Post-doctoral research position on radiative cooling

General description

In April 2024, we will start a 4-year EU Pathfinder project to design, characterize and develop novel devices to harvest energy in a bioinspired way. The project will be developed by a consortium of nine EU entities: Universidade do Minho and the International Iberian Nanotechnology Laboratory (INL) from Portugal; CSIC, University of Vigo, company Avanzare Innovation Tecnologica SL and Cooling Photonics company all from Spain; the University of Strasbourg (France), the University of Utrecht (Netherlands) and the company Sunplugged-solare Energiesysteme GMBH, from Austria.

ADAPTATION will develop energy-harvesting architectures with efficient light trapping simultaneously with powerless self-regulatory cooling capacities.

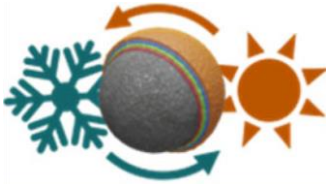
ADAPTATION radical new vision is to find a solution for sustainable energy management which relies on the development of new paradigms that will enable the integration of energy management in a wide range of services and products including transport vehicles, buildings, textiles, or housing appliances. To develop this technology, we will take **inspiration from the two natural most efficient energy management processes on Earth: photosynthesis and terrestrial radiative cooling.**

Main Tasks and responsibilities

The postdoctoral position is experimental with its core on photonics and thermal management. The photonic properties of the materials under study and their photon-phonon polaritons for cooling power will be characterized at ICMM-CSIC. In summary, the main activities will be:

- Characterization of the VIS and IR optical response of the materials under study in thin-films
- Colloidal self-assembly of materials
- Cooling power measurement of the materials under study under different conditions.

In addition, the position offers a unique possibility to be trained in a responsible and leading position within the EU-funded consortium. This allows to stablish strategic network connections with the partners. The applicant will be part of project assessments, meetings and periodic reviews. The applicant will also be able to stay in different labs of the consortium to implement different specific tasks. A tight collaboration with the partners developing and synthesizing the materials will be important. We also offer support and training on leadership and organization skills by defining a clear short and long term Personal Career Development Plan which includes: a) background identification: performance summary, career interests and abilities, identification of strengths and weaknesses; b) identification of short- and long-term development goals; c) development of a clear career plan by defining the necessary actions, the context for each action and the result of each action.



Requeriments

We are looking for an experienced researcher on experimental thermal management, radiative cooling, heat transfer and/or photonics. Experience on radiative-cooling measurements is a major plus. Experience on photonics and general optics is also good starting points. Experience on numerical modelling tools to calculate basic photonic properties of nanostructures and/or programing experience on python/matlab are also valuable. Maybe most important than anything: passionate and enthusiastic candidates are strongly encouraged to apply to this research position.

The Institute – ICMM

The Material Science Institute of Madrid (ICMM) is a research centre of the Spanish National Research Council (CSIC) located in the University Campus of Exellence in the north of Madrid, Spain. Our mission is to generate new fundamental and applied knowledge on materials and processes with added value, and transfer this knowledge to the productive sectors at the local, national and European scales. The ICMM aims to provide an environment of excellence with an interdisciplinary and transversal view on material science and applications with research lines devoted to a Sustainable World (energy and green processes), Health (therapy, diagnosis and nanomedicine) and Information and Communication Technologies (advanced photonic, electronic and quantum technologies).

Summary of conditions

- Full time work (37,5h/week)
- Contract Length: possibly up to four years
- Salary (negotiable) will depend on qualifications and demonstrated experience.
- Health insurance and social security covered.
- Estimated incorporation date: **April - 2024**

How to apply

All applications will require:

- A cover letter.
- A full CV including reference contact details.
- 2 reference contact details.

Enquiries regarding the vacancy should be made directly to the IP of the project **Dr. P. David García**: pd.garcia@csic.es and the group leader of the group **Prof. Cefe López**: c.lopez@csic.es

Hiring process

As public institution, CSIC is oblige to follow certain stablished hiring procedures. Once the position is settled for a candidate, we need to follow the hiring rules through the CSIC training and employment system which require the official correspondence of the PhD or Master degrees to the Spanish system. We will inform and guide the candidate all along the whole process.

Equal opportunities and diversity

ICMM - CSIC is an equal opportunity employer. The research group and the project coordinator are particularly committed to diversity and inclusion. People with different backgrounds and minorities are encouraged to apply to this research position.