

Marie-Skłodowska-Curie Actions – Postdoctoral Fellowships 2024

INL Expression of Interest

Research Group Leader /Research Group name:	
Sascha Sadewasser, Laboratory for Nanostructured Solar Cells	
Scientist in charge:	
Name & surname	Nicoleta Nicoara, Sascha Sadewasser
Contact email	Nicoleta.nicoara@inl.int , sascha.sadewasser@inl.int
Short description of the research group, including URL if applicable (Strengths and scientific achievements (publications, patents, etc.), important infrastructure (up to 2000 characters with spaces)):	
<p>The Laboratory for Nanostructured Solar Cells (LaNaSC) develops nano- and micro-structures of chalcopyrite-type semiconductors (Cu(In,Ga)Se₂) for application in photovoltaic energy conversion. On one hand, we develop advanced thin-film solar cells by the implementation of micro- and nanostructures. On the other hand, we develop and apply advanced scanning probe microscopy techniques for the characterization of solar cell materials and light-induced phenomena at the nanometer scale. Some of our recent results in the latter topic:</p> <p>“Inhomogeneities in the charge-carrier concentration of high-efficiency alkali-treated Cu(In,Ga)Se₂ revealed by conductive AFM tomography”; Nature Energy 9, 163 (2024). https://www.nature.com/articles/s41560-023-01420-7</p> <p>“Vacuum-healing of grain boundaries in CuInSe₂ solar cell absorbers”; Adv. Energy Mat. 13, 2204183 (2023). https://doi.org/10.1002/aenm.202204183</p> <p>“Chemical instability of chalcogenide surfaces near phase boundaries”; Nature Commun. 11, 3634 (2020). https://www.nature.com/articles/s41467-020-17434-8</p> <p>“Direct evidence for grain boundary passivation in Cu(In,Ga)Se₂ solar cells through alkali-fluoride post deposition treatments”; Nature Commun. 10, 3980 (2019). https://www.nature.com/articles/s41467-019-11996-y</p> <p>The is strongly involved in European projects and has a wide network of partners across Europe, from academia and industry.</p>	
Project title:	
Advanced scanning probe microscopy characterization of chalcogenide solar cells	
Project description (up to 2000 characters with spaces):	
The goal of the project is to improve the understanding of nanoscale phenomena in chalcogenide solar cell materials and devices by applying advanced scanning probe	

microscopy methods. The methods can include Kelvin probe force microscopy, conductive atomic force microscopy and other advanced method. Furthermore, there will be opportunity to develop and/or implement novel advanced methods to assess additional properties at the nanoscale. In this sense, the topic is of fundamental nature, nevertheless, the results obtained will have immediate impact in the applied field of photovoltaics. Samples for these studies can be obtained from partners within the various projects running in the group, among hose some of the top Universities and Research Organizations in Europe, as well as partners from the photovoltaics industry.

Research fields *(You may choose more than one)*

Chemistry (CHE)	<input type="checkbox"/>	Life Sciences (LIF)	<input type="checkbox"/>
Economic Sciences (ECO)	<input type="checkbox"/>	Mathematics (MAT)	<input type="checkbox"/>
Environment and Geosciences (ENV)	<input type="checkbox"/>	Physics (PHY)	<input checked="" type="checkbox"/>
Information Science and Engineering (ENG)	<input type="checkbox"/>	Social Sciences and Humanities (SOC)	<input type="checkbox"/>

Expiration date for Expressions of Interest from postdoctoral fellows: August 1, 2024

Necessary documents to be submitted (in addition to the required CV and motivation letter):

Full list of publications