

Division Chair Elections for Division 7 'Physical Electrochemistry'

Expression of Interest

Prof. Julia Kunze-Liebhäuser, University of Innsbruck, Institute of Physical Chemistry

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Dear Colleagues,

The ISE has consistently represented a community that fosters a sense of familial belonging. Despite its notable expansion in recent years, the ISE has retained a distinctive atmosphere of familiarity and personal support. I attended my first ISE meeting in Düsseldorf in 2002 at the end of my PhD, both as a presenting young scientist and as part of the organizing team, which made me very proud at the time.

My own scientific career has been truly interdisciplinary, moving from very fundamental physical electrochemistry and corrosion through bioelectrochemistry and materials electrochemistry back to energy conversion and storage and thus to the very foundations of physical electrochemistry, i.e., electrochemical interface science. I was fortunate to have excellent and highly supportive teachers, who represented a diverse range of role models and scientific specializations. They all shared a deep involvement in the ISE community, which has led to the establishment of almost all of my scientific collaborations.

During my time as Regional Representative of Austria, a role which I still actively pursue, I gained some experience in ISE community work. This allowed me to build bridges between different disciplines, such as electrochemistry and surface science. My aim was to bring surface scientists into the ISE, which has been very successful, and also to get electrochemists involved in surface science conferences, which has always been a common practice in my own group. The organization of a Heraeus seminar on 'Electrochemical Surface Science' and a focus session on the same topic at a DPG meeting in the past are two examples of actions in this direction that I have undertaken together with the current chair of Division 7.

Further cross-disciplinary activities are certainly forthcoming in the field of electrochemical energy conversion and storage, where electrocatalytic processes that happen in fuel cells and electrolyzers are central. Here, fundamental research is essential and necessary to gain the understanding required for the knowledge-based development of the field. However, it is equally important to include the application perspective and thus the technical electrochemistry approaches. Knowledge of both is needed to bridge gaps between disciplines and to enable technology development.

It is my personal and scientific interest to promote such joint interdisciplinary activities. In my opinion, Division 7 'Physical Electrochemistry' is a perfect platform for this.

It would therefore be an honour for me to contribute to the further development of the ISE and in particular of Division 7. As a candidate for the Chair, I am eager to learn more about the structure of the ISE and the work of the divisions, and I will dedicate my time and energy to realizing the vision outlined above.

Yours sincerely, Julia Kunze

Brief CV:

Born: 29th of December, 1974, in Neuss am Rhein (Germany)

Affiliation: Institute of Physical Chemistry, Materials- and Electrochemistry Group, University of Innsbruck (UIBK)

Innrain 52c, 6020 Innsbruck, Austria: <https://www.uibk.ac.at/de/physchem/>

ORCID: <https://orcid.org/0000-0002-8225-3110>

Google Scholar: <https://scholar.google.at>

Education and Work experience

- 2014 to date: Full Professor for Materials- and Electrochemistry and Head of the Institute of Physical Chemistry, University of Innsbruck, Austria.
- 2009-2012: Habilitation (Physical Chemistry) and Fellow of the Institute for Advanced Study (IAS), Technische Universität München, Chair of Technical Physics (U. Stimming), Germany.
- 2004-2009: Senior Scientist (with P. Schmuki), University of Erlangen-Nürnberg, Chair of Surface Science and Corrosion, Germany.
- 2002-2004: Post-Doctorate (with J. Lipkowski), University of Guelph, Canada.
- 2002-2002: Short post-Doctorate (with H.-H. Strehblow and G. Staikov), University of Düsseldorf, Institute for Physical Chemistry and Electrochemistry, Germany.
- 2000-2002: Ph.D. thesis (with H.-H. Strehblow and P. Marcus), University of Düsseldorf, Germany, and École Nationale Supérieure de Chimie de Paris, France.

Research interests

The research focus of my group is the investigation of the solid/liquid interface under reaction conditions; earlier in corrosion science, now in energy conversion and storage, such as electrocatalysis. Electrode materials range from single crystalline metal and bimetallic surfaces to compound materials, such as transition metal carbides and oxides that can have planar or nanostructured morphologies. Through the combination of electrochemistry with mainly *in-situ* analytics, such as electrochemical scanning tunneling microscopy (EC-STM), electrochemical IR spectroscopy (EC IRRAS), differential electrochemical mass spectrometry (DEMS), and near ambient pressure X-ray photoelectron spectroscopy (NAP-XPS), electrocatalytic activity can be related to the morphology and structure of electrodes, the nature of intermediates and products and the chemistry at the interface.

As head of the Institute of Physical Chemistry, I encourage collaboration between the different multi-disciplinary groups, comprising Surface Science, Heterogeneous Catalysis at high temperature and pressure, Materials Electrochemistry, and Technical Electrochemistry. We collaborate with leading theory groups in the field, where expansion towards electrochemistry advances both experimental and theory approaches.

Relevant other achievements:

- Hans-Jürgen Engell Prize of the ISE, awarded at the 56th Annual Meeting in Busan, 2005
- Editorial Advisory Board Member of Electrochemical Science Advances (ELSA) (since 2020) and the Journal of Electroanalytical Chemistry (since 2021)
- Member of the curatorship of the Austrian Science Fund (FWF) (2019-2023)
- Member of the FWF Cluster of Excellence MECS, Kick-Off in May 2024: <https://coe-mecs.at/WP/board-of-directors/>
- ISE Regional Representative of Austria (2022-2024)