

## Expression of Interest-UPM Supervisor

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

<b>Supervisor Name</b>	Charles-Alexis ASSELINEAU
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<b>Department /Institute</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 Photovoltaics</li> </ul> </li> </ul> <p>Information Science and Engineering (ENG)</p> <ul style="list-style-type: none"> <li>- G3 - Products and Processes Engineering: Product design, process design and control, construction methods, civil engineering, energy processes, material engineering <ul style="list-style-type: none"> <li>o Energy collection, conversion and storage, renewable energy</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>	Monte-Carlo ray-tracing, Photovoltaics, Multiphysics.
<b>Research Focus</b>	<p><b>Advanced optical models for bifacial photovoltaic systems</b></p> <p>Bifacial photovoltaic (BPV) modules are now widely used and their market share growing. By capturing light on both sides, BPV modules harvest more radiation than monofacial ones, with performance strongly influenced by environmental and resource conditions. Monte Carlo ray-tracing (MCRT) offers a powerful way to model the spectro-directional optics of complex components and environments. Recent studies show that MCRT improves the analysis and optimization of bifacial systems.</p> <p>This project will advance MCRT-based modelling of bifacial PV systems by a) develop efficient strategies to integrate the multiple length scales of module optics into large scale scenes; b) integrate BPV module models with electrothermal simulations, and c) enhance environmental radiation models.</p> <p>This work will be realized in partnership with The Australian National University (Canberra, Australia) and should include research stays there. Interest in global fellowship applications welcome and encouraged.</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.



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