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Internationale Union für Vakuum Forschung, Technik und Anwendung

2025 IUVSTA Welch Scholarship Winners announced

The IUVSTA Awards Committee has selected two young scientists as 2025 IUVSTA Welch Scholarship winners:

Roey Ben David, Israel
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PhD in Physical Chemistry

Fritz Haber Institute of the Max Planck Society
Period: 1/3/2025-31/12/2025

Research Proposal. Understanding the surface science of well-defined catalytic systems at the gas-solid interface requires in situ characterization techniques capable of transitioning between ultra-high vacuum and ambient pressure conditions. During my PhD, I investigated atomistic aspects of gas-solid reactions on single crystal model catalysts using surface-sensitive spectroscopic techniques such as infrared spectroscopy and ambient pressure XPS. While these techniques provide valuable insights into the chemical state and intermediates on catalyst surfaces, they lack the ability to capture structural information. For my postdoctoral research, I aim to combine these spectroscopic techniques with operando electron microscopy—specifically, environmental scanning electron microscopy (ESEM) and operando transmission electron microscopy (TEM). Coupled with gas analyzers, these tools will allow me to correlate catalyst structure and morphology with catalytic activity and selectivity. This project will utilize operando electron microscopy to study how reaction conditions affect the structure, morphology, and chemistry of nanostructured model catalysts during ammonia decomposition reaction.

Samira Dorri, Sweden
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PhD in Materials Science

University of Cambridge
Period: 1/3/2025-31/12/2025

Research Proposal. At LiU I extended the technology for high-quality TM diboride superlattices (SLs) by magnetron sputter epitaxy. I could synthesize TM diboride SLs with atomically abrupt interfaces which will serve as novel material system for highly efficient neutron optics. I am interested in extending my unique technology to the TM oxide SLs with novel ferroelectric functionalities in addition to their skyrmionic structure. Skyrmion systems are attractive candidates for next-generation spintronic devices. To achieve this goal, I would like to spend 6 months at University of Cambridge in the group of Prof. Flewitt who are experts in oxide thin films/SLs. I expect, together, to achieve similar breakthrough in the quality of oxide superstructures. Once I develop the technology for fabricating skyrmion nanostructures, I intend to proceed with a Postdoc position at Nanyang Technological University in Singapore to conduct a systematic study in this field and achieve a deeper understanding of the formation and physical properties of skyrmion lattices. Overall, Welch award will permit me to gain experience and achieve breakthrough in the field of oxide SLs which otherwise wouldn't be possible for me.

Ana G Silva, Chair of the IUVSTA Welch Award Committee,
Timo Gans, Chair of the IUVSTA Awards Committee