

Postdoctoral or Senior Researcher in Photo-/Piezo-/Pyro-Electrochemical Hydrogen Production (M-ERA.NET Project: RESH)

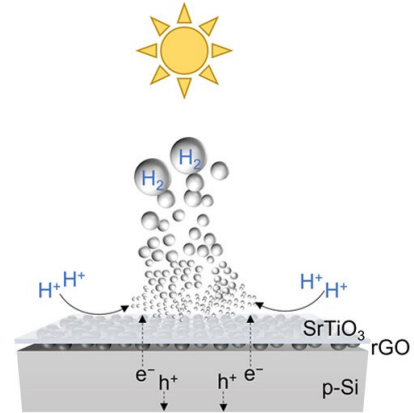
Location: Advanced Materials Department, Jožef Stefan Institute

Start Date: June 1st, 2025

Duration: 2 years, with possible extension

Application Deadline: May 5th, 2025

Are you passionate about clean energy and cutting-edge materials science? Join us in the RESH project – a groundbreaking international research effort funded by M-ERA.NET, focused on clean and sustainable low-carbon energy technology through next-generation green hydrogen and ammonia production.



Project Overview

- Radically innovative concept for photo-electrochemical (PEC) water splitting, enhanced by piezo- and pyrocatalysis.
- Development of novel Ni-based, noble-metal-free co-catalysts.
- Semiconductor/oxide heterostructures grown epitaxially on silicon substrates.
- Graphene-based interfaces for electronic coupling.
- Pulsed Laser Deposition (PLD) for atomically precise fabrication.
- Recycling of end-of-life solar panels into high-efficiency PEC devices.
- Goal: >10% solar-to-hydrogen conversion efficiency with robust ambient stability.
- Exploration of green ammonia synthesis for scalable H₂ storage.

Your Role

- Design and fabricate oxide/semiconductor heterostructures with controlled interfaces.
- Develop and test co-catalysts for enhanced charge transfer and stability.
- Contribute to PEC cell assembly and performance evaluation.
- Participate in integration of recycled PV materials into device architecture.
- Collaborate within an international, interdisciplinary consortium.

Requirements

- PhD in Materials Science, Chemistry, Physics, Nanotechnology, or related field.
- Experience with thin film deposition (e.g., PLD, ALD, sputtering).
- Strong background in semiconductor physics, catalysis, or electrochemistry.
- Familiarity with PEC systems or solar fuels is a strong asset.
- Independent thinking and a collaborative mindset.

We Offer

- Opportunity to work on a high-impact, frontier research project.
- Access to state-of-the-art facilities and international collaboration.
- Support for career development and publications.
- Competitive salary based on experience and role.

Apply Now: Please send your CV, motivation letter, and contact details for two referees by the deadline to matjaz.spreitzer@ijs.si.

Contact for inquiries: Prof. Matjaž Spreitzer, Advanced Materials Department, Jožef Stefan Institute, Jamova 39, 1000 Ljubljana, Slovenia (matjaz.spreitzer@ijs.si) or visit www-k9.ijs.si/en.