



Curriculum Vitae Professor Dr Ulrike Diebold



Image: Markus Scholz | Leopoldina

Name: Ulrike Diebold
Born: 12 December 1961

Research Priorities: Surface physics, scanning tunneling/force microscopy, surface spectroscopy, molecular processes at surfaces, metal oxides, ternary compounds

Ulrike Diebold is an Austrian physicist whose research focuses on surface physics. Using scanning probe microscopy and surface spectroscopy techniques, she investigates the surface structures and molecular processes on surfaces, in particular on metal oxides. Such processes are important for industrial as well as environmental protection applications and energy storage.

Academic and Professional Career

- since 2022 Vice President, Austrian Academy of Science, Austria
- since 2011 Research Professor, Tulane University, New Orleans, USA
- since 2010 Deputy Director, Institute for Applied Physics, Vienna University of Technology (TU Wien), Vienna, Austria
- since 2010 Professor of Surface Physics, TU Wien, Vienna, Austria
- 2006 - 2009 Yahoo! Founder Chair in Science and Engineering, Tulane University, New Orleans, USA
- 2001 - 2009 Professor, Department of Physics, Tulane University, New Orleans, USA
- 1999 - 2001 Associate Professor, Department of Physics, Tulane University, New Orleans, USA
- 1998 Habilitation in Experimental Physics, TU Wien, Vienna, Austria
- 1993 - 1999 Assistant Professor, Department of Physics, Tulane University, New Orleans, USA
- 1990 - 1993 Postdoc, Department of Physics, Rutgers University, New Brunswick, USA
- 1990 PhD in Physics, TU Wien, Vienna, Austria

1986 Diplom Degree in Physics, TU Wien, Vienna, Austria

Functions in Scientific Societies and Committees

- since 2022 Member, Election Committee, Section Chemistry, Academia Europaea
- since 2021 Member Selection Committee, Stern-Gerlach Prize, German Physics Society (DPG),
Germany
- since 2021 Member, Board of Trustees, Jubilee Fund of the City of Vienna, Austrian Academy of
Sciences, Austria
- since 2021 Member, Editorial Advisory Board, Applied Surface Science
- since 2021 Member, Editorial Advisory Board, Materials Horizons
- since 2020 Member, Expert Panel, Discipline Physics and Engineering, Academic Research Fund
(AcRF) Tier 2, Singapore Ministry of Education (MOE), Singapore
- since 2020 Member, Scientific Advisory Board, Advanced Research Center for Nanolithography
(ARCNL), Amsterdam, Netherlands
- since 2020 Member, Editorial Advisory Board, Small Science
- since 2020 Member, Board of Reviewing Editors, Science
- 2020 - 2021 International Referee, Division 2, Research Council, Swiss National Science
Foundation (SNSF), Switzerland
- since 2019 Member, Scientific Board, Central European Institute of Technology (CEITEC), Brno,
Czech Republic
- 2019 - 2022 Representative of Germany, Section Surface Science, International Union for Vacuum
Science, Technique, and Applications (IUVSTA)
- 2019 - 2021 Member, Editorial Board, Physical Review Research
- since 2018 Member, Advisory Board, J. Heyrovsky Institute of Physical Chemistry, Prague, Czech
Republic
- 2018 - 2020 Member, Commission on Structure and Dynamics of Condensed Matter (C.10),
International Union of Pure and Applied Physics (IUPAP)
- 2018 - 2020 Chair, Section Surface Physics, DPG
- 2017, 2019 Member, Jury, Stateprize Consulting-Ingenieurconsulting, Federal Ministry Republic
Austria Labour and Economy, Vienna, Austria
- 2017 - 2021 Member, Awards Commission, Erwin Schrödinger Award as well as Elisabeth Lutz
Award, Austrian Academy of Sciences, Austria
- 2017 - 2020 Officer, Division Materials Science, European Academy of Sciences (EURASC)

- since 2016 Member, International Advisory Board, *njp Quantum Materials*
- 2016 - 2021 Deputy Member, Academy Council, Austrian Academy of Sciences, Austria
- 2016 Member, Search Committee, President of the Austrian Academy of Sciences, Austria
- 2015 Member, Committee, Theodore E. Madey Memorial Award, American Vacuum Society (AVS), USA
- since 2014 Member, Executive Board, Chemical-Physical Society Vienna, University of Vienna, Vienna, Austria
- 2014 - 2017 Member, Scientific Advisory Council, BESSY II Synchrotron Storage Ring, Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany
- 2009 - 2010 Member, Reader Panel, *Nature*
- 2009 Member, Committee of Visitors for the Materials Sciences and Engineering Division, Department of Energy Office of Basic Energy Sciences, U.S. Department of Energy, Washington, D.C., USA
- since 2003 Member, Editorial Board, *Surface Science Reports*

Project Coordination, Membership in Collaborative Research Projects

- 2021 - 2024 Speaker, Special Research Programme F 81 “Tackling Complexity in Materials Modeling TACO”, Austrian Science Fund (FWF), Austria

Honours and Awarded Memberships

- since 2021 Member, American Academy of Art and Sciences, USA
- 2020 Gerhard Ertl Lecture Award, Berlin Universities, Fritz Haber Institute of the Max Planck Society, Berlin, Germany
- 2020 Principal Investigator, Advanced Grant “Water at Oxide Surfaces: A Fundamental Approach”, European Research Council (ERC)
- 2019 Science Prize, City of Vienna, Vienna, Austria
- 2019 Member, *Academia Europaea*
- since 2015 Member, German National Academy of Sciences Leopoldina, Germany
- 2015 Blaise Pascal Medal in Materials Science, European Academy of Sciences
- 2015 25th Brdička Memorial Lecture, Heyrovský Institute of Physical Chemistry, Prague, Czech Republic
- since 2014 Member, European Academy of Sciences

- 2014 Eminent Visitor Award, Catalysis Society of South Africa CATSA, South Africa
- since 2014 Member, Austrian Academy of Sciences, Austria
- 2013 Wittgenstein Award, Austrian Science Fund (FWF), Austria
- 2013 Arthur W. Adamson Award, American Chemical Society, USA
- since 2012 Corresponding Member, Austrian Academy of Sciences, Austria
- 2012 Principal Investigator, Advanced Grant “Microscopic Processes and Phenomena at Oxide Surfaces and Interfaces“, ERC
- 2008 Fellow, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany
- 2008 Outstanding Researcher Award, School of Science and Engineering, Tulane University, New Orleans, USA
- since 2007 Fellow, American Association for the Advancement of Science, USA
- 2005 Fellow, The Science and Technology Society, AVS, USA
- 2004 Research Award, Tulane Liberal Arts and Sciences Faculty, Tulane University, New Orleans, USA
- 2004 Fellow, American Physical Society, USA
- 2003 Special Creativity Award, National Science Foundation (NSF), USA
- 2001 Friedrich Wilhelm Bessel Research Award, Alexander von Humboldt Foundation, Bonn, Germany
- 1997 CAREER Award, NSF, USA
- 1995 Junior Faculty Enhancement Award, Oak Ridge Associated Universities, Oak Ridge, USA

Research Priorities

Ulrike Diebold is an Austrian physicist whose research focuses on surface physics. Using scanning tunneling microscopy and surface spectroscopy techniques, she investigates the surface structures and molecular processes of metal oxides. Metal oxide surface processes are particularly important for industrial as well as environmental protection applications and energy storage.

She investigates processes on surfaces of metal oxide. They can be used as sensors for specific gases and their surfaces and interfaces play an important role in catalytic converters, batteries and fuel cells. Metal oxides are compounds of metals and oxygen. Oxide surfaces often show defects, such as atom vacancies. In turn, such defects as well as the processes on the surface often influence the inside of the material. Ulrike Diebold analyses surfaces one atom at a time to find out what occurs, using scanning tunneling microscopy (STM) and surface spectroscopy techniques. She was

the first researcher to make material defects at atomic level visible using scanning tunneling microscopy. Subsequently, she was able to observe chemical reactions triggered by these defects molecule by molecule. In cooperation with other research groups, she has modelled the results obtained as part of her experiments in order to gain a better understanding of the reactions on the surface.

Together with her team, Ulrike Diebold has also investigated titanium dioxide (TiO_2), which is being used as coating for implants such as hip joints. She was interested in the effects of titanium dioxide as a photocatalyst, as photocatalysts react to light – making it possible to regulate their activity using light. Based on her research, a coating for cotton fibres has been developed which independently decomposes stains when exposed to sunlight.

Furthermore, she is conducting research on compounds made up of three different elements (ternary compounds), the interface between solid and liquid phases, as well as working on creating high-resolution microscope images of surfaces even in liquid solutions.