



## MISSION TITLE

### IPVF Postdoc: Perovskite Reliability Testing

## POSITION DESCRIPTION

Function	Postdoctoral Researcher	Reference	IPVF-2020-R008
Contract type	COD	Duration	36 months
Starting date	ASAP	Education	PhD in Electrical Engineering, Material Science, Physics, or Chemistry: Applied to solar energy
Working Place	Palaiseau, Paris area	Salary	Profile dependant

## IPVF IN BRIEF

Become an actor of the Energy Transition by joining a team driven by innovation and impact to address today's most decisive challenges.

**IPVF** - Institut Photovoltaïque d'Île-de-France, is a global Research, Innovation and Education center, which mission is to **accelerate energy transition through science & technology**.

Gathering industrial PV leaders (EDF, Total, Air Liquide, Horiba and Riber) and world-renowned academic research teams (CNRS, Ecole Polytechnique), multi-disciplinary and international IPVF teams conduct research for clean energy technologies. Supported by the French State, IPVF is labelled Institute for Energy Transition (ITE).

*IPVF at a glance:*

- *An ambitious Scientific and Technological Program: from tandem solar cell technologies to economy & market assessment, state-of-the art characterization, photocatalysis and concepts breakthrough.*
- *A state-of-the-art technological platform: more than 100 tools, located in cleanrooms (advanced characterization, materials deposition, prototypes for fabrication, modelling...).*
- *A high-standard Education program (M.S. and PhD students).*

## JOB CONTEXT

Perovskite solar cells are the "rising star" of solar cell development in the world-wide research community of photovoltaics. The efficiency of stand-alone perovskite single-junction solar cells approach already the world record efficiencies of silicon solar cells and by combining perovskite cells with silicon cell to so-called tandem cells, an efficiency above 29% has been achieved by the international research community. However, the practical use for renewable energy production still requires improvements in the long-term stability perovskite cells. In our work group we therefore investigate the aging characteristics of perovskites in order to predict real-world performance under operating conditions and to guide the cell development at IPVF.

More information about the research program and IPVF/C2N institutes here:

IPVF Research Program involving this postdoc position: <https://ipvf.fr/jean-paul-kleider-philip-schulz-and-daniel-ory-introducing-programme-4-characterization-modeling-reliability/>

Websites: <https://www.ipvf.fr>

## MAIN MISSIONS

The candidate will directly report to the Deputy Programs Director of IPVF.

She/he will integrate a dynamic and talented team driven by innovation and results.

Her/his main missions will consist in the followings:

- Close cooperation with solar cell development team define cell and module structures for degradation tests.
- Adaptation of test protocols for reliability testing that address the challenges of perovskite cells.
- Definition and exploration of new test procedures according to the stages of the cell development.
- Characterization of solar cells and mini-modules before, after and during degradation procedures.
- Determining correlations between fabrication process technology details and solar cell performance.
- Building a solid phenomenology for performance changes under various aging stresses.
- Close cooperation with our teams for opto-electrical characterization and chemical- and interface analysis for failure analysis and scientific understanding of the degradation mechanisms.
- Hands-on testing of solar cells and modules in laboratory solar simulators and degradation tests.
- Being in charge of operating and maintaining equipment in the R&D lab (performing experiments, organizing the maintenance, ensuring proper and safe operation of the tool, calibration - when necessary). Support potential future upgrades of some tools.
- Regularly report results to the project team and to the management.

The candidate will integrate a dynamic and talented team driven by innovation and results.

## SOUGHT PROFILE

Knowledge	Know-how	Self-management skills
<ul style="list-style-type: none"> <li>▪ Chemistry, Physics, Electrical Engineering.</li> <li>▪ Characterization of solar cells and modules.</li> <li>▪ Solar module technologies, ideally perovskite modules.</li> <li>▪ Opto-electronics of photovoltaic devices or production technology of perovskite solar cells.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Solar module testing.</li> <li>▪ Solar cell characterization.</li> <li>▪ Reliability testing of solar modules, ideally perovskite modules.</li> <li>▪ Hands-on experience in solar technology development, ideally perovskite technology.</li> <li>▪ Measurement technology.</li> <li>▪ Setting up new experimental equipment.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Team-worker with drive to explore.</li> <li>▪ Ability to work in an interdisciplinary environment.</li> <li>▪ Ability to understand and work with experimental constraints.</li> <li>▪ Tenacious problem solver that can accurately assess, solve, implement, and communicate outcomes of complex challenges.</li> </ul>

## CONTACT

Cover letter and résumé to be sent to: [nils.harder@total.com](mailto:nils.harder@total.com) and [rh@ipvf.fr](mailto:rh@ipvf.fr)