

# JAN BALAJKA

## CURRICULUM VITAE

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TU Wien  
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## PROFESSIONAL EXPERIENCE AND EDUCATION

2020 – Assistant Professor, Vienna University of Technology, Austria  
2019 – 2020 Postdoctoral Associate, Cornell University, Ithaca, NY, USA (advisor: Melissa A. Hines)  
2018 Ph.D. in physics, TU Wien, Austria (advisor: Ulrike Diebold)

## RESEARCH INTERESTS AND AREAS OF EXPERTISE

Oxide, hydroxide and mineral surfaces  
Scanning probe microscopy (STM/AFM)  
Solid-liquid interfaces  
Heterogeneous ice nucleation  
Carbon capture and mineralization

## AWARDS

2019 Loschmidt Prize, Physical Chemistry Society, Austria  
2013 Dean's Prize, Brno University of Technology, Czech Republic  
2012 Erasmus mobility grant, Institut Néel & Université Joseph Fourier, Grenoble, France

## FIVE MOST IMPORTANT PUBLICATIONS

1. Johanna I. Hütner, Andrea Conti, David Kugler, Florian Mittendorfer, Georg Kresse, Michael Schmid, Ulrike Diebold, **Jan Balajka**\*  
Stoichiometric reconstruction of the  $\text{Al}_2\text{O}_3(0001)$  surface  
*Science* 385, 6714, 1241–1244 (2024), [10.1126/science.adq4744](https://doi.org/10.1126/science.adq4744)
2. **Jan Balajka**, Melissa A. Hines, William J. I. DeBenedetti, Mojmir Komora, Jiří Pavelec, Michael Schmid, Ulrike Diebold  
High affinity adsorption leads to molecularly ordered interfaces on  $\text{TiO}_2$  in air and solution  
*Science* 361, 6404, 786–789 (2018), [10.1126/science.aat6752](https://doi.org/10.1126/science.aat6752)
3. **Jan Balajka**, Jiří Pavelec, Mojmir Komora, Michael Schmid, Ulrike Diebold  
Apparatus for dosing liquid water in ultrahigh vacuum  
*Review of Scientific Instruments* 89, 8, 83906 (2018), [10.1063/1.5046846](https://doi.org/10.1063/1.5046846)
4. **Jan Balajka**, Ulrich Aschauer, Stijn F. L. Mertens, Annabella Selloni, Michael Schmid, Ulrike Diebold  
Surface structure of  $\text{TiO}_2$  rutile (011) exposed to liquid water  
*Journal of Physical Chemistry C* 121, 47, 26424–26431 (2017), [10.1021/acs.jpcc.7b09674](https://doi.org/10.1021/acs.jpcc.7b09674)
5. Christopher T. Parzyck, Alice Galdi, J. Kevin Nangoi, William J. I. DeBenedetti, **Jan Balajka**, Brandon D. Faeth, Hanjong Paik, Cheng Hu, Tomás A. Arias, Melissa A. Hines, Darrel G. Schlom, Kyle M. Shen, Jared M. Maxson  
Single-Crystal Alkali Antimonide Photocathodes: High Efficiency in the Ultrathin Limit  
*Physical Review Letters* 128, 11, 114801 (2022), [10.1103/PhysRevLett.128.114801](https://doi.org/10.1103/PhysRevLett.128.114801)

## INVITED AND DISTINGUISHED TALKS

- 2025/12      **Keynote talk** at symposium “Nanostructured Oxides for Energy Harvesting, Conversion, and Storage” within Pacifichem 2025 in Honolulu, Hawaii, USA
- 2025/12      **Invited talk** at symposium “Emerging Frontiers in Surface Spectroscopy and Microscopy” within Pacifichem 2025 in Honolulu, Hawaii, USA
- 2025/08/05      **Invited talk** at symposium “Advanced Catalyst Characterization” within 10th Asia-Pacific Congress on Catalysis (APCAT-10) in Singapore
- 2025/05/26      **Invited seminar** at the University of Innsbruck, Austria (host: Laerte Patera)
- 2025/05/15      **Invited talk** at Condensed Matter Physics Forum at Peking University, Beijing, China (host: Guangxu Ju)
- 2025/05/11      **Invited talk** at International Symposium on Molecules at Surfaces within First National Conference on Surface and Interface Science of the Chinese Chemical Society in Chengdu, China
- 2025/05/07      **Galen invited talk** at the Chongqing University, College of Materials Science and Engineering, Chongqing, China (host: Jian Xu)
- 2024/08/20      **Invited seminar** at the University of Illinois Chicago, Department of Chemistry, Chicago, IL, USA (host: Nan Jiang)
- 2024/06/05      **Invited talk** at Marcus Wallenberg Symposium MOWiiE - Metal-Oxide/Water Interactions in Electrochemistry: Theory Meets Experiment in Uppsala, Sweden
- 2024/03/21      **Post-deadline talk** at DPG 2024 - German Physical Society annual meeting in Berlin, Germany
- 2023/11/15      **Invited talk** at Operando SPM 2023 - 1st International Conference on Nanoscale Catalysis and Energy Conversion in Berlin, Germany
- 2023/11/03      **Invited seminar** at Pacific Northwest National Laboratory (PNNL), Richland, WA, USA (hosts: Zdenek Dohnálek and Zbyněk Novotný)
- 2023/07/03      **Invited attendee talk** at ZCAM Metal-Oxide Ultrathin Films and Nanostructures: Experiment Meets Theory in Zaragoza, Spain
- 2023/06/19      **Hot topic talk** at Cluster Meeting 2023 in Prague, Czech Republic
- 2022/09/01      **Invited seminar** at Uppsala University, Sweden (host: Chao Zhang)

## COMMUNITY ENGAGEMENT

- 2026      **Organizer of NC-AFM 2026** - *The 27th International Conference on Non-Contact Atomic Force Microscopy* in Innsbruck, Austria
- 2024      **Organizer of a Marcus Wallenberg Symposium MOWiiE** - *Metal-Oxide/Water Interactions in Electrochemistry: Theory Meets Experiment* in Uppsala, Sweden
- 2023      **Organizer of mini-symposium** on *Atomic-scale mineral-water interfaces* within 36<sup>th</sup> European Conference of Surface Science (ECOSS) in Łódź, Poland
- 2023      **Reviewer** of abstracts for ECOSS-36, in Łódź, Poland
- 2023      **Reviewer** for Deutsche Forschungsgemeinschaft (DFG) funding agency, Germany
- 2022      **Committee member** of Franz Viehböck Young Investigator Award, Austria

- 2022 **Expert referee** for Ph.D. stipend applications, Studienstiftung, Germany
- 2021 **Organizer of 18th IUVESTA Summer School** *Physics at Nanoscale* (hybrid due to Covid-19)
- 2020 **Committee member** of Franz Viehböck Young Investigator Award, Austria

#### Peer reviewer

*Nature Materials, Nature Communications, JACS, Angewandte Chemie, Acc. Chem. Res, Nano Letters, Chem (Cell), Physical Review Letters, J. Phys. Chem. Letters, J. Phys. Chem. C, Phys. Chem. Chem. Phys., Surface Science, Langmuir, Topics in Catalysis, Beilstein Journal of Nanotechnology, Physica Scripta, J. Phys. Condens. Matter*

## MENTORING

#### Graduate Students

- 2021 – *ongoing* Johanna Hütner (*Winner of 2024 Morton M. Traum Award of the American Vacuum Society*)
- 2023 – *ongoing* David Kugler
- 2022 – *ongoing* Andrea Conti (co-supervisor, computational modeling)
- 2023 – *ongoing* Aishwarya Sudhama (co-supervisor, supervisor: Chao Zhang, Uppsala University, Sweden)
- 2024 Soumyajit Rajak (visiting student from University of Illinois in Chicago, Nan Jiang's lab)

*Co-supervision of several other graduate students and postdocs*

#### Master Students

- 2022 David Kugler (Erasmus Internship)
- 2022 Dominik Hruža (Erasmus Internship)
- 2018 Mojmír Komora
- 2017 Mojmír Komora (Erasmus Internship)
- 2016 Zdeněk Jakub
- 2015 Zdeněk Jakub (Erasmus Internship)

#### Bachelor Students

- 2024 Arseniy Shukhov
- 2023 Milena Zehetner
- 2021 Sophie Wrathall
- 2018 Christopher Kearney
- 2015 Katharina Mayer

## TEACHING

- 2025 Fundamentals of Physics 2 - Exercises, TU Wien, Austria
- 2024 Experimental Exercises in Physics 3, TU Wien, Austria
- 2023 Surface Physics Lecture (substitute for U. Diebold), TU Wien, Austria
- 2023 Experimental Exercises in Physics I and 2, TU Wien, Austria
- 2022 Experimental Exercises in Physics 3, TU Wien, Austria
- 2021 Experimental Exercises in Physics 2, TU Wien, Austria

## OUTREACH

- 2025 Center for Bright Beams – NSF Science & Technology Center, USA  
*A talk and panel discussion on academic careers for graduate students and postdocs*
- 2024 Brno University of Technology, Czech Republic  
*30 years of the Institute of Physical Engineering, a talk on international collaboration with TU Wien*
- 2019 Columbia University, New York, NY, USA  
*Educational activities within Cornell & Columbia STEM Workshop for elementary and middle-school teachers*

2019 Harlem Promise Academy, New York, NY, USA  
*Educational activities within Cornell & Columbia STEM Workshop for 7<sup>th</sup>-grade students*

## **PERSONAL BACKGROUND**

Born May 21<sup>st</sup>, 1989, Hustopece, Czech Republic  
Citizenship: Czech Republic