

SUSTAINABLE MATERIALS, PROCESSES AND SYSTEMS FOR ENERGY TRANSITION

DM 630 Univ. La Sapienza/Carl Zeiss - Electron microscopy and nanocharacterization techniques for correlative protocols in studying advanced materials

Funded By	Ministero dell'Università e della Ricerca - MUR [Piva/CF:96446770586] UNIVERSITA' DI ROMA "LA SAPIENZA" [Piva/CF:02133771002] CARL ZEISS S.P.A. [Piva/CF:00721920155]
Supervisor	LAMBERTI ANDREA - andrea.lamberti@polito.it
Contact	Marco Rossi - Sapienza Università Roma - marco.rossi@uniroma1.it
Context of the research activity	<p>Electron microscopy and nanocharacterization techniques for correlative protocols in studying advanced materials for energy transition.</p> <p>The PhD project will focus on the use of electron microscopy and nanocharacterization techniques to develop correlative protocols for the analysis of advanced materials used in energy transition applications. By integrating these state-of-the-art methods, the project aims to gain a comprehensive understanding of material properties at the nanoscale. This will pave the way for innovations in energy efficient technologies and contribute significantly to the development of sustainable energy solutions.</p> <p>Progetto finanziato dal PNRR a valere sul DM 630/2024 - CUP: E14D24002340004</p>
Objectives	<p>The PhD grant is part of a wider collaboration between ZEISS and Sapienza University of Rome, and it will focus on the characterisation of advanced nanomaterials for use in energy systems and processes, with an emphasis on reducing environmental impact. The research programme will focus on the development of sophisticated multi-scale and correlative characterisation protocols, integrating different scales and techniques, which are crucial for understanding and optimising materials for energy applications.</p> <p>In this context, a key component will be the use of microscopy and tomography techniques, exploiting the instrumental capabilities available in the SNN (Sapienza Nanoscience and Nanotechnology Lab). This effort will be further supported by the PNRR research infrastructure project IENTRANCE@ENL (www.ientrance.eu).</p>

The PhD project will not only use existing nanocharacterisation methods, but will also develop new techniques and approaches to improve the study of materials at different scales and integrate them into innovative correlative protocols.

The ultimate goal is to train a PhD expert capable of leading in the field of nanomaterials for energy applications and contributing globally to sustainable energy solutions. This fellowship aims to develop a professional well versed in advanced materials characterisation, equipped to address future challenges in sustainable energy.

**Skills and
competencies
for the
development of
the activity**

Skills:
Describe the skills and characteristics the candidate should have to develop the research topic (max 500 characters) Knowledge and/or experience on at least one of these topics: Materials Science, Semiconductor, Physics of the Matter, Inorganic Chemistry, Multiscale Characterizations, Electron Microscopies, Scanning Probe Microscopies, Tomography.