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On-Surface Design and Characterization of Magnetic Macromolecules SHIH-HSIN CHANG, Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan, ANDREW DILULLO, KENDAL CLARK, Department of Physics and Astronomy, Ohio University, Athens OH 45701, USA, JAN-PETER KLOECKNER, MARC-HEINRICH PROSENC, Institute of Inorganic Chemistry, University of Hamburg, Germany, ROLAND WIESENDANGER, GERMAR HOFFMANN, Institute of Applied Physics, University of Hamburg, Germany, SAW-WAI HLA, Department of Physics and Astronomy, Ohio University, Athens OH 45701, USA — The formation of molecular chains from basic magnetic molecular building blocks is addressed on various surfaces. Via a surface catalyzed reaction multi-spin macromolecules are synthesized in ultra-high vacuum and then investigated by scanning tunneling microscopy (STM) at low temperatures. In my presentation, I will discuss the impact of the surface on the catalytic step and present a systematic comparison between Cu(111), Cu(100), NaCl/Cu(111), Co/Cu(111), and Au(111) surfaces. Depending on the substrate system, either unwanted sideproducts or spin-active macromolecules are created. In the latter case, scanning tunneling spectroscopy measurements are performed revealing an intermolecular spin-spin interaction through the analysis of the Kondo resonance. Our approach shades new light on molecular magnetism where magnetically coupled complexes will be synthesized from basic units on surfaces for future spintronic applications.

Shih-Hsin Chang
Research Center for Applied Sciences, Academia Sinica, Taipei, Taiwan

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