energy technologies both in academic practice and implementation under the development of Solar Institutional campus Programme by India ministry [1]. Grid-connected solar photovoltaic (PV) systems employ the direct conversion of sunlight into electricity which is fed directly into the electricity grid without the storage in batteries. Building integrated PV system does not require any excessive space. This option, like many other renewable energy options, is generally carbon free or carbon neutral and as such does not emit greenhouse gases during its operation, since global warming and climate change are mostly caused by the release of carbon dioxide and other greenhouse gases into the atmosphere.

In most parts of India, clear sunny weather is experienced 250 to 300 days a year. The annual global radiation varies from 1600 to 2200kWh/square meter, which is comparable with radiation received in the tropical and sub-tropical regions. The equivalent energy potential is about 6,000 million GWh of energy per year [3]. India declared in its solar mission a goal of producing 22GW of electricity from solar energy by 2022 [4]. Energy production capacity of solar is very little compared to other countries. Grid Connected photovoltaic system has been generated 30,000MW in India and ~973MW stand alone systems in January 2014 [5]. Estimated PV growth is to around 100 MW in 2022, till now about 592,000 solar street and home lighting systems and 7300 agricultural pumps have been running in the rural area [6]. India's solar mission is structured in three phase in 2010: the purpose is to achieve the target 1 GW of grid-connected solar by 2013, the second 4GW by 2017 and the final to reach 22GW of PV capacity for power generation by the year of 2022. India stands now over 1GW PV capacity all over country [7].

Pondicherry University is one of the pioneering universities in India which is located on the side of east-coast road of Puducherry in Tamil Nadu. Pondicherry is situated at 11.94 (11°56'24"N) latitude and 79.83 (79°49'48"E) longitudes receives good amount of solar radiation. The geographical co-ordinates of the campus are 12.01° North and 79.9° East. The solar radiation data is based on National Aeronautics and Space Administration renewable energy resource website [2].

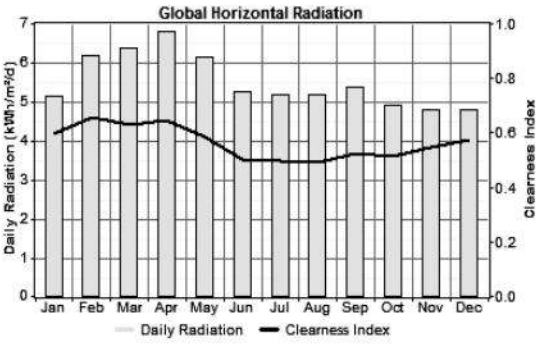

Figure 1. Relation between radiation and sky clearness [2]

The mean annual average of global horizontal solar insolation for the project site is 5.36kWh/m^2/day. The monthly average wind speed is 4.08ms^{-1} at 50m and 3.22ms^{-1} at 10m. Monthly 22-years averaged air

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doi: 10.18178/ijeee.5.1.76-83

RESEARCH ARTICLE

Feasibility study of a grid-tied 2MW floating solar PV power station and e-transportation facility using '*SketchUp Pro*' for the proposed smart city of Pondicherry in India

Ankit Kumar Singh[1], Dwipen Boruah[2], Lakshey Sehgal[3] and Ramaswamy Arun Prasath[1*]

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Abstract: The race of smart cities in India places Pondicherry at 75th position. To improve its ranking position for smart city race, we propose the implementation of 2MW Floating Solar Photovoltaic (FSPV) system where a large water body could be used for generation of solar power. The floating PV system can be used to attain much higher efficiency compared to its counterpart on land based PV system. The proposed FSPV system could cover solar panel of 1/3rd area of the proposed lake to generate 2685 MWh annually. A geo-synchronized layout has been prepared using 3D *SketchUp Pro* with Google maps. The FSPV system could cost USD 1.6 million with a payback period of 6 years. In addition, the implementation of e-transport facility by utilizing e-rickshaws with a battery capacity of 90Ah with 15 Amps DC charging facility has been proposed with an investment of USD 30000, with payback period of just 5 months. The bright side being improved overall payback due to money inflow with the implementation of e-rickshaws; greater job opportunities with benefits to physically challenged persons to improve their overall socio economic status. It is viewed that the proposed FSPV and e-transport could increase the chance to secure smart city plan for Pondicherry.

Keywords: smart city, power plant, floating solar photovoltaic, grid-tied, e-transportation facility, e-rickshaws

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1. Introduction

1.1 General Overview

The 21st century is regarded as the century of cities. According to the recent report by UN Department of Economic and Social Affair, more people live in urban areas than in the rural areas. This population shift has grown from 30 percent (746 million) in 1950 to 54 percent (3.9 billion) and is expected to be 66 percent by 2050, adding around 2.5 billion to the present figures. For developing countries like India, the growth rate is more rapid compared to the American and European continent. India is expected to add 404 million urban dwellers to

PONDICHERRY UNIVERSITY

Master Plan & Detailed Project Reports for Development of Pondicherry University Silver Jubilee Campus as Solar Campus

Draft Master Plan & DPRs

22 March 2013

Prepared by

Alternatives

&

GSES | India

Creating Sustainable Change Through

Consultancy, Engineering, Communication & Leadership

PROJECT TEAM

MNRE & REAP Team:

- Dr. A. K. Tripathi
- Mr. Pankaj Kumar Jha
- Mr. Hiren Borah

University Team:

- Dr. G. Poyyamoli
- Dr. R. Arun Prasath

GSES India Team:

- Mr. Dwipen Boruah
- Mr. Kalirajan U
- Mr. Sujoy Barua
- Mr. Punit Kumar Dubey

Press Releases

CHENNAI
THE HINDU • WEDNESDAY, DECEMBER 12, 2012

CLASSIFIEDS MART Page 6

Villupuram Yesterday 31/22 » Cuddalore Yesterday 31/22 » Puducherry Yesterday 31/22 »

Conditions/max temp/min temp in Celsius;

Puducherry Today
Mild breeze is likely. A delightful morning. The sky will be partly cloudy over the region. A comfortable afternoon. High 31°C Low 22°C RH max 89% »

Read RH as Relative Humidity

Pondicherry University's Silver Jubilee Campus set to be powered by the sun

It will be the first such varsity campus

Staff Reporter

PUDUCHERRY: Pondicherry University's Silver Jubilee Campus is looking at converting itself into a solar campus where they generate the energy required for their functioning from the sun. The project will be supported by the Ministry of New and Renewable Energy.

This will be the first project in the country for a solar powered university campus under the MNRE scheme, co-principal investigator of the project G. Poyyamoli told *The Hindu* on Tuesday.

After an initial survey of the area along with consultant Dwipen Boruah, it has been determined that if all the rooftops (including the car parks and bike parks) on the Silver Jubilee Campus had solar panels and a separate solar ring was installed in the central lawn space, it was possible to generate 1MW of power.

MNRE would potentially fund 30 per cent of the project, Mr. Boruah said.

The MNRE was currently giving the University Rs. 10 lakh to prepare the Master Plan and the Detailed Project Report. They were also considering small wind turbines on the periphery of the Campus, for which they would get a 50 per cent subsidy.

The 1 MW solar power potential would generate around 1,570 Megawatt hours of power per year, which was more than the requirement of the Silver Jubilee Campus. Any excess power that was generated could be given to the general grid.

One of the main issues of solar energy is that it is only available during the day.

This is when there was peak usage in the industrial area, so by giving any excess power generated during the day to the general grid, they would be helping the community. Also, at night when there was no power generated from the solar panels, they could receive power from the grid, he said.

According to principal investigator on the project R. Arun Prasath, the proposal that was submitted to the MNRE also included two 100 cc biogas plants and solar steam cookers.

The Dean of the Madanjeet Singh Centre of Green Energy Technology H.S.P. Rao said that the University was separately working on a prototype solar energy project by providing rooftop solar panels to the newly constructed Controller of Examination office as well as the main office.

(From Right) Dean of Green Energy Technology H.S.P.Rao, consultant Dwipen Boruah, Co-Principal Investigator Poyyamoli, and Principal Investigator Anu Prasath speaking about the solar campus project in Puducherry. – PHOTO: T. SINGARAVELOU

Press Releases

REGION

Mihin Lanka sales agent office attacked

Naam Tamilar activists attacked the office of the general sales agent of Mihin Lanka, a Sri Lankan airline, at Kalavasal junction and caused damage Page 4

Stranded elephant

A five-month-old male in Bevanur Reserve Fo was rescued by the for

Pondicherry University set to embrace energy-efficient practices

To achieve 43 per cent saving in energy consumption by 2015

Staff Reporter

PUDUCHERRY: By 2015, Pondicherry University will be able to have a 43 per cent saving in energy with the adoption of energy-efficient practices and through the introduction of renewable energy resources it will be in a position to supply power back to the grid.

"When the full plan is implemented, the university will be able to generate 830 MW of energy per year from solar panels and 379 MW per year from the wind turbines," said Dwipen Baruah, consultant for the solar campus project and MD of GSES India Sustainable Energy. He presented the Detailed Project Report to the Vice-Chancellor, Chandra Krishnamurthy, on Wednesday, and briefed her the plan.

According to the plan, the Silver Jubilee Campus will have solar panels on the roofs of the various buildings - the School of Social Sciences and Humanities, School of Tamil Language and Literature, Academic Staff College, the UNESCO Madanjit Singh Institute of South Asian Regional Cooperation and the yet-to-be-completed School of Media and Communication, he said.

Vice-Chancellor of Pondicherry University Chandra Krishnamurthy at a presentation of the Detailed Project Report on the solar campus, in Puducherry on Wednesday — PHOTO: T. SINGARAVELOU

In addition, they would be providing solar panels for the car and bike parking sheds as well as a ring of panels in the central circular lawns.

At present, the main electricity consumption in the Silver Jubilee Campus was from air-conditioning, which took up 62 per cent of the total consumption. The next highest were the lightings that consumed 13 per cent of the total electricity.

Of the total energy consumption, 87 per cent was from electricity, while the second highest consumption of energy was the diesel used as standby which took up 8.65 per cent of the consumption.

At present, there were no proper measuring facilities for energy consumption in the university and the central metering system was non-functional.

With the installation of the sources for renewable energy generation, they would also install two meters, one to measure the energy usage and another to measure the output.

In terms of funding, there were two options available to the university. One was to take the subsidy offered by the Ministry of Renewable Energy. The Ministry currently provided a subsidy of 30 per cent for solar panelling and 50 per cent for wind turbines. The second option was to apply for a Renewable Energy Certificate, through which it would be able to receive payment for the extra energy that the university manages to feed back into the grid, he said.

As per the DPR, the total project cost for the Solar Energy Campus was Rs. 866.14 lakh, he said.

The Solar Energy Campus project report was sponsored by the MNRE, with Associate Professor of the Department of Ecology and Environment Sciences G. Poyyamoli as the Principal Investigator and Professor Arun Prasanth as Co-Principal Investigator.

According to Dean of Madanjit School of Green Energy Technology H.S.P Rao, the solar campus project is the first of its kind in any university in the country.

Press Releases

THE NEW INDIAN EXPRESS

Pondicherry University silver jubilee complex to go green

newindianexpress.com/states/tamil-nadu/2012/Dec/12/pondicherry-university-silver-jubilee-complex-to-go-green-433148.html

12 Dec 2012, 3:20 pm

The silver jubilee complex of the Pondicherry University will be powered by solar energy to light up the buildings and premises in future. A detailed projeAct report (DPR) and a master plan are being prepared for this purpose and the proposal would be submitted to the Ministry of New and Renewable Energy (MNRE) for its nod.

Prof H S P Rao, Dean of the Madanjeet School of Green Energy Technology, on Tuesday said the DPR and master plan would be submitted to the ministry in July. As of now the proposal would be to generate O.5 mega watt power using solar photovoltaic cells, he said, and added that if the project gets the ministry's nod, then Pondicherry University will be the first in the country to use solar energy for supplying power to its premises.

Rao said Dr Poyyamoli, assistant professor, Department of Ecology and Environmental Science, and Dr R Arun Prasath, assistant professor, Centre for Green Energy Technology, were the driving force behind the solar campus project.

Consultant for the solar campus project, Dwipen Boruah, managing director, GSES India Sustainable Energy Pvt), said the silver jubilee complex had 78,000 square meters of roof top area which would be utilised for setting up the solar power panels. The 1.5 km periphery of the silver jubilee complex could be used for producing wind energy, he added. Boruah said the complex required 1300 megawatt hour of power and when the project becomes a reality, it would generate 1570 megawatt hour of power.

Prof H S P Rao said after getting the nod from ministry, a prototype would also be set up on the roof top of the Controller of Examinations building. He said the students of the Madanjeet School of Green Energy Technology would be associated with the setting up of the project.

Earlier, an awareness workshop on solar campus for the complex, Pondicherry University, was organised. Vice-chancellor Prof J A K Tareen delivered the inaugural address.

Prof S Balakrishanan, Director Research), and Prof A B Khan, Dean, School of Life Sciences), addressed the gathering, Prof Carrick M Eggleston, University of Wyoming, Fulbright-Nehru scholar, Madanjeet School of Green Energy Technology, made a presentation on 'Renewable energy on campus-- some examples from the USA.'

Updated on: 25 Nov 2024, 10:58 am

Press Releases

Pondicherry University showcases green energy solutions at G20-S20 meet

The Hindu Bureau
PUDUCHERRY

The Department of Green Energy Technology at Pondicherry University organised an exhibition with prototypes and awareness literature on sustainable energy as part of the G20-S20 Inception meeting in the city.

The exhibition conducted by the department, an arm of the Madanjeet School of Green Energy Technology at the University, broadly reflected its vision to promote teaching, research and outreach in environmentally clean methods of energy production, conservation and utilisation.

It also represented some of the Department's patented models and the ongoing research programmes related to renewable energy.

A team from Pondicherry University led by Vice-Chancellor Gurmeet Singh at an exhibition held during the G20-S20 Inception meet in Puducherry. SPECIAL ARRANGEMENT

Interaction held

Pondicherry University Vice-Chancellor Gurmeet Singh, R. Arun Prasath, Head of Department and P. Elumalai, professor, interacted with the visiting G20 delegates.

In fact, 'Clean Energy for a Greener Future' is among the key themes of the G20 events.

The exhibits displayed by the department under various heads, included waste to wealth: converting agricultural/domestic e-waste into battery; all-solid-state polymer electrolyte-based lithium metal batteries for high safety; XB3DIW 3D printer and its application in green energy and medical sectors, and electricity generation from waste heat through thermoelectric devices, a press note from the University said.

The exhibition at the Suganya Convention Centre also featured posters on waste to wealth-agricultural/domestic e-waste into battery; photoelectrochemical water splitting for green hydrogen production; vertically mounted bifacial solar power plant for highways; carbon sequestration and circular bioeconomy for biofuels; solar photovoltaic and biomass-based hybrid food drier for domestic usage, and solar thermal energy storage system for hot and cold storage applications.

Solar power plant

The press note also mentioned the University setting an example in the adoption of sustainable energy by commissioning a 2.4 Mwp (Megawatt peak) rooftop solar power plant, which at the time of installation in 2021, was one of the largest affordable and clean energy generation units in educational institutions in India.

The rooftop solar plant has significantly contributed to the energy requirements of the campus and cut carbon emissions, the press note said.

THE HINDU • WEDNESDAY, DECEMBER 12, 2012

CLASSIFIEDS MART Page 6

Villupuram Yesterday 31/22 | Cuddalore Yesterday 31/22 | Puducherry Yesterday 31/22 | Puducherry Today

Pondicherry University's Silver Jubilee Campus set to be powered by the sun

Rooftop Solar Photovoltaic System Design and Assessment for the Academic Campus Using PVsyst Software

PONDICHERRY UNIVERSITY

Master Plan & Detailed Project Reports for Development of Pondicherry University Silver Jubilee Campus as Solar Campus

Draft Master Plan & DPRs

22 March 2013

Pondicherry University Silver Jubilee Complex to Go Green

REGION

Pondicherry University set to embrace energy-efficient practices

The Vision..... 2012

The Reality 2021

Pondicherry University gets a 2.4 MW solar plant

The rooftop solar plant, commissioned by Amp Energy India, will supply about 40% of the university's energy requirement and help offset around 2,900 tons of carbon emissions every year.

SEPTEMBER 16, 2021 UMA GUPTA

COMMERCIAL & INDUSTRIAL PV | ROOFTOP SOLAR | PUDUCHERRY

PONDICHERRY UNIVERSITY
VERS LA LUMIERE

unesco Chair

Prof. R. Arun Prasath played an important role in preparing and submission of Master Plan for Solar Campus. His initiative has Ignited for Solar Campus at Pondicherry University and instrumental to established UNESCO Chair to Promote Renewable and Clean Energy for Sustainable Development.

Appendices

Appendix – I:

Application Submitted for UNESCO Chair

Submissions > Affordable Renewable and Clean Energy for Sustainable Development

WELCOME / BIENVENUE

Welcome to the UNESCO Chair and UNITWIN Network platform for the submission of proposals and requests for renewals.
Please note that a 15 minutes session security timeout applies to this form. You are advised to fill-it in through various steps and save everytime.
Once it is completed, you will need to Select the option "I submit" before a final save.

Bienvenue sur la plateforme Chaire UNESCO et Réseau UNITWIN pour la soumission de propositions et de demandes de renouvellements.
Veuillez noter qu'un délai de sécurité de session de 15 minutes s'applique à ce formulaire. Il vous est conseillé de le remplir à travers différentes étapes et de sauvegarder à chaque fois.
une fois terminé vous devez sélectionner OUI dans "Je soumets" et appuyer sur le bouton Save

This concerns / Cela concerne :
UNESCO Chair (New Application) / Chaire UNESCO (Nouvelle application)

This concerns / Cela concerne:

A. TITLE AND SUMMARY / TITRE ET RESUMÉ DESCRIPTIF

Title of chair or network / Nom de la Chaire ou du Réseau
Affordable Renewable and Clean Energy for Sustainable Development

Summary / Résumé descriptif
The Department of Green energy technology is unique in its vision and goals for achieving South Asia's renewable and clean energy requirements for its sustainability. The department is established as a regional center in South Asia for research and teaching and creating awareness of sustainability and environmental challenges to the public. India's per-capita energy consumption is meager compared to developed nations. To achieve the sustainable development goals of the United Nations, energy production needed to be increased substantially. The high solar insolation of this region is a promising factor in generating solar and related renewable/clean energy for emission-free and/or carbon-neutral. Therefore, the UNESCO Chair of renewable and clean energy technology for sustainability proposes to research and develop emission-free energy technologies to transfer all research and development through training and education activities in existing universities and scientific and technical centers.

Keywords / Mots-clés

Keyword1 / Mot-clé1	Keyword2 / Mot-clé2	Keyword3 / Mot-clé3	Keyword4 / Mot-clé4	Keyword5 / Mot-clé5	Other / Autres (specify/spécifier)
Climate action - Action pour le climat	Education for Sustainable Development - - Éducation au développement durable	Environment Protection - Protection de l'environnement	Education for Sustainable Development - Éducation au développement durable	Science, Technology and Innovation - Science, technologie et innovation	Renewable Energy Technology

Select up to 5 keywords

B.1. HOST INSTITUTION & CHAIRHOLDER/COORDINATOR / INSTITUTION HÔTE ET RESPONSABLE /COORDINATEUR

Host higher education institution details / Établissement d'enseignement supérieur d'accueil

Name of the Host higher education / Nom de l'établissement d'enseignement supérieur d'accueil institution
PONDICHERRY UNIVERSITY

Faculty or department / Faculté ou département
Dr. R. ARUN PRASATH, Professor and Head, Department of Green Energy Technology

Country / Pays
India - Inde

City / Ville
PONDICHERRY

Full address / Adresse complète
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Professor & HOD
Department of Green Energy Technology
Madanjeet School of Green Energy Technologies
Pondicherry University
Puducherry - 605 014, INDIA

Telephone number / Numéros de téléphone
+91 0413 2654431

Website of institution / Site Web de l'établissement
https://www.pondiuni.edu.in/

Website of faculty/department/research centre / Site Web de la faculté/département/centre de recherche
https://www.pondiuni.edu.in/faculy_profiles/dr-r-arun-prasath/

Name of head of the institution / Nom du responsable de l'établissement

Dr. R. ARUN PRASATH

Contact email / Courriel de contact
raprasath@pondiuni.ac.in

Contact email (additional) / Courriel de contact (additionel)
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Chairholder or Network Coordinator / Titulaire de la Chaire ou du Coordonateur de réseau

CH - Full name / Nom et prénom
ARUN PRASATH RAMASWAMY

CH - Academic title / Titre académique
Professor and Head

CH - Gender / Genre
MALE

CH - Position held / Poste occupé
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CH - Professional website / Site Web professionnel
https://www.pondiuni.edu.in/faculy_profiles/dr-r-arun-prasath/

CH - Personal website / Site Web personnel
https://backup.pondiuni.edu.in/PU_Establishment/profile_view/?node=1173

CH - Highest level of education / Le plus haut niveau d'études
Doctor of Philosophy

About the Team / A propos de l'équipe

Please provide information about the team members who will support the Chairholder(s) [possibility to add 15 members].
Veuillez fournir des informations sur les membres de l'équipe qui soutiendront le ou les titulaires de chaire [possibilité d'ajouter 15 membres]

Team Information / Composition de l'équipe

First name / Prénom	Last name / Nom	Thematic area of expertise / Domaine thématique d'expertise (20 words)	Role (20 words)	Email
Dr. Elumalai	Perumal	Batteries, Fuels cells & Supercapacitors	https://backup.pondiuni.edu.in/PU_Establishment/profile_view/?node=1376	drperumalelumalai@pondiuni.ac.in
Dr. Sharada	D. S	Organic Photovoltaic Solar Cells	https://www.pondiuni.edu.in/faculy_profiles/dr-d-s-sharada/	drdssharada@pondiuni.ac.in
Dr. Prasanth	R	Nanotechnology & Photonics	https://www.pondiuni.edu.in/faculy_profiles/dr-r-prasanth/	prasanth.get@pondiuni.edu.in
Dr. B. Mohammed	Jaffar Ali	Bio photonics, Biofuels & Carbon capturing	https://www.pondiuni.edu.in/faculy_profiles/dr-b-mohammed-jaffar-ali/	jaffarali.get@pondiuni.ac.in
Dr. Thilakan	Periyaswamy	Solar cell Device Fabrication & PV plant	https://www.pondiuni.edu.in/faculy_profiles/dr-p-thilagan/	apthilakan@gmail.com
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Dr. Sivasankari	S	Biomass Energy Conversion for Bioenergy	https://www.pondiuni.edu.in/faculy_profiles/dr-s-sivasankari/	sivasankari.get@pondiuni.ac.in
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Dr. Sangmesh	S	Thermal Energy and Piezoelectric Technology	https://www.pondiuni.edu.in/faculy_profiles/dr-sangmesh/	sangmesh@pondiuni.ac.in
Dr. Villa Krishna Harika		Sonochemistry for Energy & Environment	https://www.pondiuni.edu.in/faculy_profiles/dr-villa-krishna-harika/	harika@pondiuni.ac.in

Overall comments on the team / Commentaires généraux sur l'équipe

The Department's vision is to implement and execute Sustainable Development Goals corresponding to the UN Agenda 2030, with the partnership of the global population. The prosperity of our planet is majorly dependent upon environmental factors, energy, education, eradication of poverty, gender neutrality and creating a peaceful environment for the future generation. The Department provides cost-effective and emission-free technology solutions as well as high-quality educational training. The Department promotes research in the fields of all clean sources of energy production, conversion and utilization like solar photovoltaics, solar thermal, energy storage, fuel cells, biofuels, wind energy, ocean energy, chemical energy, energy conversion, computational in energy, energy audit and management, green building, sustainable technologies, applications of nanotechnology for energy conversion, etc. The Department has 12 well-trained faculties (in multidisciplinary are to promote affordable, clean and renewable energy) to teach, offer consultancy and research in many core areas of affordable, clean and renewable energy technologies. The department achievements can be listed as (1) Graduated more than 250 M.Tech. and more than 25 PhD scholars. (2) Recognized as Centre of Excellence in Green Energy Technology by MNRE. (3) Published 240 peer review indexed journal papers with the cumulative h-index of 15.3 and citation 6,753. ((4) Generated a tune of Rs. 26 Crore grants from several funding agents, DST, MNRE, UGC, SERB, CSIR, BRNS, DAE, SPARC.

The Department of Green Energy Technology is known for its promotion in renewable energy technology. It is worth mentioning that our university installed a 2.4 MWp rooftop solar power plant on our main campus in 2021 -one of the largest affordable and clean energy generation in an educational institution in India. At the time of installation in 2021, the rooftop solar power plant was one of the largest affordable and clean energy generation units in educational institutions in India. The rooftop solar plant has significantly contributed to the energy requirements of the campus and cut carbon emissions. (https://www.youtube.com/watch?v=yIRK-VB-4jU) Now, the campus aim is to look for a carbon-neutral campus, for which the Department of Green Energy Technology role is highly commendable.

The proposed UNESCO chair at the DGET, Pondicherry University, has consolidated its mission towards promoting an integrated education system, industrial-linked projects, training on state-of-the-art instruments, minor and major projects in renewable energy, research, technological cooperation, and community service, focusing on energy and sustainable development.

For more details- Please refer the attached DGET Brochure

B.1.1 HOST INSTITUTION & CHAIRHOLDER/COORDINATOR / INSTITUTION HÔTE ET RESPONSABLE /COORDINATEUR (cont.)

Previous engagements between UNESCO and the host institution / Engagements antérieurs entre l' UNESCO et L'institution hôte

Does the institution currently have a UNESCO Chair or is a member of a UNITWIN Network? / L'établissement dispose-t-il actuellement d'une chaire UNESCO ou fait-il parti d'un résea

NO / NON

Please specify the name of the UNESCO Chair or UNITWIN Network / Veuillez préciser le nom de la Chaire UNESCO ou du Réseau UNITWIN

Has the institution hosted a UNESCO Chair or a member of a UNITWIN Network in the past? / L'institution a-t-elle accueilli une chaire UNESCO ou a-t 'elle fait-parti d'un réseau UNITV

NO / NON

Provide the name of the Chair/Network, year of establishment and expiration / Indiquez le nom du président/réseau, l'année de création et l'expiration

Is this the first time the institution submits an application to propose a UNESCO Chair or UNITWIN Network? / Est-ce la première fois que l'institution soumet une candidature pour pr

YES / OUI

Provide the year of application and theme proposed / Indiquez l'année de candidature et le thème proposé

Recent Publications / Liste des publications

List the most recent publication(s) produced by the proposed Chairholder(s) or Network Coordinator(s) that closely relate to the proposal (up to 3), preferably in English or French, otherwise in Arabic, Chinese, Russian and Spanish. Publications in languages beyond the 6 UN languages can be listed in the individual CVs of the proposed Chairholder(s) or Network Coordinator(s).

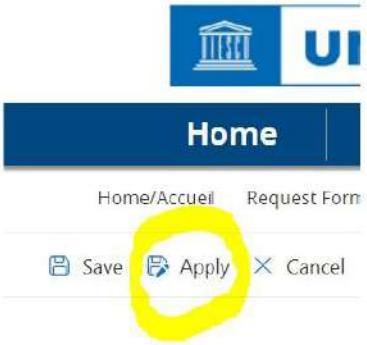
Liste des publications les plus récentes produites par le ou les Responsables de Chaire ou Coordinateurs de Réseau proposés qui sont étroitement liées à la proposition (jusqu'à 3), de préférence en anglais ou en français, sinon en arabe, chinois, russe et espagnol. Les publications dans des langues autres que les 6 langues officielles des Nations Unies peuvent être répertoriées dans les CVs individuels des Responsables de Chaire ou des Coordinateurs de Réseau proposés.

List of publications / Liste des publications

Type / Catégorie	Title / Titre	Link / Lien	Summary (50 words) / Résumé – 50 mots	Language / Langue
Peer-reviewed journal article / Article de revue à comité de lecture	One-pot controlled microwave synthesis of Broadband-light absorbing irregular gold nanoparticles for solar cell application	https://www.sciencedirect.com/science/article/abs/pii/S0038092X22003851; Solar Energy, 240, 435-442 Impact Factor: 7.17	Improvement of light-harvesting efficiency using our plasmonic hybrid material is a promising approach to boost the efficiency of the solar energy conversion systems by more than 30% compared to the reference solar cell devices.	English / anglais
Peer-reviewed journal article / Article de revue à comité de lecture	Polymer-garnet composite electrolyte based on comb-like structured polymer for lithium-metal batteries	https://www.sciencedirect.com/science/article/abs/pii/S246860692100201X; Materials Today Energy 21, 100836 Impact factor - 9.25	Highly efficient hybrid polymer-garnet composite electrolyte (PGCE) membranes are achieved by using novel synthesized comb-like structured polymeric material. The novel polymers and garnet-based solid-state electrolytes prepared have good Li-ion conductivity in energy storage Li-ion battery	English / anglais

			applications.	
Peer-reviewed journal article / Article de revue à comité de lecture	Sustainable urban development: Can the balanced scorecard contribute to the strategic management of sustainable cities?	https://onlinelibrary.wiley.com/doi/full/10.1002/sd.2215; Sustainable Development 29 (6), 1155-1172 Impact factor - 8.56	The article is towards sustainable development and aims to present, adapt, and propose the use of the Balanced Scorecard (BSC) as a tool to support strategic management for sustainable cities. A text mining analysis was applied to the results obtained in this literature review to find the main factors related to sustainable cities.	English / anglais

Please use the "Apply" button on top of the page to save your data prior to continue
Merci d'utiliser le bouton "Apply' en haut de page afin de sauvegarder les données avant de continuer



B.2.1 CO-HOST INSTITUTION / CO-INSTITUTION HÔTE

Co-Host - Select the status / Co-hôte - Selectionnez le status

There is no co-chairholder or co-coordinator - Il n'a pas de co-responsable ou de co-coordinateur

C. CONTRIBUTIONS TO UNESCO PRIORITIES / CONTRIBUTIONS AUX PRIORITÉS DE L'UNESCO

The following are the strategic objectives and outcomes as outlined in UNESCO's Medium-term Strategy (2022-29). **Select a minimum of one outcome and a maximum of three outcomes** that your proposal will contribute to.
Ci-dessous les objectifs stratégiques et les résultats tels que définis dans la Stratégie à moyen terme de l'UNESCO (2022-2029). **Veuillez indiquer un résultant (minimum) et trois résultats (maximum) auxquels votre proposition contribuera.**

Strategic Objective 1 / Objectif stratégique 1

EN : Ensure quality equitable and inclusive education and promote lifelong learning opportunities for all, in order, inter alia, to reduce inequalities and promote learning and creative societies, particularly in the digital era

FR : Assurer à tous une éducation de qualité équitable et inclusive et des possibilités d'apprentissage tout au long de la vie, afin, entre autres, de réduire les inégalités et de promouvoir des sociétés apprenantes et créatives, notamment à l'ère du numérique

Select SO1 / Selectionnez SO1

Outcome 1: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Outcome 2: Srengthen international coordination for the achievement of SDG 4 and develop the global education agenda based on research, foresight and innovation

Strategic Objective 2/ Objectif stratégique 2

EN : Work towards sustainable societies and protecting the environment through the promotion of science, technology, innovation and the natural heritage

FR : Œuvrer à l'édification des sociétés durables et à la protection de l'environnement par la promotion de la science, de la technologie, de l'innovation et du patrimoine naturel

Select SO2 / Selectionnez SO2

Outcome 3: Enhance knowledge for climate action, biodiversity, water and ocean management, and disaster risk reduction. Outcome 4: Advance international cooperation in science, technology and innovation

Strategic Objective 3/ Objectif stratégique 3

EN : Build inclusive, just and peaceful societies by promoting freedom of expression, cultural diversity, education for global citizenship, and protecting the heritage

FR : Construire des sociétés inclusives, justes et pacifiques en promouvant la liberté d'expression, la diversité culturelle et l'éducation à la citoyenneté mondiale, et en protégeant le patrimoine culturel

Select SO3 / Selectionnez SO3

Outcome 5: Enhance the protection and promotion of the diversity of heritage and cultural expressions. Outcome 6: Promote freedom of expression and the right to information. Outcome 7: Promote inclusion and combat discrimination, hate speech and stereotypes

Strategic Objective 4 / Objectif stratégique 4

EN : Foster a technological environment in the service of humankind through the development and dissemination of knowledge and skills and the development of ethical standards

FR : Favoriser un environnement technologique au service de l'humain par le développement et la diffusion des connaissances et des compétences ainsi que l'élaboration de normes d'éthiques

Select SO4 / Selectionnez SO4

Outcome 9: Develop ethical standards, norms and frameworks for action to meet the challenges of innovative technologies and digital transformation

Has the proposal been developed in collaboration or consultation with UNESCO? / La proposition a-t-elle été élaborée en collaboration ou en consultation avec l'UNESCO ?

YES / OUI

Provide details / Fournir les détails

UNESCO Office/Institute	Notes
UNESCO INDIA https://www.unesco.org/en unesco.edu@nic.in	Scrutinized our application in detail and suggests us to provide needed proofs during initial process.

Contributions to UNESCO's mission / Contributions à la mission de l'UNESCO

Department of Green Energy Technology is a premier institute established to promote green energy education in South Asia. Admission for Masters and Ph.D. programs is through a standard entrance test conducted by the National Testing Agency of the government of India. The University promotes all UN 17 SDGs, particularly SDG4, SDG7, SDG13, etc. The co-founders of the department, the South Asia Federation, are working with UNESCO to develop higher education in South Asia. In the last twelve years, 70 SAF students graduated from this department. The department educates students from all south Asian countries and established research collaborations with other institutes within and abroad. As an educator and promotor of green energy technologies, the department actively enhances knowledge with its national and international partners in climate action and renewable energy technology. The following activity will contribute to UNESCO's mandate and mission to deepen International cooperation, dialogue and understanding to build lasting peace.

Education/Training/Research: In line with the role that energy has acquired in the promotion of sustainable development and its relevance in the Development Agenda 2030. The main goal is to train students to become professionals by having a broad knowledge of technical and scientific fields, able to operate in the energy sector at a multi-scale level, including the development of specific technologies and the energy analyses of different scenarios for promoting local sustainability and socio-economic growth.

Conferences/Meetings: Several lectures and presentations have been planned to be organized, aiming at promoting a knowledge-sharing network through capacity building and dissemination towards different sectors. Training will be addressed to NGOs, Foundations, Indian and International students of Pondicherry university and people from other universities.

Partnerships: Partnerships among universities may represent a 'scientific diplomacy,' which can enhance the establishment of strategic relations to enforce local networks and contribute to fostering the capacity-building process.

Approach to gender equality / Approche de l'égalité des genres

The development of green energy technology and climate actions require equal participation of all genders; the department provides equal opportunity. The student's enrolment reflects the policy. The selection of student representatives and leadership programs intentionally cares about the gender-equal approach. Gender neutrality is also a targeted objective of the department. Pondicherry University ranks top in the Times Higher Education rating for gender equality. —student ratio of Females to Males at 47: 53.

https://www.timeshighereducation.com/world-university-rankings/pondicherry-university

D. WORKPLAN AND BUDGET/ PLAN DE TRAVAIL ET BUDGET

In this section, applicants present their workplans and budget for the next four years.

Dans cette section, les candidats doivent présenter leurs plans de travail et leur budget pour les quatre prochaines années du projet proposé.

Background and rationale / Contexte et analyse

The UNESCO Chair for Affordable Renewable and Clean Energy for Sustainable development is proposed to be established in the Department of Green Energy Technology of Madanjeet School of Green Energy Technologies at Pondicherry University (Central University) located in the southern outskirts of Puducherry State (a Union Territory) of India. The department of Green Energy Technology, Pondicherry University, was established under the aegis of the South Asia Federation with a vision to provide high-quality education to South Asian students in renewable and sustainable energy. The Department offers M. Tech. in Green Energy Technology, which is partly supported by South Asia Foundation (SAF). The Ministry of New and Renewable Energy (MNRE) has recognized and approved the Department as a center for excellence. The department has well-established research laboratories in solar photovoltaics, solar thermal, batteries and fuel cells, wind energy, bioenergy, and sustainable materials. The department also offers mathematical modeling, artificial intelligence, and fluid dynamics courses. The co-founders of the department, the South Asia Federation, are working with UNESCO to develop higher education in South Asia. Through this coordination, all south Asian countries are sending students to the department for the M.Tech program. In the last twelve years, seventy students graduated. The Department building is a "GRIHA" Certified Green Building.

The proposed chair will help provide more visibility to the academic activities of the department and educate society on the sustainable development goal of UNESCO.

Objectives / Objectifs

To accelerate the research and development worldwide and disseminate scientific and technical know-how on renewable and sustainable energy amongst the higher education institutions in the following domains: environment, climate, and economy and production.

1.Training: The UNESCO Chair aims to prioritize developing training programs in institutions for higher education, both initial education (awareness for the public) and specialized courses (certification programs for graduate and post-graduate students). Intensive courses for industries and Professional audiences are also being organized on national and regional levels. All training activities are based on an active pedagogy, focusing on operational and practical activities.

2.Research: Research activities cover materials, devices, and systems for the optimum utilization of renewable energy resources in the region. It also targets to archive energy efficiency, sustainable building technologies, gender parity, and income generation for marginalized people.

3.Network creation: Setting up an international network is essential for the research, development, promotion, and experience sharing on earthen architecture. This network is being

set up on various levels: regional, interregional, national, and international.

4.Information collection and sharing: The chair aims to gather all the information available worldwide and create a knowledge platform accessible to all.

Project beneficiaries / Bénéficiaires du projet

The primary beneficiaries are the M.Tech and Ph.D. students of the Department. Since the students are from all south Asian countries, there is a direct benefit to the South Asia region. The certification courses proposed in this project benefit the industries and professionals in the country and networking institutions from international level. The awareness programs and out-reach programs are proposed to benefit the local and regional level. Further, it benefits all stakeholders for their involvement in our proposed programs under UNESCO Chair

activities.

Activities and outputs / Activités et résultats

The Department of Green Energy Technology is multi-disciplinary in nature. The Department's faculty members are experts in various energy-related subjects such as materials science, bioenergy, mechanical engineering, physics, chemistry, photonics, thermal energy, etc. The curriculum of the courses is developed through various levels of discussions with industries and academic experts from national and international institutes. The courses are student-centric and outcome-based.

The Ministry of New and renewable energy, India, has recognized the Department as a center for excellence in Green Energy Technology. Equipment grants and fellowship programs are offered through this program. The Department attracted research grand from various funding agencies like DST, CSIR, UGC, DAE, BRNS, etc. So far, this research project has generated a total research grant of more than five crores. Many state-of-art facilities are available in the Department. Solar simulators, quantum efficiency measurement systems, electrochemical workstations, BET analyzers, contact angle measurements system, glove box facilities, battery fabrication and testing facilities, and different ingeniously developed solar dryers are a few. Faculty members are also working as industrial consultants. Through this proposed chair, the Department aims to increase its visibility and serve society more socially responsibly. The Department's vision overlaps with UNESCO in sustainability and SDG4. Through its teaching objectives, the Department can fulfill this goal. Since socio-economic and gender aspects have more influence in this region, working towards these goals is essential. Since energy is an influencing factor in development, the Department's research is focused on SDG 7. Pondicherry University targets SDG13, SDG 7, SDG 6, and SDG 5. Many activities are ongoing on campus. Forty percent of energy is produced from the solar power plant on campus. Wastewater treatment plant aims to recycle and reuse water; university practice e-governess and paper-free campus. The Department also plays a significant role in the sustainable development activities of the University.

The Department also collaborates with other sister departments in the University, such as nanoscience and technology, environmental science, pollution control, computer science, physics, chemistry, biotechnology, and earth science, to initiate more interdisciplinary education and research. Students have the opportunity to take courses from all these departments. The UNESCO chair can make this connection strong and effective by organizing mutually beneficial training programs and certification courses. The Department is collaborating with the National Power Training institute and Karnataka power corporation for more practically oriented and quality student education. These regional collaborations can be strengthened through the UNESCO chair. The Department collaborates with national institutes such as the Indian Institute of Science, IITs, and NITs. UNESCO chair can strengthen these activities. The Department has MOU with Bazilian University and Malasian University. With the help of the UNESCO chair, the collaborations can expand to other countries.

Impact

The alumnus of the department runs many start-ups and entrepreneurship. This includes photovoltaics, solar thermal, and bioenergy, energy storage batteries, etc. This promotes the small-scale industries in eco-agriculture, fisheries, and many related household units. This activity helps the socio-economic development of this region.

At the research level, many collaborative activities are going on in the department. The exchange program through Indo-Brasilian collaboration is a significant achievement in this direction. The joint research project is going on with the Indian Institute of Science. Students from National Power Training Institutes are getting trained at the Department. The M.Tech students from the department is trained by Karnataka Power Cooperation. Through UNESCO chair more similar programs can be organized and we look beyond for partnership with several energy related organizations both national and international.

The UNESCO chair will help to get more visibility to our activities and can help to scale it up further.

Total budget in USD / Budget total en dollars US

240,000

Budget breakdown / Répartition du budget

Total budget 240000 USD for four years

Goals for FOUR Year in USD

Project technical supporting staff (Multipurpose)- 15000 USD
FOUR national conferences (Extra funds will be raised via Registration and others)- 25000 USD
TWO international conferences (Extra funds will be raised via Registration and others)- 25000 USD
Certificate training programs (Extra funds will be raised via Registration and others)-25000 USD
Special invited seminars - USD10000
Training and workshop related equipments, accessories, managements of equipments and miscellaneous (If needed- Extra funds will be raised from others)- 60000 USD
Project and research work related expenses (MTech & PhD) -60000 USD.

The UNESCO Chair activities will be financially supported by the Indian chapter of South Asia Foundation (SAF-India), https://www.southasiafoundation.org/. Pondicherry University and SAF-India have a robust MOU for supporting financially the SAF scholarships for the 16 meritorious students per year comprising eight autonomous chapters: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka to carry out their M.Tech Green Energy Technology courses from 2010 onwards. Currently, SAF-India grants 200000 USD per year and extends support every year. To support the activities of the UNESCO Chair in UMSGET, 60000 USD has been earmarked every year, i.e., 30% of the 200000 USD yearly grant for the Department. Hence for the four-year UNESCO chair, a total of 240000 USD will be provided by SAF-India to utilize for the chair activities. In addition, we certainly will secure additional support from Pondicherry University and other partnering groups soon with the UNESCO logo.

Total for FOUR Years 240000 USD

E. SUMMARY OF OUTPUTS/ RÉSUMÉ DES RÉSULTATS

This section aims to provide detail on the expected project outputs and their target audience or beneficiaries.
Cette section vise à fournir des détails sur les résultats attendus du projet proposé et leur groupe cible ou leurs bénéficiaires.

Research and knowledge production / Recherche et production des connaissances

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
20	Projects in affordable renewable and clean energy technology	PG and researcher students - M.Tech & PhD	Projects works related to the UNESCO SDG-4, -7, & -13

Publications

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
10	Journals, Conference Proceedings, Books, Book Chapters & Thesis Reports	PG and researcher students - M.Tech & PhD	Projects works related to the UNESCO SDG-4, -7, & -13

Websites and social media / Sites web et réseaux sociaux

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO

5	University Web Page, FaceBook, Instagram, LinkedIn, You tube Channel	UG/PG/PhD Students & Public	Publishing UNESCO Chair Activities related to UNESCO SDG-4, -7, & -13

Teaching or lecturing / Cours et conférences

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
16	Over 32 hours of Special Lectures have been planned to be conducted during the proposed four years on UNESCO Sustainable Development Goals.	UG/PG/PhD Students & Public	UNESCO representative/s will be invited to deliver the lectures along with eminent persons working related to SDG-4, -7, & -13

Training and institutional capacity development workshops / Ateliers de formation et de renforcement des capacités institutionnelles

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
4	Total FOUR training programs (One week Training Program per year)	UG/PG/PhD Students & Public	Involvement with UNESCO experts

Student mobility/exchanges / Mobilité académique /échanges d'étudiants

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
8	Internships, University Exchange programs with National & International participants	UG/PG/PhD Students & Public	Involvement with UNESCO experts With UNESCO flyer

Visiting professorships/research fellowships/mobility/exchanges / Professeurs invités/bourses de recherche/mobilité/échanges

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
4	FOUR research fellowship (one per year)	UG/PG B.Tech & M.Tech	UNESCO can forward with recommendation

Conferences and large events / Conférences et grands événements

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
6	National & International Conference, Symposiums, Expo on Clean Energy management	Students, Researchers & Public	Conferences and events will focussed towards UNESCO SDG-4, -7, & -13

Seminars / webinars / workshops / Séminaires / webinaires / ateliers

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
8	Total EIGHT Workshops/Seminars/ Webinars program (Two Program per year)	Students, Researchers & Public	Collaboration with UNESCO officials to conducts the events focused towards UNESCO SDG-4, -7, & -13

Community/civil society engagement / Engagement de la communauté/société civile

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
4	Open House Exhibition and lectures and activities to enlighten the younger generation to work on achieving clean energy & environment.	School Students & Public	Focused towards UNESCO SDG-4, -7, & -13

Networking and partnerships / Réseautage et partenariats

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
4	Collaboration with SAF Institutes in National and international	Students, Researchers & Public	With UNESCO flyer

Inter-university cooperation / Coopération interuniversitaire

Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
4	Collaboration with IIT's, NIT;s, CFTI's, State universities, and private universities in national and international level	Students, Researchers & Public	Focused towards UNESCO SDG 4, 7, & 13

Other / Autre

Specify / Précisez	Quantity / Quantité	Details on the output / Détails sur la production	Target audience / Audience ciblée	Cooperation with UNESCO / Coopération avec l'UNESCO
PG and PhD scholar's project work related expenses	25	Collaboration with national and international level Institutes	Students, Researchers & Public	Focused towards UNESCO SDG 4, 7, & 13
PG and PhD scholar's travel/field trips/industrial trips/transports, etc	25	Collaboration with national and international level Institutes	Students, Researchers & Public	Focused towards UNESCO SDG 4, 7, & 13

F. PARTNERSHIPS/ PARTENARIAT

Please select from the below list the category of partners involved in the implementation of the project and indicate their name(s), role(s), and contributions (institutional, intellectual, in kind, financial etc.) (up to 15) . This is the space to indicate the proposed UNITWIN Network Members (up to 10 in total)

Veuillez sélectionner dans la liste ci-dessous la catégorie de partenaires impliqués dans la mise en œuvre du projet proposé et indiquer leur(s) nom(s), rôle(s) et contributions (institutionnelles, intellectuelles, en nature, financières, etc.) [jusqu'à 15] . Cet espace permet d'indiquer les membres du réseau UNITWIN proposés [jusqu'à 10]

Partners details / Détails du partenaire

Category / Catégorie	Name (s) / Nom (s)	Links / Liens	Role(s)/contribution(s)
Foundation / Fondation	South Asia Foundation SAF - India	https://www.southasiafoundation.org/	Funding and supporting activities
Government entity / Entité gouvernementale	Pondicherry University	https://www.pondiuni.edu.in/ https://www.pondiuni.edu.in/department/centre-for-green-energy-technology/	Logistical support
Other / Autre	Emeriti Professor Klaus Mullen	https://www.mpip-mainz.mpg.de/en/muellen	Exchange of knowledge, samples and results via both offline/online through regular conferences/seminars on topics of common interest. For Details please refer his support letter attached with this application
Other / Autre	Professor Carrick McAfee Eggleston	https://www.wpi.edu/people/faculty/ceggleston	Collaboration for joint conferences, seminars, workshops, training opportunities, and certificate courses. For Details please refer his support letter attached with this application
Other / Autre	Professor Martina Stenzel	https://www.unsw.edu.au/staff/martina-stenzel	His team and sister departments, such as the School of Photovoltaic and Renewable Energy from the University of New South Wales, Australia, committed to collaborating for the chair activities. The main activities of the chair are to promote international inter-university cooperation and networking to enhance institutional capacities through knowledge sharing and collaborative work through conferences, seminars, workshops, training, and certificate courses. For Details please refer his support letter attached with this application
Other / Autre	Professor José Baltazar Salgueirinho Osório de Andrade Guerra	https://www.unisul.br/	Professor Jose Baltazar have collaborated intensely for the last EIGHT years on renewable energy technologies, climate mitigation action, environmental action, linkages between energy, food and water consumption and related sustainable development activities. We indeed planned to apply for additional funds for our joint chair activities once the chair is established in the Department of Green Energy Technology, Pondicherry University, for our collaborative activities between Brazil and India. For Details please refer his support letter attached with this application
Other / Autre	Professor Dr. Rajesh Saiju	http://znes-flensburg.de/person/saiju-rajesh?language=en	Engage with chair activities such as conducting the international conference, providing technical lectures on advanced renewable energy technologies and training for workshops through professor exchange programs. We jointly would like to seek funding with German/international funding agencies to support our collaborative activities in promoting renewable energy technology for sustainable development to support the SDGs of the United Nations. For Details please refer his support letter attached with this application
Other / Autre	Dr. Shanmugasundaram Sakthivel, Scientist-F & Head	https://www.arci.res.in/peoples-csem https://www.arci.res.in/people-pages/1558608035_Sakthivel.pdf	Facilitate the solar energy technology-related workshops and training courses. For Details please refer his support letter attached with this application proposed in the chair activities based on vast experiences.
Other / Autre	(Dr.)Dwipen Boruah, Managing Director, GSES,	https://gses.in/	Confirms its association/ partnership with academic-level activities such as conferences, seminars, workshops, training, and certificate courses if the application successfully establishes the UNESCO Chair at Pondicherry University. Since this Chair aims to promote a knowledge-sharing network through capacity building and dissemination for which GSES India is committed to associating with the activities of the Chair. For Details please refer his support letter attached with this application proposed in the chair activities based on vast experiences.
Other / Autre	Dr. Sham Sundar Subbarao, Head, The National institute of Engineering	https://nie.ac.in/blog/faculty/mr-shamsundar-s/	Partner with the UNESCO chair academic activities. Facilitate the renewable technology-related workshops and training courses proposed in the chair activities based on our vast experiences. His team actively promote research/technology training courses in line with proposed UNESCO chair activities. For Details please refer his support letter attached with this application proposed in the chair activities based on vast experiences.
UNESCO / UNESCO	UNESCO	https://www.unesco.org/en https://whc.unesco.org/en/statesparties/in	Creation of UNESCO Chair for Department of Green Energy Technology

G. SUPPORTING DOCUMENTS/ DOCUMENTS JUSTIFICATIFS

Kindly upload the following documents (formats accepted: pdf, doc, jpeg, png with a maximum size of 10 MB per document...)

- Letter from the head of the higher education institution (e.g. President, Rector, Vice-Chancellor) proposing the establishment of the UNESCO Chair or UNITWIN Programme

- Letter of support from the National Commission for UNESCO, or from the official United Nations representative in the case of applications from countries that are not Member States of UNESCO.
- Letter of support from partner institution(s) indicating their commitment to the project.
- Curriculum Vitae of the proposed Chairholder(s) or Network Coordinator(s)
- Any other documents such as reference letters from potential partners institutions or the budget breakdown

Kindly use the following naming convention for all attachements: Supporting document type_Country_Higher education institution, and group files of the same type in one document.

Veuillez télécharger les documents suivants (formats acceptés : pdf, doc., jpeg, png avec une taille maximale de 10 Mo par document.)

- Lettre du responsable de l'établissement d'enseignement supérieur (par exemple : Président, Recteur, Vice-Président) proposant la création d'une Chaire UNESCO ou d'un Réseau UNITWIN
- Lettre de soutien de la Commission nationale pour l'UNESCO, ou du représentant officiel des Nations Unies dans le cas de candidatures de pays non-membres de l'UNESCO.
- Lettre de soutien d'institution(s) partenaire(s) indiquant leur engagement envers le projet proposé.
- Curriculum Vitae du ou des Responsables de Chaire ou Coordinateurs de Réseau proposés
- Tout autre document tel que des lettres de recommandation d'institutions partenaires potentielles.

Veuillez-vous assurer que tous les documents supplémentaires sont regroupés en un seul document avant de les télécharger. Veuillez utiliser des conventions de dénomination standard pour tous les documents : Type de document de soutien_Pays_Institution d'enseignement supérieur et de regrouper les lettres du même type dans un seul document.

Upload documents / Télécharger documents

Type of document / Type de document	Name
Letter from the head of the higher education institution / Lettre du responsable de l'établissement d'enseignement supérieur	LETTER OF SUPPORT- Pondicherry University
Letter of support from the National Commission for UNESCO / Lettre de soutien de la Commission nationale pour l'UNESCO	Letter of Support form INCCU
Letter from partners / Lettre de soutien d'institution(s) partenaire(s)	Letter of support- National and international-Updated
Curriculum Vitae	Professor R Arun Prasath -CV CHAIR
Other documents / Autre documents	DGET Brochure 2023-2-10

H. COMMENTS / COMMENTAIRES

Comments / Commentaires

The UNESCO Chair for Affordable Renewable and Clean Energy for Sustainable development is proposed to be established in the Department of Green Energy Technology of Madanjeet School of Green Energy Technologies at Pondicherry University (Central University) located in the southern outskirts of Puducherry State (a Union Territory) of India. The Department was established as a Centre in 2010, under the aegis of the South Asia Federation has been elevated to Department of Green Energy Technology in 2020, with a vision to promote education and research in environmentally clean methods of energy production, conservation and utilization. The Department offers M. Tech. in Green Energy Technology, which is partly supported by South Asia Foundation (SAF). The Ministry of New and Renewable Energy (MNRE) has recognized and approved the Department as a center for excellence.

UNESCO Chair full description about the activity:

The Department's vision is to implement and execute Sustainable Development Goals corresponding to the UN Agenda 2030, with the partnership of the global population. The prosperity of our planet is majorly dependent upon environmental factors, energy, education, eradication of poverty, gender neutrality and creating a peaceful environment for the future generation. The Department provides cost-effective and emission-free technology solutions as well as high-quality educational training. The Chair has consolidated its mission towards promoting an integrated education system, research, technological cooperation, and community service, focusing on energy and sustainable development.

Proposed Activities on Education:

Certification Courses on Sustainable Energy
Bachelor Course on Sustainable Energy – B.Tech
Master Degree Courses on Sustainable Energy – M.Tech
Doctoral Degree – Ph.D in Sustainable Energy and its related areas

Proposed Activities on Training:

Training (short term) – Skill Development
Training in collaboration with State/Central/Private Universities
Training in collaboration with National/International Organizations
Training in collaboration with Civil Society Organizations
Training in collaboration with Foundations

Proposed Activities on Research:

As per the UN Sustainable Development Goals, the department is working towards creating a sustainable environment by promoting research in the fields of all clean sources of energy production, conversion, and utilization like Solar Photovoltaic, Solar Thermal, Wind Energy, Ocean Energy, Energy Storage, Fuel Cells, Bio-Fuels applications of nanotechnology for energy conversion, etc. The department has well-trained faculties to teach, offer consultancy and take up research work in many core areas of green energy technology.

Proposed Conferences/Meetings:

Organizing Conference/ Symposium and events related to the sustainable development goals especially on the area of Sustainable Energy for Green Environment
National / International Interuniversity Exchanges / Partnerships

Research Reports
Journal Articles (refereed) / Conference Proceedings / Occasional Papers
Teaching/Learning Materials
Multimedia Materials (CD-Rom) / Multimedia Materials (Video)
Master Thesis
Doctoral Thesis

Cooperation with UNESCO Headquarters, Field Offices

The co-founders of the department, the South Asia Federation, are working with UNESCO to develop higher education in South Asia. Through this coordination, all south Asian countries are sending students to the department for the M.Tech program. In the last twelve years, seventy students graduated.

Product Development through various project work

The department developed many prototype devices on solar photovoltaics, solar thermal dryers, bio-fuel reactors, smart materials for energy conversion and storage, energy storage systems batteries and supercapacitors, etc towards renewable and clean energy technologies.

I. SUBMISSION / SOUMISSION

Is the applicant the proposed Chairholder? / Le candidat est-il le titulaire de chaire proposé?

YES / OUI

I submit my application / Je soumets ma candidature

YES / OUI

To submit your application, select YES, press the Save button. Your application will be forwarded to the National Commission for UNESCO of your country for final endorsement before it is submitted to the UNESCO Secretariat for evaluation. Once the application is submitted it can no longer be modified.
Pour soume re votre candidature, sélec onnez OUI/YES, appuyez sur le bouton Enregistrer/SAVE. Votre candidature sera transmise à la Commission na onale pour l'UNESCO de votre pays pour approba on finale avant d'être soumise au Secrétariat de l'UNESCO pour évalua on. Une fois la demande soumise, elle ne peut plus être modifiée.

Application Status

Endorsed by National Commission - Under Review by UNESCO Secretariat

Appendix - II

Dr. R. Arun Prasath,
Professor, Department of Green Energy Technology, Pondicherry University

List of Publications
60 peer-reviewed journal articles published (National – 7 & International -53)

1. Ashith Kishor, K. Vignesh, Donato A.G. Aranda, R. Arun Prasath, et al. "Basicity -tune d graphitic carbon nitride supported MgO heterogeneous catalysts for efficient transesterification of groundnut oil to biodiesel," Journal of Industrial and Engineering Chemistry, 2024, 1-14.
2. Krishna Kumar Jaiswal, Chandrama Roy Chowdhury, Deepti Yadav, Swapnamoy Dutta, Ishita Banerjee, Km Smriti Jaiswal, Arun Prasath Ramaswamy, et al., "Applied Biotechnology and Bioinformatics: Agriculture, Pharmaceutical Research and Environment", 2024, 12, 25 269-302.
3. Dhavalkumar N Joshi, Anil Kumar Pal, R Krishnapriya, R Arun Prasath, "Submicron-scale Au-decorated TiO2 mesoporous spheres for enhanced photon harvesting in DSSCs through near-field enhancement, light scattering, and dye loading" Frontiers in Materials, 2024, 11, 1457325.
4. P Swathi, T Panneerselvam, OV Sreejith, R Murugan and Arun Prasath Ramaswamy," UV cross-linked highly stable polymer garnet composite electrolyte with improved interphase for lithium metal batteries" Journal of Electroanalytical Chemistry, 2024, 968, 118492.
5. Sudhanshu Pandey, M.D. Dhileepan, Bernaudshaw Neppolian and Arun Prasath Ramaswamy, "Plasmonic Ag-nanoparticles decorated phosphorus and boron co-doped g-C3N4 for enhanced photocatalytic H2 production, Materials Today: Proceedings, 2023, 93 (2), 21-27
6. P Swathi, S OV, T Panneerselvam, R Murugan, Arun Prasath Ramaswamy "Cross-linked polymer composite electrolyte incorporated with waste seashell based nanofiller for lithium metal batteries" Energy & Fuels, 2023 37 (8), 6186-6196 Impact factor - 5.3
7. Rajamani, T. Panneerselvam, R. Murugan, and R. Arun Prasath, "Electrospun derived polymer-garnet composite quasi solid-state electrolyte with low interface resistance for lithium metal batteries" *Energy,* 2023, 263, 126058. Impact factor - 8.85
8. Dhavalkumar N J., R Krishnapriya, Tulja B K., Arun Prasath R. "One-pot controlled microwave synthesis of Broadband-light absorbing irregular gold nanoparticles for solar cell application" *Solar Energy,* 2022, 240, 435-442. Impact factor - 7.17
9. Shreyash Raj Suwal and Arun Prasath Ramaswamy, "Performance of roof-cool paints prepared using organic acrylic polymer binder and inorganic additives for the thermal reduction in buildings" *Environ. Prog. Sustainable Energy,* 2021; e13767, 1-10. https://doi.org/10.1002/ep.13767. Impact factor - 2.87
10. Swathi P, Karthik K, Arun Prasath R, and Murugan R, "Polymer-garnet composite electrolyte based on comb-like structured polymer for lithium-metal batteries" *Materials Today Energy,* 2021, 21, 1-9 100836. https://doi.org/10.1016/j.mtener.2021.100836.Impact factor - 9.25
11. Samara da Silva Neiva, Ramaswamy Arun Prasath, Wellyngton Silva de Amorim, Mauricio de Andrade Lima, Samuel Borges Barbosa, João Marcelo Pereira Ribeiro, Flávio Ceci, Jonas Schneider, André Borchardt Deggau, José Baltazar Salgueirinho Osório de Andrade Guerra, "Sustainable urban development: Can the balanced scorecard contribute to the strategic management of sustainable cities?" *Sustainable Development,* 2021, 29, 6, 1155-1172, https://doi.org/10.1002/sd.2215, Nov 2021. Impact factor - 8.56
12. Krishna Kumar Jaiswal, Swapnamoy Dutta, Cheryl Bernice Pohrmen, Ravikant Verma, Arvind Kumar and Arun Prasath Ramaswamy, "Bio-waste chicken eggshell-derived calcium oxide for photocatalytic application in methylene blue dye degradation under natural sunlight irradiation" *Inorganic and Nano-Metal Chemistry,* 2020, 51 (7), 995-1004.
13. Sujoy Barua, Deepak Acharya, Karthik Kiran, Tika Ram Khadka, Vinayagam Murugavelu, Dharmaligam Singaravelo, Gopal Poyyamoli, Dwipen Boruah and R. Arun Prasath, 'Carbon Footprint Assessment and Mitigation Strategies for Sustainable Development' *International Journal of Strategic energy and environmental Planning*, ISSN :2643-6930,2020, 2 (2), 55-79.
14. Ritesh Pradhan and Arun Prasath Ramaswamy, 'Encapsulation of paraffin wax by rigid cross-linked poly (styrene divinylbenzene-acrylic acid) and its thermal characterization' *Springer Nature Applied Sciences*, 2019, 1, 859.

15. S Dutta, KK Jaiswal, R Verma, DM Basavaraju, Arun Prasath Ramaswamy, 'Green synthesis of zinc oxide catalyst under microwave irradiation using banana (Musa spp.) corm (rhizome) extract for biodiesel synthesis from fish waste lipid' Biocatalysis and Agricultural Biotechnology, 2019, 22, 101390.
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17. S. Sudhakar, Krishna Kumar Jaiswal, and Arun Prasath Ramaswamy, 'The Role of Microwave Irradiation Temperature on Nitrogen Doping in Metal-Free Graphene Catalysts for an Efficient Oxygen Reduction Reaction in an Alkaline Condition' Chemistry Select, 2018, 3, 8962–8972. IP:1.5
18. Dhavalkumar N. Joshi, P. Ilaiyaraja, C. Sudakar, R. Arun Prasath, 'Facile one-pot synthesis of multi-shaped silver nanoparticles with tunable ultra-broadband absorption for efficient light harvesting in dye-sensitized', Solar Energy Materials and Solar Cells, 2018, 185, 104–110, IP-4.8
19. S Sudhakar, DN Joshi, SG Peera, AK Sahu, CM Eggleston, RA Prasath, 'Hydrothermal- microwave synthesis of cobalt oxide incorporated nitrogen-doped graphene composite as an efficient catalyst for oxygen reduction reaction in alkaline medium' Journal of Materials Science: Materials in Electronics, 2018 29 (8), 6750-6762
20. Krishna Kumar Jaiswal, S. Sudhakar and Arun Prasath Ramaswamy 'Graphene'-World's thinnest material for revolutionizing applications, Everyman's Science, 2018, 4, 219-223. ISSN:0531495X
21. Shivendra Kaundilya, O.S. Sastry, Birinchi Bora, Supriya Rai, Manander Bangar, Renu, Rashmi Singh, Avinash Kumar, Kamlesh Yadav, Mithilesh Kumar, and R. Arun Prasath 'Soiling Effect on Crystalline and Thin-film Technology PV Modules for Composite Climate Zone of India', Materials Today: Proceedings,2018, 5, 23275–23280
22. Krishna Kumar Jaiswal, Dhamodaran Manikandan, Ramaswamy Murugan, Arun Prasath Ramaswamy ' Microwave-assisted rapid synthesis of Fe3O4/poly(styrene-divinylbenzene-acrylic acid) polymeric magnetic composites and investigation of their structural and magnetic properties', European Polymer Journal, Vol. 98, 2018, Pages 177-190 IP:3.65
23. Dhavalkumar N. Joshi, Sudip Mandal, Ramanujam Kothandraman, R. Arun Prasath, 'Efficient light harvesting in dye sensitized solar cells using broadband surface plasmon resonance of silver nanoparticles with varied shapes and sizes' Materials Letters, Vol. 193 , 2017, pp.288–291. IP: 2.43
24. Dhavakumar N. Joshi, S. Sudhakar, Radhika V. Nair, and R. Arun Prasath, 'Swift sol–gel synthesis of mesoporous anatase-rich TiO2 aggregates via microwave and a lyophilization approach for improved light scattering in DSSCs' J Mater Sci., 2017, Vol. 52, pp.2308–2318, IP:2.30
25. Sujoy Barua, R. Arun Prasath and Dwipen Boruah, 'Rooftop Solar Photovoltaic System Design and Assessment for the Academic Campus Using PVsyst Software' 2017, International Journal of Electronics and Electrical Engineering Vol. 5, No. 1, 76-83.
26. Sudhakar S, Krishna Kumar Jaiswal, Gouse Peera S and R. Arun Prasath, ' Green Synthesis of N- graphene by hydrothermal microwave irradiation for alkaline fuel cell application' 2017, International Journal of Recent Scientific Research 8 (8), 19049-19053
27. Ankit Kumar Singh, Dwipen Boruah, Lakshey Sehgal and Ramaswamy Arun Prasath, 'Feasibility study of a grid-tied 2MW floating solar PV power station and e-transportation facility using 'SketchUp Pro' for the proposed smart city of Pondicherry in India' Journal of Smart Cities, 2016, Volume 2, Issue 2, pp.1-11
28. Dhavalkumar N. Joshi and R. Arun Prasath Low temperature rapid synthesis of direct mesoporous anatase TiO2nano-aggregates and its application in dye-sensitized solar cell, 2016, Materials Today: Proceedings, Vol:3, No.6, 2413-2421.
29. P. S. Vijayananda J. Vivekanandan, A. Jeeva, and R. Arun Prasath, 'Preparation, characterization and morphological study of poly(m-toluidine-co-m-aminoacetophenone) conductive copolymer' 2016, Polymer Science, Series B, Vol. 58, No. 5, 1–7,
30. Krishna Kumar Jaiswal and Arun Prasath, Integrated growth potential of Chlorella pyrenoidosa using hostel mess wastewater and its biochemical analysis, 2016, International Journal of Environmental Sciences, Vol:6, No.5, 592-599.
31. Bhaskar Jha, Krishna Kumar Jaiswal, and Arun Prasath R, 'Impact of poly-aluminium chloride on foam suppression in a chicken waste-based biogas plant: A case study at KEPCO Kerala' 2016, International Journal of Environmental Sciences, Vol:6, No.6, 934-940.

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33. Lakshey Sehgal, R. Arun Prasath, and Arvind Rehalia, 'Proposal of Integral Mounted Solar Charging and External Solar Charging Station for an Electric Rickshaw in Delhi' 2015, American Journal of Renewable and Sustainable Energy, Vol. 1, No. 3, 86-89.
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35. R. Dhivya Prabha J. Santhanalakshmi and R.ArunPrasath, 'Analysis of micellar behavior of as synthesized sodium itaconate monoesters with various hydrophobic chain lengths, in aqueous media' 2013, Research Journal of Chemical Sciences, 3(12), 43-49.
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39. Filip E. Du Prez, R. Arun Prasath, and M. Talha Gokmen, 'Thio-click' Chemistry and microfluidics: straightforward method towards macroporous and nonporous functional polymer beads', 2010, Polymer Preprints, 51(2), 719-720.
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44. R. Arun Prasath, S. Nanjundan, T. Pakula and M. Klapper, 'Synthesis and characterization of poly(urethane-ester)s based on calcium salt of mono(hydroxybutyl) phthalate'. 2006, Journal of Applied Polymer Science, 100, 1720-1727.
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51. R. Arun Prasath, P S. Vijayanand and S. Nanjundan, `Studies on polyurethanes and polyurethane-ureas derived from divalent metal salts of mono(hydroxybutyl)hexolate'. 2000, Polymer International, 49, 1464- 1472.

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Published Patents (3 International, and 2 European) - 5

- "Functionalised polymers for binding Metal Surfaces' Cormack Peter, Graham Duncan, Hernandez- Santana Aaron, Ramaswamy Arun Prasath, Smith Ewen, US 9029473 B2, Publication type grant- PCT number- PCT GB2007/004038, Published May 12, 2015, EP 2078045 A1 PCT/GB2007/004038, Jul 15, 2009, Pub. number:WO2008050109, 2008.
- 'Antimicrobial Membranes' M. Jaleh, S. Dirk, Ramaswamy Arun Prasath, C. Vicki, W. Thomas, Pub. number WO2009047154, PCT/EP2008/063000, April 2009. CN101820984 A, PCT/EP2008/063000, Sept 2010. EP2217358 A1, PCT/EP2008/063000, Aug 2010. US20110024355 A1, PCT/EP2008/063000, Feb 2011, US20140091031 A1, US 14/101,388, 10 Dec 2013.
- 'Alkoxyamine-functionalized polysulfone, comb copolymers, their preparation and membranes' S. Tobias, M. Jaleh, C. Timothy Stuart, Ramaswamy Arun Prasath, Pub. number WO2009098161, 2009.
- 'Process for the preparation of an antimicrobial article comprising polymeric membranes' Ramaswamy Arun Prasath,H. Martina Stenzel, EP 2160946 A1 20100310, 2010.
- 'Antimicrobial articles comprising metals and amphiphilic copolymers' Ramaswamy Arun Prasath, H. Martina Stenzel, EP 2160945 A1 20100310, 2010.

Book Chapters -12

1. MS Talukder, G Gokul, H Kaur, S Dutta, KS Jaiswal, AP Ramaswamy,et.al., "Biomass Resources and Potential for Its Applications in Energy and Platform Chemicals with 3G Biorefinery Approaches" Clean Energy Transition-via-Biomass Resource Utilization: A Way to Mitigate Climate Change, 2024, 9,3 29-58
2. S Pandurangan, DN Joshi, AP Ramaswamy, V Kumar, Hydrogels for Metal-Ion Batteries, 2023, Hydrogels, 213-232. eBook ISBN9781003351566, CRC Publication
3. Krishna Kumar Jaiswal, Vinayak Vandan Pathak, and Arun Prasath Ramaswamy, "Magnetic Harvesting of Microalgae Biomass for Cost-effective Algal Biofuel Production" Algal Biofuel Sustainable Solution, The Energy and Resources Institute Publication, 2020, ISBN 978-93-8653-094-3, Chapter-7, 139-148.
4. R. Arun Prasath, G. Poyyamoli, Dwipen Boruah, M. Nandhivarman and Golda A. Edwin, "The role of higher educational institutions and other training organizations to promote renewable energy in India," World Sustainability Series, Implementing Campus Greening Initiatives , 2015, Springer International Publishing Switzerland 2015, W. Leal Filho et al. (eds.), ISSN 2199-7373, ISBN 978-3-319-11960-1, p37-52.
5. Dwipen Boruah, R. Arun Prasath, G. Poyyamoli, M. Nandhivarman and Golda A. Edwin, "Developing Pondicherry University silver jubilee campus as 'solar campus'," World Sustainability Series, Implementing Campus Greening Initiatives , 2015, Springer International Publishing Switzerland 2015, W. Leal Filho et al. (eds.), ISSN 2199-7373, ISBN 978-3-319-11960-1, p139-150.
6. G. Poyyamoli, R. Arun Prasath, M. Nandhivarman, Golda A. Edwin and Dwipen Boruah, "Potentials and Constraints for Adopting Campus Carbon Neutrality Strategies in Indian Higher Educational Institutions" World Sustainability Series, Implementing Campus Greening Initiatives , 2015, Springer International Publishing Switzerland 2015, W. Leal Filho et al. (eds.), ISSN 2199-7373, ISBN 978-3-319-11960-1, p251-264.
7. M. Nandhivarman, G. Poyyamoli, Golda A. Edwin, R. Arun Prasath and Dwipen Boruah, "Evolving and Implementing Energy Recovering Strategy from Food Wastes at Jawahar Navodaya Vidhyalaya (JNV) Fostering Campus Sustainability," World Sustainability Series, Implementing Campus Greening Initiatives , 2015, Springer International Publishing Switzerland 2015, W. Leal Filho et al. (eds.), ISSN 2199-7373, ISBN 978-3- 319-11960-1, p1-12.
8. Golda A. Edwin, G. Poyyamoli, M. Nandhivarman, R. Arun Prasath and Dwipen Boruah, "Constructed Wetlands for the Treatment of Grey Water in Campus Premises," World Sustainability Series, Implementing Campus Greening Initiatives , 2015, Springer International Publishing Switzerland 2015, W. Leal Filho et al. (eds.), ISSN 2199-7373, ISBN 978-3-319-11960-1, p337-350.
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10. G. Poyyamoli, R. Arun Prasath, M. Nandhivarman, and Golda A. Edwin, "Evolving and implementing green campus strategies in Indian higher educational institutions for sustainable development, Sustainable Development at Universities: New Horizons, 2012, Volume 34, Peter Lang International Academic Publishers. ISSN 1434-3819, ISBN 978-3-631-62560-6, Chapter 46, p541-553.
11. Golda A. Edwin, Poyyamoli Gopalsamy, R. Arun Prasath, Nandhivarman Muthu, "Water Management and Reuse Strategies at Pondicherry University - Sustainable Alternatives",Sustainable Development at Universities: New Horizons, 2012, Volume 34, Peter Lang International Academic Publishers. ISSN 1434-3819, ISBN 978-3-631-62560-6, Chapter 58, p697-708.
12. Nandhivarman Muthu, Golda A. Edwin, R. Arun Prasath, and Poyyamoli Gopalsamy, "Integrated Organic Kitchen Waste Management for Campus Sustainability- a case study of Pondicherry University, India" Sustainable Development at Universities: New Horizons, 2012, Volume 34, Peter Lang International Academic Publishers. ISSN 1434-3819, ISBN 978-3-631-62560-6, Chapter 59, p709-772.

Affiliation details

- Energy Science Society of India, Executive Council Member, 2013 onwards
- ANGIRAS -Network of Indian Alumni from German Universities for Sustainable Solutions, member from 2013 onwards
- Indian Society of Geomatics (ISG) - Pondicherry Chapter, member from 2016 onwards

Published in the Proceedings – 9

1. Shivendra Kaundilya, O.S. Sastry, Birinchi Bora, Supriya Rai, Manander Bangar, Renu, Rashmi Singh, Avinash Kumar, Kamlesh Yadav, Mithilesh Kumar, and R. Arun Prasath 'Soiling effect on crystalline and thin-film technology PV modules for composite climate zone of India' 5th International conference on advanced in energy research 15-17th Dec 2015, IIT Bombay.
2. Dwipen Boruah, R. Arun Prasath, G. Poyyamoli 'Potential for rooftop solar PV system in Pondicherry university campus to promote sustainable development' International Conference REGSA -2014: "Renewable Energy, Energy Efficiency and Sustainable Development-Published 2015 Unisul Universidade Do Suldesanta Catarina, Brazil, 361-377, Published in 2015.
3. R. Arun Prasath, Title: "Renewable Energy in India: Potential, Challenges, Policies, Programmes, and Achievements", Name of the Programme: DAAD- German Alumni Energy Expert Seminar for South and South-East Asian Countries, Organiser: University of Oldeburg, University of Flensburg, and United International University, Dhaka, 5-11th Jan 2012.
4. R. Arun Prasath and S. Nanjundan, Title: 'Synthesis and characterisation of metal containing polyurethanes and polyurethane - ureas based on new divalent metal salts of mono(hydroxybutyl) phthalate' Name of the Programme: MACRO-98 Macromolecules--New Frontiers, 1998, Organiser: IUPAC International Symposium on Advances in Polymer Science and Technology, CLRI, Chennai, Jan 5-9, 1998, ISBN: 81-7023-760-2.
5. R. Arun Prasath, S. Nanjundan, and C.Sreekuttan Unnithan, Title: 'Flame retardant metal containing polyurethanes: synthesis and characterisation' Name of the Programme: ELASOMER '98 Elasomeric Materials-Manufacture and Characterisation, Organiser: Division of Rubber Technology, Anna University, 5 & 6th February 1998.
6. R. Arun Prasath, S. Nanjundan K. Subba Rao and N. Jothi Kumar, Title: 'Divalent metal salts of mono(hydroxybutyl)phthalate: synthesis, characterization and bacterial activity' Name of the Programme: XIIIth ISAS National Symposium, Organiser: Indian society of analytical scientists, IISc, Nov. 24-25 1998.
7. R. Arun Prasath, S. Nanjundan and R. Balaji, Title: 'Synthesis and characterisation of metal containing polyurethanes and polyurethane – ureas' Name of the Programme:.Polymers '99 International symposium on Polymers Beyond AD 2000 Organiser: Indian Institute of Technology Delhi, 12-15 January 1999.
8. S. Nanjundan R. Arun Prasath, R. Balaji and R. Jayakumar, Title: 'Flame retardant polyurethanes based on di(hydroxyalkyl)esters of hexolic acid' Name of the Programme:.Polymers '99 International symposium on Polymers Beyond AD 2000 Organiser: Indian Institute of Technology Delhi, 12-15 January 1999.
9. R. Balaji, S. Nanjundan and R. Arun Prasath, Title: 'Copolymerization of 2-(N-phthalimido)ethyl methacrylate with methyl methacrylate: syhthesis, characterization and determination of monomer reactivity ratios' Name of the Programme:Polymers '99 International symposium on Polymers Beyond AD 2000 Organiser: Indian Institute of Technology Delhi, 12-15 January 1999.

Conferences/seminars-Organizing committee member

- Renewable Energy and Sustainable Living in Remote Areas, Auroville-Puducherry, International -Programme committee member 7th to 13th Oct 2013 funded by DAAD, Germany.
- 4th Indian biodiversity Congress, Organizing committee member, Pondicherry University, 10- 12th March 2017.
- MECS 2016 2nd National Conference on Materials for Energy Conversion and Storage Pondicherry University, DST-Pondicherry, 11-13 March 2016 National-Local Organizing Committee.
- National conference on recent advances in bio-chemical science in Annai Violet college of Arts and Science4-5 Feb 2016 National-Local Organizing Committee.
- International Workshop on Energy Materials and Devices IWEMD-2018, CGET, Pondicherry University 3-4 May 2018 as Organizing secretary.
- Indo-Brazil SPARC International virtual workshop on "Biofuel Production & Processing" Feb 22-25, 2021 as Co-convener
- One week SERB Karyashala Workshop "AWARENESS ON SUSTAINABLE ENERGY MANAGEMENT AND HARVESTING TECHNIQUES " 5th June to 9th June, Chairman DGET, Pondicherry University,
- One-day Workshop & Hands-On Training on Electrochemical Techniques, 1st September 2023 -Convener, DGET, Pondicherry University,
- One-day Workshop and hands-on Material Charactersation using XRD and PS, 28th Nov 2023 -Convener, DGET, Pondicherry University,
- National conference on Green Energy Technology for Sustainbaility NCGETS-2024 as Convener, March 21-22, 2024, DGET, Pondicherry University

Invited talks/Conferences/Semi/Symp/workshops attended and/or presented papers - ABOVE 80

1. Contributed presentation: 7th International Conference on Recent Advances in Material Chemistry (ICRAMC-2023) Title: Plasmonic Ag-nanoparticles decorated phosphorus and boron co- doped g-C3N4 for enhanced photocatalytic H2 production, 16-18th February 2023, Department of Chemistry, SRM institute of science and technology, Kattankulathur, Chennai – 603 203
2. Contributed presentation: 7th International Conference on Recent Advances in Material Chemistry (ICRAMC-2023) Title: A Critical Review on Sustainable Green Hydrogen Production Technologies, 16-18th February 2023, Department of Chemistry, SRM institute of science and technology, Kattankulathur, Chennai – 603 203
3. Contributed presentation: NATIONAL CONFERENCE ON RECENT TRENDS IN GREEN ENERGY TECHNOLOGIES (NCRTGET-2022), Title: Design of CuBi2O4/g-C3N4 p-n Heterojunction Photocathodic Material for Photo-electrochemical Hydrogen Production, 8-9th December 2022, Department of Green Energy Technology, Pondicherry University, Puducherry- 605014
4. Invited webinar Talk: Webinar on CHEMTALK@CUTN Department of Chemistry School of Basic and Applied Sciences, Central University of Tamil Nadu, Thiruvarur 610005 31st March 2022 on the title 'Efficient Light Harvesting Plasmonic Materials for DSSCs' via Webex
5. Invited Talk: SERB sponsor National Seminar "Key Engineering Materials and Manufacturing Technologies for Green Energy Development at IFET College of Engineering, Department of Engineering & Science and Humanities, Villupuram, TN. Title of the talk: Plasmonic Materials for Efficient Light Harvesting in DSSCs, 24th March 2022.
6. Invited webinar Talk: Webinar for FDP on Green technology and sustainability engineering in chemistry organized by Adhiyamaan College of Engineering (Autonomous), Hosur, Tamil Nadu from 2nd to 6th August 2021 on the title 'Materials for sustainable energy conversion technologies: Solar, bio- energy and fuel cell technology' on webex
7. Invited webinar Talk: Webinar for FDP on Green technology and sustainability engineering in chemistry organized by Adhiyamaan College of Engineering (Autonomous), Hosur, Tamil Nadu from 2nd to 6th August 2021 on the title 'Energy Conservation/Efficiency and Green Energy Technologies for Sustainable Development in Buildings'
8. Invited webinar Talk: Webinar for FDP on Green Energy Conservation and Management organized by Kerala Technological University, MGM College of Engineering Technology, Kochi, Kerala from 23rd to 25th June 2021 on the title 'Solar Photovoltaic Technologies: Basics to Fabrication' at online mode
9. Invited webinar Talk: Webinar for FDP on Green Energy Conservation and Management organized by Kerala Technological University, MGM College of Engineering Technology, Kochi, Kerala from 23rd to 25th June 2021 on the title 'Energy Conservation and Renewable Energy for Green Sustainable Buildings' at online mode
10. Invited webinar Talk: Webinar on for FDP Green Energy Conservation and Management organized by Kerala Technological University, MGM College of Engineering Technology, Kochi, Kerala from 23rd to 25th June 2021 on the title 'Waste to Energy Conversion Technologies' at online mode
11. Invited webinar Talk: Webinar on International Workshop on Biofuel Production & Processing organized by Department of Green Energy Technology, Pondicherry University on 22-25th Feb 2021 on the title 'Magnetic hybrid catalysts for transesterification' via online https://www.youtube.com/watch?v=JwYBxyIu0jQ, https://www.youtube.com/watch?v=_g-vnsSRvcg, https://www.youtube.com/watch?v=lausfLDyc98, https://www.youtube.com/watch?v=ewtf1St4vFM Co-Convenor
12. Invited webinar Talk: Webinar on the title "Energy Conservation and Renewable Energy for Sustainable Development" organized by The Institution of Engineers-Puducherry, Puducherry State Centre, on the occasion of Energy Conservation Day on 23rd December 2020 at 7.00.p.m at online mode
13. Invited webinar Talk: Lecture in the title 'Materials for sustainable energy conversion technologies: Solar, bio-energy and fuel cell technology' the AICTC Faculty Development Programme on 'Environmental and Sustainable Chemical Engineering' orgnised by Pondicherry Engineering College, Puducherry on 19th December 2020 at online mode
14. Invited webinar Talk: Talk on Renewable Energy to address the SDGs orgaised by Conselho Gestor Do Instituto Soul, Brazil on "Renewable and Sustainable Generation and the Culture of Conscious Consumption" Renewable Energy" https://m.youtube.com/watch?v=CUwCCKM6D-I&feature=youtu.be, Dec 15th 2020.
15. Invited webinar Talk: Webinar on "Materials for sensors and energy conversion" organized by the Department of Chemistry, Bannari Amman Institute of Technology, Title: Solar photovoltaic technologies, 27th June 2020
16. Invited Talk: National level workshop on "Advanced nanomaterials for Sustainable Energy and Sensor Applications" (AN-SEA 2020) at Department of Chemistry, Alagappa University, Tamil Nadu, Title of the talk: Materials for sustainable energy conversion and sensor applications, 5th March 2020.
17. Invited Talk: National conference on "Emerging materials and nonotechnology NCEMN- 2020" at Department of Physics, Thiruvalluvar Government Arts College, Rasipurm, Namakkal, Tamil Nadu. Title of the talk: Plasmonic materials for efficient solar energy harvesting delivered plenary talk on 28th Feb 2020.

18. Invited Talk: National conference on recent trends in chemistry of materials at the Department of Chemistry, Bannari Amman Institute of Technology, Tamil Nadu Title: Materials for better light harvesting in the dye-sensitized solar cells Oct-11th 2019 Invited Talk: AICTE sponsored QIP- short term course on Advances in Materials and Structural Aspects of Tall Building Construction" Title: Energy Efficiency and Renewable Energy for Tall Buildings, Department of Civil Engineering, Pondicherry Engineering College, Puducherry, on15th March 2019.
19. Invited Jury: National level technical symposium TIELINES Organised By Department of Chemical Engineering, Pondicherry Engineering College, Pondicherry on 21st-22nd Feb 2019.
20. Invited Talk: National level seminar organized by the PG & Research Department of Chemistry Topic : Renewable energy conversion technologies for sustainable development in Morappur Kongu College of Arts and Science, Salem on 5th Feb 2019.
21. Invited Talk: National conference on recent trends in chemistry-2019 Topic presented: Renewable energy technology on sustainable development in Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore on 2nd Feb 2019.
22. Invited Talk: IEEE sponsored one day national level seminar titled "Emerging trends and innovation challenges in renewable energy for development of smart cities. Topic presented: Renewable energy technology for smart grid, Manakula Vinayagar Institute of Technology, Pondicherry, 11th Jan 2019.
23. Invited Talk: MHRD sponsored MVIT-IIC cell workshop on IPR for students and faculty members. Topic presented: Intellectual property rights in Manakula Vinayagar Institute of Technology, Pondicherry, 10th Jan 2019.
24. Invited Talk: MECS 2018 Materilas for. Energy Conversion & Storage, Topic : Anisoropic plasmonic Ag/Au based nanoparticles for improved efficiency in dye sensitized solar cells. 18-20 Oct 2018, Dept of Chemistry, IIT BHU.
25. Invited Talk: AICTE-ISTE sponsored induction/refresher programme- smart grid internet of things and green computing-The future of energy intelligence. Topic: Green Energy Conversion: Low Carbon Energy Technologies for Smart Grids, Manakula Vinayagar Institute of Technology, Pondicherry, 16th-21st July 2018.
26. Invited Talk: Renewable Energy Conversion & Management-FDP 2018, Topic: Renewable Energy Technologies for sustainable development, Saintgits College of Engineering, Kottayam, Kerala, 23-27th April 2018.
27. Invited Talk: National Conference on Challenges in Energy Conversion and Environmental Applications, Presentation on the topic: Renewable Energy Conversion Technologies, Bannari Amman Institute of Technology, Erode, 23-24th March 2018.
28. Invited Talk: Recent Trends on Materials for Energy and Environment, Presentation on the topic: Sustainable energy technologies and energy conservation for sustainability, J.K.K.Nattraja College of Arts and Science, Salem, Tamil Nadu, 23rd Feb 2018.
29. Invited Talk: Green Technology and Waste Management for Health Care, Presentation on the topic: Waste to Energy Technologies, Sri Ramakrishna Engineering College, Coimbatore, Tamil Nadu, 15th Feb 2018.
30. Invited Talk: Green Chemistry and Sustainable Technologies, Presentation on the topic: Sustainable energy Technologies, Sri GVG Visalakshi College for Women, Udumalpet, Tamil Nadu, 16th Feb 2018.
31. Invited Talk: State level awareness program on sustainable waste management 2017-18. Presentation on the topic: Waste management for sustainability, JIPMER Pondicherry 10th Jan 2018.
32. Invited Talk: State level awareness program on sustainable waste management 2017-18. Presentation on the topic: Waste management for sustainability, Yanam Municipality, Pondicherry 22nd Jan 2018.
33. Invited Talk: National workshop on Smart Renewable Energy Technologies- Opportunities and Challenges (NWSRT-2015). Presentation on the topic: Renewable Energy in India: Potential and Challenges, Department of Civil Engineering, K.S.R College of Technology, Tiruchengode,TN, 28th August 2018.
34. Invited Talk: Staff training programme title: Renewable Energy and Energy Conversion Technologies for sustainability. Electrical wing, Pondicherry University 24-02-2017.
35. Invited Talk: TEQIP training programme on the topic: Membrane applications in industrial wastewater treatment at Department of Chemical Engineering, Pondicherry Engineering college, Pondicherry on 21st June 2016.
36. Contributed oral presentation: 2015 North American Solid State Chemistry Conference, presented research work under UGC-Raman fellow on the topic 'Enhanced Visible Light Photocurrent of Carbon Nitride Thin Films Grown by Atmospheric Pressure Chemical Vapor Deposition' The Florida State University, Florida, USA. May 22nd -24th 2015.
37. Invited Talk: International DAAD Alumni Seminar 2014: Presentation on the topic "Renewable Energy Promotion and Training through SMEs to Propel Development in India: Potentials and Challenges", Brandenburg University of Technology (BTU) Cottbus - Senftenberg, from March 29th-6th April and "Hannover Messe 2014" from April 7th - 9th 2014 Germany.

38. Member of Evaluation committee for National Children Science Congress 2013, Jawahar Navodaya Vidyalaya Pondicherry 22-12-2013.
39. Invited Talk: TEQIP-II Sponsored faculty development programme on Sustainable energy technologies for the future generation. Topic: Renewable energy for Sustainability-Renewable energy potentials and challenges in India. Pondicherry Engineering College, 25th Nov 2013, Pondicherry.
41. Participated and Programme committee member in the DAAD Indian Alumni Convention and Exhibition on 'Renewable Energy and Sustainable Living in Remote Areas' Auroville-Puducherry, 7th to 13th Oct 2013.
42. Participate in the short course 'Nanostructured Carbon: Fuel Cell Applications' conducted by IIT Kanpur, Sept-30 to Oct 4th 2013.
43. Invited Talk Reverse Osmosis: Principles and Applications, Faculty development programme, organized by TEQIP cell of Pondicherry Engineering College, Pondicherry. Title : Membrane Technologies & Antifouling Membrane on 17th June 2013.
44. Resource Person for "Content Enrichment Training Programme for TGTs (Science) held at Jawahar Navodaya Vidyalaya Pondicherry 27-05-2013 to 01-06-2013.
45. Invited Talk: Controllers for Management of Renewable Energy Sources- FDP Govt. College of Engineering, Bargur, Tamil Nadu, on 18th May 2013, Title: Renewable Energy for Sustainable Development.
46. International conference on Polymers on Frontiers of Science and Technology, Panjab University, Chandigarh, Feb.21-23, 2013, Title: Membranes containing Silver-Polymer Hybrid Particles for Antifouling Property.
47. Green Campus Summit-2013, Pondicherry, 04-05th April 2013, Title of the paper: The renewable energy sector in India: Current status, prospects and challenges.
48. Green Campus Summit-2013, Pondicherry, 04-05th April 2013, Title: Developing Pondicherry University silver jubilee campus as " solar campus".
49. Green Campus Summit-2013, Pondicherry, 04-05th April 2013, Title: The role of higher education institutions and other training organizations in India to promote renewable energy. Awareness workshop on solar campus of Pondicherry University, Pondicherry University, 11th Dec. 2012 Title: Solar Energy Scenario in India.
50. Invited Talk: Recent advances in Green Engineering- TEQIP based FDP, Pondicherry Engineering college, Pondicherry on 5, Dec 2012, Title: Green Energy scenario in India- issues and challenges.
51. Invited Talk: World Tourism Day 2012, Pondicherry on 27, September 2012, Title : Renewable Energy for Sustainable Development in Tourism Industry.
52. Invited Talk: Alternative energy systems for near future- AICTE sponsored SDP, Sri Manakula Vinayagar Engineering College, Pondicherry on 27, June 2012, Title:Energy, Environment and Sustainable Development.
53. Invited Talk: SEPT International Alumni Seminar 2012, Universitat Leipzig, Germany, Nov 24th to Nov 28th 2012 Title of the paper: Renewable Energy Promotion and Training through SMEs in Rural India to Mitigate Migration of People to Urban India.
54. Invited Talk: Sustainable Management and promotion of Territory- SIS, Perugia University Todi, Italy, 24th August 2012 to 2nd September 2012, Title of the paper: Green Business for Sustainable Development: Indian scenario.
55. Invited Talk: Sustainable Management and promotion of Territory- SIS, Perugia University, Todi, Italy, 24th August 2012 to 2nd September 2012, Title of the paper: The Solar Energy: Current Situation and Perspectives in India.
56. Invited Talk: 8th National Conference on Management Excellence, Federal Fluminense University Rio de Janerio, Brazil, 8th and 9th June 2012, Title of the paper: Sustainable business in India: Potentials and Challenges. World Symposium on Sustainable Development at Universities - WSSD-U 2012, Rio de Janerio, Brazil, on 5th and 6th June 2012, Title of the paper: Green energy in higher educational institutions for sustainable development: potentials and challenges in India.
57. Invited Talk: International DAAD -Germany Alumni Expert Seminar on "Renewable Energy in South and South-East Asia" United International University, Dhaka, Bangladesh from 5th to 11th January, 2012, Title of the paper: Renewable Energy in India: Potential, Challenges, Policies, Programmes, and Achievements.
58. Invited Talk: International DAAD Summer School 2011, Justus-Liebig-University Giessen, Germany, May 30th 2011 to June 11, 2011, Title : India's solar energy potential and HPNs application in solar cell.
59. Invited Talk: Nano Engineering Materials FDP, Pondicherry Engineering college, Pondicherry Pondicherry, on 22nd Dec. 2010, Title: Surface-Enhanced Resonance Raman Scattering (SERRS) Nano Sensors. MACRO2010-International conference, IIT Delhi, 14 to 17, Dec 2010, Title:Thiol-mediated Polymeric Materials.

60. Invited Talk: Ozone Day 2010, Pondicherry, on 16th Sept. 2010, Title of the paper: Ozone Layer Depletion – Causes, Effects and Mitigation.
61. Invited Talk: Climate Change and Ozone Layer Depletion, Mahe, on 4th Sept. 2010, Title of the paper: Climate Change and Ozone layer Depletion.
62. Special Lecture 74th Prague Meeting on Macromolecules 2010, Institute of Macromolecular Chemistry AS CR, v.v.i., Prague, Czech Republic- July 18-22, 2010 Title of the paper: A microfluidic 'thio-click' approach towards functional/clickable and degradable polymer beads.
63. 239th ACS National meeting, San Francisco, United States, March 21-25, 2010, Title of the paper: Novel monodisperse porous polymer particles with various shapes and reactive groups via a simple microfluidic device.
64. APME 2009 Dresden, Germany, Oct.4-7, 2009, Title of the paper: Thiol-ene and thiol-yne 'click' chemistry for the preparation of functional beads.
64. Japan-Belgium Symposium on Polymer Science 2009, Tokyo, Japan Nov. 8-11, 2009, Title of the paper: 'Clicked' polymeric microcapsules and beads: Azide-alkyne versus thiol-ene and thiol-yne approach.
65. International Textile Conference Aachen, Germany, Nov-26-27, 2009 Title of the paper: Exploration of novel functionalization concepts for surfaces, beads and microcapsules.
66. Meeting on CRP, Houffalize, Belgium, Sept 17-18, 2009 Participated.
67. EPF '09, Graz, Austria July 12-17 Title of the paper: 'Clicked' polymeric microcapsules and beads: azide-alkyne versus thiol-yne approach.
68. Frontiers in Polymer Science - POLY2009, Mainz, Germany, June 7-9, 2009, Title of the paper: Biodegradable polymeric Microcapsules via 'Click' Chemistry.
69. EUPOC 2009, Lago di Garda, Italy, May 31st – June 4th, 2009 Title of the paper: "Clicked" Microcapsules, beads and multilayers: Azide-alkyne versus thiol-ene and thiolyne approach.
70. EUPOC 2009, Lago di Garda, Italy, May 31st – June 4th, 2009, Title of the paper: Block copolymers via thiol-ene "Click" chemistry.
71. BPG Annual Meeting 2009, Houffalize, Belgium, May 14-15, 2009, Title of the paper:Block copolymers via thiol-ene 'click' chemistry.
72. 29th Australasian Polymer Symposium, Tasmania, Australia, Feb 11-15, 2007, Title of the paper: SERRS active polymer beads.
73. 'Faraday Discussion 132' London, London, UK Sept.19-21, 2006, Title of the paper: SERRS labelled beads for multiplex detection.
74. FACSS, the Federation of Analytical Chemistry and Spectroscopy Soc. Quebec City, Canada/Oct. 9–13, 2005, Title of the paper: SERRS Polymer Beads.
75. INSAT'98 National conference, Bangalore, India, Nov. 24-25, 1998, Title of the paper: Divalent metal salts of mono(hydroxybutyl)phthalate: Synthesis, characterization and bacterial activity.
76. BWETEEAM, National seminar, Chennai, India, Nov.18-20, 1998, Title of the paper: Inhabitation, health education, strategy of water supply and sanitation programme.
77. BWETEEAM, National seminar, Chennai, India, Nov. 18-20 ,1998, Title of the paper: Removal of phenol from wastewater by electrochemical chlorination.
78. Elastomer 98, National seminar, Chennai, India, Feb.5-6, 1998, Title of the paper: Flame retardant metal contain polyurethane: synthesis and characterization.
79. Macro 98, International conference of IUPAC, CLRI, Chennai, India, Jan. 5-9, 1998, Title of the paper: Synthesis and characterization of metal containing polyurethanes and polyurethane-ureas based on new divalent metal salts of mono(hydroxybutyl) phthalate.
80. Indian Council of Chemists, National conference, Mangalore University, India, Dec.27-29, 1997, Title of the paper: Evaluation of kinetic parameters and mechanisms of divalent metal salts of mono(hydroxybutyl) phthalate using thermal analysis.
81. Anacon 97, International conference, Bombay, India, Dec11, 1997, Title of the paper: Evaluation of kinetic parameters and mechanisms of divalent metal salts of mono(hydroxybutyl) phthalate using thermal analysis.
82. Physico-Chemical Application in the Analysis of Pollutants in the Environment, National symposiums, Nuzvid, India, Feb. 2-4, 40, 1996, Title of the paper: Evaluation bacteriological quality of water from temple tanks in and around Madras city.
83. 86th Indian Science Congress Exhibition 1999, Anna University Chennai, India, Jan.3-7, 1999, Voluntary Service.
84. 14th National Symposium on Catalysis, Anna University, Chennai, India, Dec.16 – 18, 1998, Participated.
85. NARRI, Madras, Jan.30, 1996, Participated
86. Leadership-Innovation-Commercialization Course, Melbourne, Australia, Aug.27-31st 2007, Participated

Appendix - III

Documentation of Important Email Exchanges for UNESCO chair application process

Fwd: Thanking you- Registration done with UNESCO

2 messages

Dr.ARUN PRASATH <raprasath@pondiuni.ac.in> Wed, Apr 26, 2023 at 6:09 PM
To: Madanjeet Singh <madanjeetsaf@gmail.com>

Dear Madam France Marquet,

Good News!.

I am pleased to note that the Ministry has selected our application to forward it to UNESCO for their consideration.

Meanwhile, I have registered through Account Request Form and am looking forward to it.

I am very much thankful for your kind guidance and support.

Kind regards

R. Arun Prasath

Dr. R. ARUN PRASATH
Professor & HOD
Laboratory for Energy Materials and Sustainability
Department of Green Energy Technology
Madanjeet School of Green Energy Technologies
Pondicherry University
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Web:https://www.pondiuni.edu.in/faculy_profiles/dr-r-arun-prasath/

---------- Forwarded message ---------
From: **Dr.ARUN PRASATH** <raprasath@pondiuni.ac.in>
Date: Wed, Apr 26, 2023 at 6:05 PM
Subject: Thanking you- Registration done
To: UNESCO MoE <unesco.edu@nic.in>
Cc: Shalia Shah <dsicc-he@gov.in>, Saroj Kumar Choudhary <sarojchoudhary.edu@nic.in>

Dear Bindu Rajagopalan

Thank you very much for your kind email and pleased to note that the Ministry has selected our application from Pondicherry University for forwarding the same to UNESCO for their consideration.

Meanwhile, I have registered through Account Request Form and looking for their confirmation.

Thanking you and looking forward

Kind regards
R. Arun Prasath

Dr. R. ARUN PRASATH
Professor & HOD
Laboratory for Energy Materials and Sustainability
Department of Green Energy Technology
Madanjeet School of Green Energy Technologies

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On Wed, Apr 26, 2023 at 4:48 PM UNESCO MoE <unesco.edu@nic.in> wrote:

Sir,

With reference to your application on the subject cited above, it is hereby informed that the application in respect of Pondicherry University has been selected by this Ministry for forwarding the same to UNESCO for their consideration. You are, therefore, requested to register yourself, through Account Request Form which can be accessed at page no. 9 under ' HOW TO ACCESS THE ONLINE SUBMISSION PLATFORM' in the revised UNESCO Chairs guidelines(attached), **immediately.**

2. The letter of support of Natcom, in this regard, would be sent shortly.

With regards,

(Bindu Rajagopalan)
Section Officer (UU)
Department of Higher Education
Ministry of Education
Shastri Bhawan, New Delhi - 110001
Tele: 011 2338 4442.

Madanjeet Singh <madanjeetsaf@gmail.com> Wed, Apr 26, 2023 at 7:26 PM
To: "Dr.ARUN PRASATH" <raprasath@pondiuni.ac.in>

Le 26 avr. 2023 à 14:40, Dr.ARUN PRASATH <raprasath@pondiuni.ac.in> a écrit :

[Quoted text hidden]

Dr.ARUN PRASATH <raprasath@pondiuni.ac.in>

Application successfully submitted to National Commission - Demande soumise avec succès a la Commission nationale

2 messages

UNESCO - Do not reply <noreply@unesco.org> Fri, Apr 28, 2023 at 1:27 PM
To: raprasath <raprasath@pondiuni.ac.in>

[Version française ci-dessous]

Thank you for your interest in the UNITWIN/UNESCO Chairs Programme. Your application has been received and will be reviewed by the National Commission for UNESCO of your country for final endorsement. You will be informed once the National Commission for UNESCO has completed its review.
Updates on the application status are available at this link
++++++
Merci de l'intérêt que vous portez au programme UNITWIN/Chaires UNESCO. Votre candidature a bien été enregistrée et sera examinée par la Commission nationale pour l'UNESCO de votre pays pour approbation finale.
Vous serez notifié lorsque la Commission nationale pour l'UNESCO aura terminé son examen.
Les mises à jour sur le statut de la demande sont disponibles sur ce lien

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Dr.ARUN PRASATH <raprasath@pondiuni.ac.in> Fri, Apr 28, 2023 at 1:53 PM
To: Madanjeet Singh <madanjeetsaf@gmail.com>

Dear Madam France Marquet,

I am pleased to inform your kind that our UNESCO application has been submitted. I forward the same for your kind. There is the link for your kind observation.

Meanwhile, I have to say that after submission, there is an error "Access is denied. (Exception from HRESULT: 0x80070005 (E_ACCESSDENIED)):

However, if I open again, it says that the application was submitted! Submitted to the National Commission. It also reads...Cadiou Richard made edits. I am yet to contact our NatCom for confirmation!

I hope I have done my best. Rest with your kind support.

Thank you, Madam, for giving me an opportunity to take it forward.

Kind regards

Arun Prasath

Dr. R. ARUN PRASATH
Professor & HOD
Laboratory for Energy Materials and Sustainability
Department of Green Energy Technology
Madanjeet School of Green Energy Technologies
Pondicherry University
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Fax:+91 0413 2656758
Web:https://www.pondiuni.edu.in/faculy_profiles/dr-r-arun-prasath/
[Quoted text hidden]

Dr.ARUN PRASATH <raprasath@pondiuni.ac.in>

Positive evaluation of the application to establish UNESCO Chair or UNITWIN Network - Résultat de candidature Chaire UNESCO ou Réseau UNITWIN

1 message

UNESCO - Do not reply <noreply@unesco.org> Sun, Oct 15, 2023 at 10:24 PM
To: raprasath <raprasath@pondiuni.ac.in>
Cc: dl-nac-in <dl-nac-in@unesco.org>

Dear applicant,
We are pleased to inform you that the application to establish a UNESCO Chair or UNITWIN Network “Affordable Renewable and Clean Energy for Sustainable Development ” at PONDICHERRY UNIVERSITY has been favorably evaluated by UNESCO.
A draft agreement between UNESCO and PONDICHERRY UNIVERSITY, to formally establish the UNESCO Chair or UNITWIN Network will be shared with you in the next 2-3 weeks.
We thank you for your cooperation within the framework of the Unitwin/UNESCO Chairs Programme and look forward to our future collaboration.
In the meantime, should you have any questions, do not hesitate to contact us at unitwin@unesco.org.

Yours sincerely,
UNITWIN Programme Team

***
Cher candidat,

Nous avons le plaisir de vous informer que la demande d’établir 'une Chaire UNESCO ou un Réseau UNITWIN “Affordable Renewable and Clean Energy for Sustainable Development ” à PONDICHERRY UNIVERSITY a été positivement évaluée par l'UNESCO.
L'accord entre l'UNESCO et l'institution hôte, visant à établir officiellement la Chaire UNESCO ou le Réseau UNITWIN, vous sera communiqué d’ici deux à trois semaines.
Nous vous remercions pour votre coopération dans le cadre du Programme Unitwin/Chaires UNESCO et nous nous réjouissons de notre future collaboration.
En attendant, si vous avez des questions, n'hésitez pas à nous contacter à unitwin@unesco.org.

Cordialement,
Équipe du Programme UNITWIN

Dr.ARUN PRASATH <raprasath@pondiuni.ac.in>

UNESCO Chair Draft Agreement [2023IN2770]

9 messages

Unitwin <Unitwin@unesco.org> Sun, Oct 22, 2023 at 7:27 PM
To: "vc@pondiuni.edu.in" <vc@pondiuni.edu.in>
Cc: dl-nac-in <dl-nac-in@unesco.org>, raprasath <raprasath@pondiuni.ac.in>, "raprasath.get" <raprasath.get@pondiuni.edu.in>, Indian National Commission for Cooperation with UNESCO <natcom.in@natcom.unesco.org>, Delegation of India/Délégation de l'Inde <dl.india@unesco-delegations.org>, "Boer, Benno" <b.boer@unesco.org>, "Midha, Neha" <n.midha@unesco.org>, "Ramasamy, Jayakumar" <r.jayakumar@unesco.org>, "Lespine, Marie-Laure" <ml.lespine@unesco.org>, "Nichanian, Inga" <I.Nichanian@unesco.org>, "Ferri Hernandez, Maria Edelmira" <me.ferri-hernandez@unesco.org>, Unitwin <Unitwin@unesco.org>

To the attention of Professor Gurmeet Singh, Vice-Chancellor, Pondicherry University

Dear Professor Gurmeet Singh,

Please find enclosed the draft Agreement between UNESCO and Pondicherry University, to formally establish a UNESCO Chair on Affordable, Renewable and Clean Energy [2023IN2770].

The university is requested to **complete the information specific to the host institution**, highlighted in blue on pages 1, 2, and 6; and **review the objectives in Article 2**, which have been adapted in consultation with UNESCO specialists based on the inputs provided in the application.

Kindly note that the remainder of the articles in the agreement are standard, and modifications, while may be possible, are rarely accepted by UNESCO's legal department.

We would be grateful to receive the completed agreement, with any changes integrated in 'tracked changes' by **3 November**, by way of return email to this message (unitwin@unesco.org). The agreement will subsequently be finalized with relevant teams, and reviewed by UNESCO's language services before it is submitted to the Director-General for her signature.

Do not hesitate to get back to the team should you have any questions regarding the agreement or the process.

Kind regards,

Thu Truong (Ms.)

Associate Project Officer

UNITWIN Programme Team

Future of Learning and Innovation
7, Place de Fontenoy, 75007 Paris

https://www.unesco.org/en/unitwin

unesco

ID 2024IN2770_UNESCO Chair Agreement & Supporting Documents

2 messages

Unitwin <Unitwin@unesco.org> Wed, Feb 28, 2024 at 4:25 PM
To: "vc@pondiuni.edu.in" <vc@pondiuni.edu.in>, raprasath <raprasath@pondiuni.ac.in>
Cc: raprasath <raprasath@pondiuni.ac.in>, "raprasath.get" <raprasath.get@pondiuni.edu.in>, "Boer, Benno" <b.boer@unesco.org>, "Midha, Neha" <n.midha@unesco.org>, Indian National Commission for Cooperation with UNESCO <natcom.in@natcom.unesco.org>, Delegation of India/Délégation de l'Inde <dl.india@unesco-delegations.org>, UNESCO New Delhi <newdelhi@unesco.org>, "Ramasamy, Jayakumar" <r.jayakumar@unesco.org>, "Lespine, Marie-Laure" <ml.lespine@unesco.org>, Unitwin <Unitwin@unesco.org>, "Prince, Maya" <m.prince@unesco.org>, "Truong, Thu" <t.truong@unesco.org>, "Nichanian, Inga" <I.Nichanian@unesco.org>, "Ferri Hernandez, Maria Edelmira" <me.ferri-hernandez@unesco.org>, "Altimari, Giulia" <g.altimari@unesco.org>

To the attention of Professor Rajneesh Bhutani, Registrar, Pondicherry University

Dear Registrar,

We hope this message finds you well.

Kindly find enclosed the Agreement between UNESCO and Pondicherry University, signed by the UNESCO Director-General, to formally establish the UNESCO Chair on Renewable and Clean Energy for Sustainable Development. We would be grateful to receive your co-signature on this signed agreement by way of return email to this message (unitwin@unesco.org) by March 22. The agreement shall enter into force on the date of its signature by the Host institution and shall remain valid until 30 June 2028. UNESCO is committed to sustainable practices, as such, unless otherwise requested, the agreement exchanged by email is considered the final one. Do let us know should you require UNESCO to send a hard copy of the agreement by postal mail.

Important information:

1. **CHAIRHOLDER**. UNESCO welcomes the appointment Professor Arun Prasath Ramaswamy as Chairholder. The appointment of a new Chairholder/Co-Chairholder is subject to UNESCO approval.

2. **CHAIR TEAM.** In addition to the Chairholder, we encourage you to regularly update the contact information of the members of the Chair's team. This will ensure that UNESCO communication and invitation for engagement reaches all members of the Chair. Kindly communicate this information to us by email at unitwin@unesco.org.

3. **ID.** The UNESCO Chair unique identifier is 2024IN2770. Kindly use it in all your communications with UNESCO.

4. **GUIDELINES.** The host institution and UNESCO Chair are invited to consult the UNITWIN/UNESCO Chairs Programme guidelines and procedures (March 2022) which outline basic information about the agreement, and to consult the dedicated webpage for latest information, updates, and opportunities for engagement with the programme: https://www.unesco.org/en/education/unitwin

5. **LOGO.** The host institution is authorized to use the enclosed UNESCO Chair logo in its activities, webpage and communication materials, within the framework of the UNITWIN/UNESCO Chairs Programme. Guidance on the use of the logo can be found in the abovementioned guidelines.

6. **WEBSITE.** The host institution is encouraged to facilitate the development and maintenance of a webpage dedicated to the UNESCO Chair.

7. **RENEWAL.** Should the host institution wish to pursue the activities of the UNESCO Chair beyond this initial period, a formal request to renew the validity of the agreement must be submitted through UNITWIN Management Platform six months before the expiry date of the current agreement (or by 31 December 2027). Kindly check UNITWIN website for the guidelines and procedures on how to submit a request for renewal.

8. **UNESCO FOCAL POINT(S).** The designated focal points for the Chair are Mr. Benno Boer, UNESCO Office in New Delhi (email: b.boer@unesco.org) and his colleague, Ms. Neha Midha (email: n.midha@unesco.org). Engagements with UNESCO, with colleagues at its Headquarters and across the various Field Offices and Institutes, are essential for ensuring greater impact of the work of the Chair at local, national, or cross-national levels. As such, the Chair team is highly encouraged to explore concrete collaborations with UNESCO as early as possible.

9. **NATIONAL COMMISSION FOR UNESCO.** You are encouraged to regularly engage with the National Commission for UNESCO of your country. National Commissions play a critical coordination and monitoring role and contribute to the success of the programme.

Finally, you are warmly encouraged to reach out to and engage with other UNESCO Chairs and UNITWIN Networks. The updated list is published here every month. All members of the Chair or Network are encouraged to join the LinkedIn Group – we just ask that the person identifies themselves with the Chair/Network to be admitted [e.g. Chairholder, Network Coordinator, UNITWIN Network team member, UNESCO Chair team member etc..].

The UNITWIN team looks forward to hearing from the UNESCO Chair or a regular basis – please add us in your mailing lists and do not hesitate to contact us for any questions you may have at unitwin@unesco.org. A welcome session will be organized in the coming weeks to answer any questions you may have.

Kind regards,

Giulia Altimari

Programme Assistant

UNITWIN/UNESCO Chairs Programme

Future of Learning and Innovation Division
7, Place de Fontenoy, 75007 Paris
g.altimari@unesco.org

unesco

6 attachments

Dr.ARUN PRASATH <raprasath@pondiuni.ac.in>

URGENT- Queries answered - PU–Agreement between the United Nations Educational, Scientific and Cultural Organization and Pondicherry University concerning A Unesco Chair on Renewable and Clean Energy for Sustainable Development at Pondicherry University – clarification – Reg.

1 message

Dr.ARUN PRASATH <raprasath@pondiuni.ac.in> Tue, Mar 26, 2024 at 7:53 AM
To: "M@il Team" <arpd66@yahoo.in>, Ajai Babu <dracademic@pondiuni.ac.in>, ar.pnd@pondiuni.edu.in
Cc: registrar <registrar@pondiuni.edu.in>, Rajneesh Bhutani <rbhutani@gmail.com>, Head Get <head.get@pondiuni.ac.in>, DEPUTY REGISTRAR <dr.pnd@pondiuni.edu.in>

Dear Sir,

I herewith addressed the point-by-point queries that were raised by the MoU Evaluation Committee members. I hope the information provided the necessary clarification and addressed all the concerns raised by the committee members.

Article 5 Reads: " The Chair's Team shall consist of the Chairholder, and if appropriate a Co-Chairholder, and the necessary personnel, researchers and students required to carry out the specific research, teaching and training, community engagement and communication activities of the Chair"

Query by the member for Article 5: Article 5 requires manpower to be placed in position - needs administrative approval.

Answer to address Article 5 related query: The UNESCO application submitted with the proposed chairholder as Professor R. Arun Prasath with his credential including his publications (refer application for inclusion of required recent publications of Prof. R. Arun Prasath) and his international collaborator support letters from Emeriti Professor Klaus Mullen (was host to Prof. R. Arun Prasath for DAAD fellowship from Germany), Professor Carrick McAfee Eggleston (Visiting professor to Prof. R. Arun Prasath's Lab from USA -Visited in 2014 under Full-bright fellowship), Professor Martina Stenzel (collaborator and former supervisor to Prof. R. Arun Prasath to work in Australia), Professor José Baltazar Salgueirinho Osório de Andrade Guerra (collaborator to Prof. R. Arun Prasath from Brazil with recent joint publications), Professor Dr. Rajesh Saiju (collaborator to Prof. R. Arun Prasath from Germany), and the Indian supporting letters (Dr. S.Sakthivel, Scientist-F & Head of ARCI, Dwipen Boruah, Managing Director, GSES and Dr. Sham Sundar Subbarao, Head, The NIE) submitted for UNESCO chair. The chairholder Prof. R. Arun Prasath and his department team will have the workforce. Once the approval of this agreement by UNESCO, a team comprising all the faculties of the department will be in place as per the activities mentioned in the submitted application under the heading E (e.g. Research and knowledge production, Publications, Websites and social media, Teaching or lecturing, Training and institutional capacity development workshops, Conferences and large events, Seminars / webinars /workshops, Community/civil society Engagement, etc)

Article 6 Reads: The Host Institution shall grant the Chair the facilities necessary to conduct research, teaching and training, community engagement and communication activities

Query by the member for Article 6: Article 6 requires financial approval for activities from the administration.

Answer to address Article 6 related query: The UNESCO Chair activities will be financially supported by the Indian chapter of South Asia Foundation (SAF-India), https://www.southasiafoundation.org/. Pondicherry University and SAF-India have a robust MOU (from 2010 and active) for supporting financially the SAF scholarships for the 16 meritorious students per year comprising eight autonomous chapters: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka to carry out their M.Tech Green Energy Technology courses from 2010 onwards. Currently, SAF-India grants 200000

USD per year and extends support every year. To support the activities of the UNESCO Chair in UMSGET, 60000 USD has been earmarked every year, i.e., 30% of the 200000 USD yearly grant for the Department. Hence, for the four-year UNESCO chair, a total of 240000 USD will be provided by SAF-India to utilize for the chair activities (Plz refer to the section subsection "f" of "D" related to the "Budget" application and the support letter of former VC Prof. Gurmeet Singh). In addition, in the name of UNESCO LOGO, we will secure additional support from national and international levels for activities.

Article 7 reads: The Host Institution shall arrange for the Chair to participate in UNESCO programmes and activities with a view to strengthening international academic cooperation. Wherever possible, the Host Institution shall arrange for the Chair to engage in the exchange of professors, teachers, researchers and students with other higher education institutions within the framework of the UNITWIN/UNESCO Chairs Programme.

Query by the member for Article 7: Article 7 requires financial assistance from the University for international travel-needs administrative approval.

Answer to address Article 7 related query: The above-given answer (Answer to address article 6 related query) can be considered to address Article 7 related query. The financial assistance for ANY travel needs of the Chair and related exchange activities can be met through SAF-allotted funds for the year and/or funds generated with the help of UNESCO LOGO after the agreement.

Article 10 reads: The Host Institution shall assume all expenses linked to the implementation of activities undertaken by the Chair.

Query by the memberfor Article 10: Article 10 clearly states that the financial burden on the University - needs to be approved by the administration.

Answer to address Article 10 related query: There is NO financial burden on our university with this UNESCO chair and certainly UNESCO LOGO helps to attract funding from national and international level. As per the application and approved by UNESCO, the UNESCO Chair activities will be financially supported by the Indian chapter of South Asia Foundation (SAF-India), https://www.southasiafoundation.org/. Pondicherry University and SAF-India have had a robust MOU since 2010 and are active to support financially. The above-given answer (Answer to address the Article 6 related query) can be considered to address the Article 10 related query.

Meanwhile, Giulia Altimari, Programme Assistant, UNITWIN/UNESCO Chairs Programme has sent a further kind reminder to receive the signed agreement before 29th March 2024. I request your kind to speed up the process for which I am thankful.

Thanking you and looking forward

Dr. R. ARUN PRASATH
Professor & Head
Laboratory for Energy Materials and Sustainability
Department of Green Energy Technology
Madanjeet School of Green Energy Technologies
Pondicherry University
Puducherry - 605 014, INDIA
Office: +91 0413 2654963
Mobile: +91 9487769611
Fax:+91 0413 2656758
Web:https://www.pondiuni.edu.in/faculy_profiles/dr-r-arun-prasath/

On Mon, Mar 25, 2024 at 2:45 PM M@il Team <arpd66@yahoo.in> wrote:

> **Sir,**

Sub: PU–Agreement between the United Nations Educational, Scientific and Cultural Organization and Pondicherry University concerning A Unesco Chair on Renewable and Clean Energy for Sustainable Development at Pondicherry University – clarification – Reg.

Ref: Your Letter No.PU/DGET/HOD/UNESCO-Chair Co-signature/2023-24/849&4797, dated 4.3.2024.

With reference to the subject cited above, the MoU Evaluation Committee members raised the following points.

1. *Article 5 requires manpower to be placed in position - needs administrative approval.*
2. *Article 6 requires financial approval for activities from the administration.*
3. *Article 7 requires financial assistance from the University for international travel- needs administrative approval.*
4. *Article 10 clearly states that the financial burden on the University - needs to be approved by the administration.*

Hence, you are requested to provide the clarification for the same to the Undersigned, for necessary action please.

Thanking you,

Yours faithfully,

Assistant Registrar (P & D)

Planning and Development Section

Pondicherry University

Processed : ID 2024IN2770_UNESCO Chair Agreement & Supporting Documents

2 messages

Dr.ARUN PRASATH <raprasath@pondiuni.ac.in> Thu, Mar 28, 2024 at 2:20 PM
To: "Altimari, Giulia" <g.altimari@unesco.org>
Cc: Unitwin <Unitwin@unesco.org>, "raprasath.get" <raprasath.get@pondiuni.edu.in>, "Boer, Benno" <b.boer@unesco.org>, "Midha, Neha" <n.midha@unesco.org>, Indian National Commission for Cooperation with UNESCO <natcom.in@natcom.unesco.org>, Delegation of India/Délégation de l'Inde <dl.india@unesco-delegations.org>, UNESCO New Delhi <newdelhi@unesco.org>, "Ramasamy, Jayakumar" <r.jayakumar@unesco.org>, "Lespine, Marie-Laure" <ml.lespine@unesco.org>, "Prince, Maya" <m.prince@unesco.org>, "Truong, Thu" <t.truong@unesco.org>, "Nichanian, Inga" <I.Nichanian@unesco.org>, "Ferri Hernandez, Maria Edelmira" <me.ferri-hernandez@unesco.org>

Dear Giulia Altimari,

I am pleased to attach with this email the co-signed agreement from our Registrar, Pondicherry University, for the establishment of the UNESCO Chair on “Renewable and Clean Energy for Sustainable Development” with the UNESCO Chair holder Prof. R. Arun Prasath in the Department of Green Energy Technology at Pondicherry University.

I am committed and eagerly await further guidance on our next steps to activate the UNESCO Chair programs.

Thanking you, and looking forward

Dr. R. ARUN PRASATH
Professor & Head
Laboratory for Energy Materials and Sustainability
Department of Green Energy Technology
Madanjeet School of Green Energy Technologies
Pondicherry University
Puducherry - 605 014, INDIA
Office: +91 0413 2654963
Mobile: +91 9487769611
Fax:+91 0413 2656758
Web:https://www.pondiuni.edu.in/faculy_profiles/dr-r-arun-prasath/

On Tue, Mar 26, 2024 at 8:07 AM Dr.ARUN PRASATH <raprasath@pondiuni.ac.in> wrote:

> Dear Giulia Altimari,
>
> Thank you very much for your kind email. Our administration is processing to get the agreement signed by our Registrar Professor Rajneesh Bhutani.
>
> I am grateful for the support and cooperation provided by the UNESCO Chairs Programme and Secretariat throughout this process. I look forward to a healthy and fruitful collaboration with UNESCO for which I am grateful.
>
> Thanking you
>
> Kind Regards
> ARUN
>
> Dr. R. ARUN PRASATH
> Professor & Head
> Laboratory for Energy Materials and Sustainability
> Department of Green Energy Technology
> Madanjeet School of Green Energy Technologies
> Pondicherry University
> Puducherry - 605 014, INDIA
> Office: +91 0413 2654963
> Mobile: +91 9487769611

Chair ID	Region	Country	Type	Chair/Network Title	University/Institution	Year of establishment	All keywords	Chairholder(s)	Web Site
2012CN0976	Asia and the Pacific	China	Chair	UNESCO Chair in Comparative Education	University of Hong Kong	2012	Education; Inclusive education; Teachers	Mark Bray	https://web.edu.hku.hk/knowledge-exchange/unesco-chair
2022CN1522	Asia and the Pacific	China	Chair	UNESCO Chair on Asia-Pacific Water-Food-Environment (WFE) Nexus	Wuhan University	2022	Water; Food; Science; Environmental conservation	Jiesheng Huang; Yufeng Luo	https://en.whu.edu.cn/
2005CN0709	Asia and the Pacific	China	Chair	UNESCO/COUSTEAU Ecotechnie Chair	Yunnan University	2005	Environmental engineering	Xiaokun Ou	https://english.ynu.edu.cn/
1998IN0106	Asia and the Pacific	India	Chair	UNESCO Chair for Human Rights, Democracy and Peace	Academy of Engineering and Educational Research	1998	Democracy; Human rights	Vishwanath D. Karad	https://mitpune.ac.in/
2020IN1417	Asia and the Pacific	India	Chair	UNESCO Chair on Experiential Learning For Sustainable Innovation and Development	Amrita Vishwa Vidyapeetham	2020	Sustainable development; Climate; Disaster risk reduction; Education; Environmental conservation	Maneesha V Ramesh	https://www.amrita.edu/unesco chair-sustainable-development/
2016IN1177	Asia and the Pacific	India	Chair	UNESCO Chair on Gender Equality and Women Empowerment	Amrita Vishwa Vidyapeetham	2016	Gender equality	Rao Bhavani	http://www.amrita.edu/
2021IN1452	Asia and the Pacific	India	Chair	UNESCO Chair on Inclusive Museums and Sustainable Heritage Development	Anant National University	2021	Cultural heritage	Amareswar Galla	https://inclusivemuseums.org/index.php/executive-director/
2010IN0912	Asia and the Pacific	India	Chair	UNESCO Chair for Peace and Intercultural Understanding	Banaras Hindu University	2010	Cultural diversity; Intercultural dialogue; Resilience; Higher education	Priyankar Upadhyaya	http://www.mcpr-bhu.org
2021IN1439	Asia and the Pacific	India	Chair	UNESCO Chair on Experiential Learning, Work Education and Community Engagement	Mahatma Gandhi National Council of Rural Education	2021	Teacher education	W.G. Prasanna Kumar	https://www.mgncre.org/about.html
1999IN0520	Asia and the Pacific	India	Chair	UNESCO Chair for the Promotion of the Culture of Peace and Non-Violence	Manipal Academy of Higher Education	1999	Sustainable development; Peace; Information literacy; Gender equality; Education	Madhav Das Nalapat	https://www.manipal.edu/gir/department-faculty/department-list/centre-for-north-east-studies11.html
2024IN2770	Asia and the Pacific	India	Chair	UNESCO Chair on Renewable and Clean Energy for Sustainable Development	Pondicherry University	2024	Climate; Education for sustainable development; Environmental conservation; Education for sustainable development; Science	Arun Prasath Ramaswamy	https://www.pondiuni.edu.in/
2012IN1004	Asia and the Pacific	India	Chair	UNESCO Chair in Inclusive Adapted Physical Education and Yoga	Ramakrishna Mission Vivekananda University	2012	Sport	Rangaraj Giridharan	https://rkmvu.ac.in/
2014IN1077	Asia and the Pacific	India	Chair	UNESCO Chair on Culture, Habitat and Sustainable Development	Srishti School of Art, Design and Technology	2014	Cultural heritage; Creativity; Cultural diversity; Education for sustainable development; Higher education	Neelkanth Hariprasad Chhaya	https://srishtimanipalinstitute.in/
2015IN1108	Asia and the Pacific	India	Chair	UNESCO/Cardinal Paul Poupard Foundation Chair on Interreligious and Intercultural Dialogue	St Andrew's College of Arts, Science and Commerce	2015	Sustainable development; Water; Oceans; Natural resources; Ecosystems	Aniceto Pereira; Giuseppe Musumeci	https://standrewscollege.ac.in/unesco/

Request for Creation of a Dedicated Web-Page for UNESCO Chair on "Renewable and Clean Energy for Sustainable Development" in the DGET domain-Reg

3 messages

Dr.ARUN PRASATH <raprasath@pondiuni.ac.in> Mon, Sep 30, 2024 at 12:49 PM
To: head cce <head.cce@pondiuni.ac.in>, KALESHA WJ <kalesha.cce@pondiuni.edu.in>, Ganabathi A <ganabathi.cce@pondiuni.ac.in>
Cc: Sundara Mohan <sundaramohan@pondiuni.ac.in>, Arun Prasath Ramaswamy <raprasath.get@pondiuni.edu.in>

To
The Systems Manager & Head
Computer Centre
Pondicherry University
Pondicherry – 605014

Subject: Request for Creation of a Dedicated Web-Page for UNESCO Chair on "Renewable and Clean Energy for Sustainable Development" in the DGET domain-Reg.
Ref: (i) Agreement between UNESCO and Pondicherry University, (ii) Welcome letter from UNESCO, (iii) UNESCO webpage proof for the establishment of UNESCO Chair, and (iv) Endorsement letter from MSF.

Dear Sir,

I am writing to request the creation of a dedicated web-page within the Department of Green Energy Technology's domain for the newly established UNESCO Chair on Renewable and Clean Energy for Sustainable Development. The web-page has to serve as a platform to host and maintain information about the Chair's activities, developments, a key communication tool for our local to global outreach, academia, industry, and research dissemination and achievements. As a first instance, I would like to include the following content on the webpage as attached in **Annexure-I**. I believe that the web-page will significantly enhance the visibility and outreach of the UNESCO Chair's activities. I kindly request your help for creating and maintaining the web-page for which I am thankful.

Encl: As per cited reference and Annexure -I - attached as pdf file and word file

Thanking you
ARUN

Dr. R. ARUN PRASATH
Professor & Head
Laboratory for Energy Materials and Sustainability
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Web:https://www.pondiuni.edu.in/faculy_profiles/dr-r-arun-prasath/

2 attachments

PONDICHERRY UNIVERSITY
VERS LA LUMIERE

SOUTH ASIA FOUNDATION-SAF

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Chair