

Expression of Interest-UPM Supervisor

Marie Skłodowska Curie Action–Postdoctoral Fellowship 2026 (MSCA-PF-2026)

Supervisor Name	Luis F. González-Portillo	
Email	Lf.gonzalez@upm.es	
Department /Institute / Centre Name/Location	Department of Energy Engineering / Universidad Politécnica de Madrid	
Research Area	Information Science and Engineering (ENG)	Physics (PHY)
Research team/group	<p>The Thermal Energy for Sustainability (TE4S) research group focuses on applied thermal engineering, spanning component and system design, numerical analysis, and experimental validation. Its core areas include concentrating solar technologies, hydrogen production, thermal energy storage, turbomachinery, advanced power cycles, and energy system modelling. TE4S demonstrates strong innovation leadership with over 50 patents, more than 300 peer-reviewed publications, and nearly 50 PhD theses in under 20 years. These results stem from projects funded by Spanish and regional governments, the European Commission, and the U.S. Department of Energy, alongside close collaborations with institutions such as MIT, IASS-Potsdam, Sandia National Laboratories, and industrial partners.</p> <p>More information: https://short.upm.es/8a3zb</p>	
Keywords	CFD, Bubbles, Droplets, Hydrogen, Solar	
Research Focus	<p>Bubble and Droplet Modeling in Liquid Metals for Hydrogen and Solar Applications</p> <p>This project focuses on advanced CFD modeling of bubble and droplet dynamics in liquid metals, targeting applications in methane pyrolysis for CO₂-free hydrogen production and concentrating solar power (CSP) systems. The main objective is to understand and predict bubble and droplet behavior in liquid metal environments, where extreme thermophysical properties challenge existing numerical approaches.</p> <p>The research will center on the development of multiphase CFD models capable of reproducing gas–liquid metal interactions. These models will be systematically validated against experimental data obtained using the facilities of the TE4S laboratories. In the final stage, the validated models will be applied to optimize system designs by maximizing their overall efficiency, while strengthening ongoing collaborations with international institutions such as MIT.</p>	
Applications: documents to be submitted and deadlines	<p><i>CV, motivation letter, 2 recommendation letters.</i></p> <p><i>Submit to the supervisor before 24/04/2026</i></p>	