

## Expression of Interest-UPM Supervisor

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

<b>Supervisor Name</b>	Luis F. González-Portillo	
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<b>Department /Institute / Centre Name/Location</b>	Department of Energy Engineering / Universidad Politécnica de Madrid	
<b>Research Area</b>	Information Science and Engineering (ENG)	Physics (PHY)
<b>Research team/group</b>	<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: <a href="https://short.upm.es/8a3zb">https://short.upm.es/8a3zb</a></p>	
<b>Keywords</b>	Hydrogen, Methane Pyrolysis, experimental	
<b>Research Focus</b>	<p><b>CO<sub>2</sub>-Free Hydrogen Generation via Methane Pyrolysis in Liquid Metal Reactors</b></p> <p>This project focuses on the design, construction, and testing of a small-scale methane pyrolysis reactor to produce CO<sub>2</sub>-free hydrogen using liquid metals. The TE4S group has already developed a first prototype, and an upgraded laboratory-scale reactor will be built to improve key components and enable detailed performance analysis. This small-scale system will serve as a learning platform to gain the operational and design experience required for the development of a subsequent multi-kilowatt reactor.</p> <p>The selected researcher will work within a multidisciplinary team addressing complementary aspects of the technology. The project also includes the development of advanced process models, which will be systematically validated using experimental data generated in the project. In the final stage, the validated models will be applied to optimize reactor and system design, maximizing overall efficiency while strengthening collaborations with international partners such as MIT.</p>	
<b>Applications: documents to be submitted and deadlines</b>	<p>CV, motivation letter, 2 recommendation letters</p> <p>Submit to the supervisor before 24/04/2026</p>	