Nanostructured materials | Jožef Stefan Institute Ljubljana, Slovenia

SEMINAR III

Tuesday, 20.1.2026, 13:00, Kolar's Lecture Hall

Cantor Entropy Alloys for Hydrogen Evolution Reaction

Barbara Ljubec B., Jožef Stefan Institute

What if hydrogen evolution catalysts could be designed without relying on scarce and expensive noble metals? Entropy stabilized alloys (ESA) offer a promising pathway toward this goal. By combining multiple transition metals into a single and entropy stabilized structure, ESA enable new strategies for tuning catalytic activity and stability in the hydrogen evolution reaction (HER).

In this seminar, I will present our work on the synthesis, physicochemical characterization, and electrocatalytic evaluation of various Cantor-type ESAs (CoFeNi, CoFeNiMn, CoFeNiCr, and CoFeNiMnCr) for the HER in both alkaline and acidic Environments. The seminar will systematically explore the relationships between physicochemical properties (such as chemical composition, phase structure, and microstructure) and electrocatalytic activity and stability toward HER. The presented results will demonstrate how compositional disorder, when guided by entropy stabilization, can be transformed into a rational design strategy for realistic next generation HER electrocatalysts.

Kindly invited.