



Postdoctoral Researcher in Solar Thermophotovoltaics

Institution: PROMES CNRS

Location: Odeillo, France

Duration: 12 months, with possibility to renew once

Start date: Flexible (within 2025)

Position Overview:

We are seeking a highly motivated and talented postdoctoral researcher to join our research team in the field of solar thermophotovoltaics (STPV). This position offers a unique opportunity to contribute to cutting-edge research focused on developing advanced materials and systems for highly efficient solar energy conversion that integrates thermal energy storage.

Laboratory:

The PROMES Laboratory is a world-renowned research facility part of the French National Research Centre (CNRS) focused on advancing solar energy technologies, with particular expertise in the fields of concentrated solar power, thermophotovoltaics, and renewable energy systems. The laboratory is located in two main sites, one in Perpignan and the other in Odeillo.

Located at 1600m elevation in the Pyrenees, at the border between France and Spain, the Odeillo site gathers solar concentration equipment at all scales. Notably, it hosts the largest solar furnace in the world, with megawatt thermal power capacity. These facilities enable reaching extremely high temperatures above 2000°C, with multiple applications including solar thermal energy conversion. These are complemented with characterization equipment dedicated to assessing the optical and structural properties of materials in these extreme temperature environments.

Research Activities of the Team:

We are currently developing a first prototype to demonstrate solar thermophotovoltaic energy production including high-temperature thermal energy storage. Current topics of particular interest include thermal energy storage in high-temperature phase-change materials (modelling and experiment), strategies to improve heat transfer (radiative, convective and radiative) within the system, or the theoretical assessment of performance limits and optimal configurations for (solar) thermophotovoltaic systems.

Research Topic:

The research topic will focus on concentrated sunlight absorption, thermal energy storage and/or thermophotovoltaic energy conversion, and will be defined with the candidate based on their experience and research interest. It may consist exclusively of theory and simulations, or experiments and characterization, or combine both.

Qualifications:

- A Ph.D. in Physics, Materials Science, Electrical Engineering or a related field with a focus on photovoltaics, photonics, heat transfer or renewable energy technologies.
- Proven experience with experimental techniques, including optical, electrical, and thermal characterization methods and/or with numerical tools and techniques for modelling optical, electrical and thermal aspects of STPV devices.
- Prior experience in solar energy research or thermophotovoltaics is highly desirable.

**Funding:**

PV STAR (Photovoltaics in non-standard conditions) is a French research program financed by Occitanie region within the framework of its initiative “Défi Clés”. It targets innovative research involving photovoltaic cells employed outside of their typical conditions (e.g., concentrated photovoltaics, thermophotovoltaics...). The project defined and written with the applicant will involve another partner institution from Occitanie region to be determined depending on the topic. The project will be evaluated by the executive committee to validate the allocation of the funding.

Application Instructions:

Interested applicants should submit the following documents to the e-mails below:

- A cover letter outlining your research interests and how your experience aligns with the project.
- A CV with a list of publications and contact details of academic or professional references.

Contacts:

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