UNIVERSIDAD POLITÉCNICA DE MADRID

Expression of Interest-UPM Supervisor

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

Supervisor Name	Charles-Alexis ASSELINEAU
Email	Charlesalexis.asselineau@upm.es
Department /Institute /	Department of Energy Engineering

Research Area	Information Science and Engineering (ENG)
	- G3 - Products and Processes Engineering: Product design, process design and control, construction methods, civil engineering, energy processes, material engineering
	  ○ Computational engineering and computer aided design
	  ○ Energy collection, conversion and storage, renewable energy
	  ○ Materials engineering

Research team/group	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. 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.
Keywords	Concentrated Solar Thermal, Renewable energy, Decarbonization, Solar energy
Research Focus	**Modularization in concentrated solar thermal tower systems** Concentrated Solar Thermal Tower (CSTT) technologies convert and store direct solar radiation in the form of heat, potentially at high temperatures. At the core of tower CSTT is the use of heliostat fields that concentrate sunlight on high-temperature receivers, placed at the top of a tower for optical reasons. The use of steam Rankine power blocks to produce electricity from CSTT heat has traditionally constrained CSTT systems to large, single unit systems. Alternative power block options and the rising need for decarbonized heat for industrial processes are potentially opening the field for a range of disruptive and innovative modularization options that could significantly affect CSTT efficiency and cost. Examples include multiple towers-receivers, modular and multi-aim heliostat fields, distributed storage systems, etc. This research focus welcomes candidates with interest in CSTT and curiosity for numerical multiphysics modelling, techno-economics and design optimization.
Applications: documents to be submitted and deadlines	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 charlesalexis.asselineau@upm.es by the end of April 2026.