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Water-Related Adsorbates on Stepped Platinum Surfaces

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List of Publications

- Kolb, M.J., Farber, R.; Derouin, J.; Badan, C.; Calle-Vallejo, F.; Juurlink, L.B.F.; Killelea, D.R. and Koper, M.T.M.: *Double Stranded Water on Stepped Platinum Surfaces*, Phys. Rev. Lett., 2016, submitted
- Shen, J.; Kolb, M.J.; Gittle, A.J. and Marc T.M. Koper*: *DFT Study on the Mechanism of the Electrochemical Reduction of CO₂ Catalyzed by Cobalt Porphyrin*, J. Phys. Chem. C, 2016, DOI: 10.1021/acs.jpcc.5b10763
- Bockstedte, M.; Michl, A.; Kolb, M.J.; Mehlhorn, M. and Morgenstern, K.: *The incomplete bilayer termination of the ice (0001) surface*, J. Phys. Chem. C, 2016, 120 (2), pp 10971109
- Kolb, M.J., Wermink, J.; Calle-Vallejo, F.; Juurlink, L.B.F. and Koper, M.T.M.: *Initial stages of water solvation of stepped platinum surfaces*, Phys. Chem. Chem. Phys., The Royal Society of Chemistry, 2016, 2016,18, 3416-3422
- Calle-Vallejo, F.; Díaz-Morales, O.A.; Kolb, M.J. and Koper, M.T.M. : *Why Is Bulk Thermochemistry a Good Descriptor for the Electrocatalytic Activity of Transition Metal Oxides?*, ACS Catalysis, 2015, 5, 869-873
- Kolb, M. J.; Calle-Vallejo; F., Juurlink, L.B.F. and Koper, M.T.M. : *Density functional theory study of adsorption of H₂O, H, O, and OH on stepped platinum surfaces*, The Journal of Chemical Physics, 140, 134708, 2014

- Li, H.; Calle-Vallejo, F.; Kolb, M.J.; Kwon, Y.; Li, Y. and Koper, M.T.M. : *Why (100) Terraces Break and Make Bonds: Oxidation of Dimethyl Ether on Platinum Single-Crystal Electrodes*, Journal of the American Chemical Society, 2013, 135, 14329-14338

Curriculum Vitae

Manuel Kolb was born on June, 22nd 1986 in Lauf an der Pegnitz, Germany. After finishing *Gymnasium* with the Abitur, he studied Physics at the Friedrich Alexander Universität Erlangen-Nürnberg. His studies finished with a one year Diplomarbeit in the group for theoretical solid state physics of Prof. Dr. Oleg Pankratov and the supervisor Dr. Michel Bockstedte. The title of his diploma thesis was "Surface Vacancies and Low-Coordinated Lattice-Sites on Metal Oxide Surfaces", studying the electronic structure of defect sites on magnesium oxide. He finished his studies with the degree of Diplom-Physiker in September 2012. After this he continued working under the supervision of Michel Bockstedte as a research assistant in the DFG project "Interaction of long living solvated electrons with adsorbates at the surface of ice" until the end of December 2012.

In January 2013 he joined the research group of Marc Koper as a PhD student on the project "Water-Related Adsorbates on Stepped Platinum Surfaces" as part of a TOP grant awarded to Marc Koper and Ludo Juurlink. The aim of this work was to understand the interaction between regularly stepped platinum surfaces and the electrochemically relevant adsorbates H, O, OH and H₂O in the context of earlier UHV experiments. The results of this work are presented here. During the project he spent 3 months as a visiting scientist in the group of Prof. Hannes Jonsson and Dr. Egill Skulason at the University of Iceland. Several parts of this work have been presented at international conferences.

