DMITRIY BORODIN

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EDUCATION

11/2017 – 12/2021	**Dr. rer. nat. Chemistry,** *summa cum laude* MPI for Biophysical Chemistry and University of Göttingen, GER
10/2012 – 10/2017	**M.Sc. Chemistry**, *with distinctions* University of Göttingen, GER

SELECTED PUBLICATIONS

1. *"A quantum sensor for atomic-scale electric and magnetic fields"*
   T. Esat[+], D. Borodin[+], J. Oh *et al.*, *Nat. Nanotechnol*, (*accepted*, 2024).
2. *"Quantum Effects in Thermal Reaction Rates at Metal Surfaces"*
   D. Borodin*, N. Hertl, G. B. Park *et al.*, *Science* **377**, 394 (2022).
3. *"Measuring Transient Reaction Rates from Nonstationary Catalysts"*
   D. Borodin, K. Golibrzuch, M. Schwarzer *et al.*, *ACS Catalysis* **10**, 14056 (2020).
4. *"Following the Microscopic Pathways to Adsorption through Chemisorption and Physisorption Wells"*
   D. Borodin[+], I. Rahinov[+], P. R. Shirhatti *et al.*, *Science* **369**, 1461 (2020).
5. *"Velocity Resolved Kinetics of Site-Specific Carbon Monoxide Oxidation on Platinum Surfaces"*
   J. Neugebohren, D. Borodin, H. W. Hahn *et al.*, *Nature* **558**, 280 (2018).

(*: Corresponding Author, [+]: Equal Contribution)

FELLOWSHIPS AND AWARDS

2023	**Feydor-Lynen Fellowship of the Alexander von Humboldt Foundation** Postdoc funding at the Center for Quantum Nanoscience, Seoul, South Korea
2023	**Otto-Hahn Medal and Otto-Hahn Award** For outstanding achievements during doctoral research with opportunity to establish an independent research group at a Max-Planck institute in Germany
2022	**Richard-Zsigmondy Award** Best doctoral research at the faculty for chemistry in Göttingen
2014, 2016	**Award for Best Non-Independent Teaching in Physical Chemistry** Prize for best tutorials seminars in physical chemistry. Voted by students.

RESEARCH EXPERIENCE

03/2022 – present **Postdoctoral research**
Institute for Basic Science, Center for Quantum Nanoscience, KOR
Advisor: Andreas J. Heinrich and Yujeong Bae
- Investigation of spin dynamics of single atoms and molecules on surfaces using Electron Spin Resonance Scanning Tunneling and Atomic Force Microscopy.

Keywords: *spin dynamics, low temperature STM, AFM, single molecule ESR, atom manipulation, molecular magnetism, atomic qubits, quantum sensor*.

01/2022 – 02/2023 **Postdoctoral research**
MPI for Multidisciplinary Sciences, GER
- Instrumental development for Velocity Resolved Kinetics to study nonstationary phenomena in heterogeneous catalysis.

Keywords: *high repetition-rate fs-laser, ultrafast particle imaging, event camera, non-stationary catalysis.*

11/2017 – 12/2021 **Doctoral research**
MPI for Biophysical Chemistry and University of Göttingen, GER
Supervisor: Alec M. Wodtke and Theofanis N. Kitsopoulos
- Development of precise experimental methods for the investigation of site-specific reaction and desorption rates on model catalysts.
- Development of statistical rate models for benchmarking energetics for molecule-surface interactions from precise rate measurements.

Keywords: *ion and velocity map imaging, REMPI, reaction kinetics and dynamics, molecular beams, transition state theory, statistical mechanics*.

11/2016 – 01/2017 **Research internship**
German Aerospace Center for Combustion Technology, Stuttgart, GER
Supervisor: Patrick Oßwald and Markus Köhler
- C4-alkane and alkene combustion chemistry at atmospheric pressures.

Keywords: *laminar flow reactor, molecular beam mass spectrometry (MBMS).*

SELECTED TALKS

6.[+] *'Minutes-Longs Spin Lifetime of a Molecule "standing" on a Metal Surface'*
3rd Spins on Surfaces Workshop, San Sebastian, ESP (09/2023)

5.[*] *'Making Kinetics at Surfaces a More Exact Science'*
30th International Symposium on Molecular Beams, Crete, GRE (06/2023)

4.[#] *'Velocity Resolved Kinetics – Towards Elementary Step Rates at Catalytic Surfaces'*
Bunsen Society Annual Meeting, Gießen, GER (09/2022)

3.[*] *'Benchmark non-reactive Interactions of NH_3 at Pt — Explore the Limitations of Modelling Approaches in Kinetics at Surfaces'*
Bunsen-Discussion Meeting, Göttingen, GER (04/2022)

2.[+] *'The Influence of Electron Spin on the Rate of Thermal Reactions at Metal Surfaces'*
34th Symposium on Surface Science, St. Christoph, AUT (03/2022)

1.[*] *'Probing Molecule-Surface Interactions through Thermal Desorption Rates'*
GDCh Colloquium, Göttingen, GER (12/2021)

([*]: Invited Talk, [+]: Hot Topic Talk, [#]: Keynote Lecture)