

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

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<b>Department /Institute / Centre Name/Location</b>	Department of Energy Engineering
<b>Research Area</b>	<p>Physics (PHY)</p> <ul style="list-style-type: none"> <li>- P5 - Applied physics: <ul style="list-style-type: none"> <li>o Computational modelling</li> <li>o Optical engineering, photonics, lasers</li> <li>o Photovoltaics</li> </ul> </li> </ul>
<b>Research team/group</b>	<p>The TE4S (Thermal Energy for Sustainability) research group active in a range of research lines: hydrogen production, electrification of process heat, production of renewable electricity and heat from solar energy, thermal energy storage and waste-heat recovery.</p> <p>TE4S manages fully instrumented turbomachinery testing cells, a liquid metal methane pyrolysis reactor, solar concentrators, a temperature sensor calibration facility and a PTES loop. TE4S has access to a wider range of facilities within UPM and the federated lab access platform of the Madrid region. Knowledge-wise, TE4S has internationally relevant expertise in heat transfers with notably in: coupled multiphysics models, radiative transfers, Monte-Carlo ray tracing, turbomachinery, microfluidics and dynamic system modelling.</p>
<b>Keywords</b>	Thermophotovoltaics, Monte-Carlo ray-tracing, Energy balance, multiphysics
<b>Research Focus</b>	<p><b>Advanced thermo-radiative models for thermophotovoltaics systems</b></p> <p>Thermophotovoltaic (TPV) systems convert high-temperature heat into electricity with infrared photovoltaic cells. Coupled with renewable heat generation and/or thermal energy storage, they open a new pathway for electricity storage and waste heat valorization.</p> <p>The numerical models used so far to analyze laboratory experiments and develop advanced TPV systems are dominantly based on significant simplifications (0D, band averaged properties, Lambertian surfaces, no thermal model, etc.) and are unable to perform fully coupled multiphysics and multispectral energy balances. Such energy balances are desirable to accurately understand experimental results and to design optimized TPV systems.</p> <p>This work seeks to develop efficient numerical 3D models for TPV systems where radiative transfer is treated with scientific ray-tracing and coupled with dedicated heat-transfer models. Collaborations with experimental groups and industry could be envisioned, depending on the orientation of the work.</p>
<b>Applications: documents to be submitted and deadlines</b>	Provide an updated academic CV, a motivation letter indicating the most relevant merits related to the research focus and at least one recommendation letter to <a href="mailto:charlesalexis.asselineau@upm.es">charlesalexis.asselineau@upm.es</a> by the end of April 2026.