UNIVERSIDAD POLITÉCNICA DE MADRID

Expression of Interest – UPM Supervisor

Marie Skłodowska Curie Action –Postdoctoral Fellowship 2024 (MSCA-PF-2024)

Contact Person/Scientist in charge	**Name**	Carlos
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Department /Institute /Centre	**Name**	Instituto de Energía Solar
	Address	Avenida Complutense, 30
	Province	Madrid
Research Area		Information Science and Engineering (ENG) Physics (PHY) Chemistry (CHE)
Brief description of the Centre/Research Group		The project will be carried out at the Instituto de Energía Solar (IES-UPM), a worldwide recognized centre devoted to Photovoltaic Solar Energy (PV) that was founded in 1979 by Prof. Antonio Luque. Follower of a collaborative research philosophy, during its more than 40 years of history the Institute has coordinated multitude of projects of great impact, with relevant contributions in aspects such as ultrapurification of silicon, novel solar cell structures (among them, the invention of the bifacial solar cell back in the 1970s and the proposal of the intermediate band solar cells in the 2000s), and the engineering of PV systems. Some of these projects have been considered by the European Commission as examples of success, and by USA and Japan as a source of inspiration in the implementation of their own R&D strategies. Nowadays, around 20 professors, 35 PhD students and 10 administrative and technical staff are employed at IES-UPM. The postdoctoral position will reinforce the research group "Silicon and New Concepts for Solar Cells", specifically in the research line on Silicon Technology, which is well equipped for the manufacturing and characterization of photovoltaic materials, devices and systems.
Project description		Being the workhorse of today's PV reality, crystalline Silicon technology has the potential to improve further, in terms of cost reduction, efficiency enhancement and minimization of its environmental impact. The Silicon technology research line is willing to contribute to this improvement by the proposal and characterization of unconventional silicon substrates, the design, manufacturing and characterization of novel silicon-based solar cells including their use as bottom subcells in tandem structures, and the reduction of the environmental footprint of the technology all along the lifetime of the solar module, from the material to the end-of-life. This project will benefit from the infrastructures of the Silicon Technology group:

	• A complete manufacturing line for silicon solar cells: wet benches, diffusion furnaces, Plasma Enhanced Chemical Vapor Deposition reactor, photolithography, vacuum evaporators with e-beam and Joule effect sources, etc. • A well-equipped characterization lab for PV materials and devices, including, among others: Electrochemical Capacitance-Voltage profilometer, FTIR, spectroscopic ellipsometry, carrier lifetime measurements by photoconductance decay techniques and microwave reflectivity, X-ray diffractometer, solar simulator, quantum efficiency measurements, UV-Vis-IR spectrophotometer, and Haynes-Shockley set up.
Applications: documents to be submitted and deadlines	CV with cover letter. Reference letters and/or contacts will be appreciated. Deadline: April 30th, 2024.