SCA Synthetic Carbon Allotropes SFB953

GSMS Graduate School Molecular Science

FAU Friedrich-Alexander-Universität Erlangen-Nürnberg

EINLADUNG

zu einem Vortrag
im Rahmen des Seminars des Sonderforschungsbereiches 953 „Synthetic Carbon Allotropes“ und der Graduate School Molecular Science

am Mittwoch, 28. September 2022, 17:15 Uhr
im Hörsaal C1 des Chemikums, Nikolaus-Fiebiger-Str 10, Erlangen

Es spricht:

Prof. Dr. Josef Michl

University of Colorado, Boulder, USA

zum Thema:

”Synthesis of Porphene, an Antiaromatic Analog of Graphene”

Prof. Dr. A. Hirsch
(Sprecher SFB 953)

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Synthesis of Porphene, an Antiaromatic Analog of Graphene

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Two-dimensional organic materials offer atomic precision for optoelectronics and energy-efficient nanoelectronics, but most are not easily patterned and tuned. The fully conjugated Zn-porphene, $(C_{20}N_4Zn)_\infty$ has now been prepared from Zn porphyrin by oxidative polymerization on aqueous surface and transferred to solid substrates. Its structure was established by imaging as well as in-situ and ex-situ spectroscopy. Reversible insertion of other metal ions is possible and promises an atomic canvas for painting with thousands of distinct metal ions and ligands without taking any π centers out of conjugation. Unlike earlier computational results, which predicted a *P*4*mm* (D_{4h}) square unit cell and metallic conductivity, ours resemble those for antiaromatic molecules and predict Zn-porphene to be a two-dimensional antiaromatic semiconductor with a pair of *P*2*mm* (D_{2h}) rectangular unit cells, rapidly interconverting via a *P*4*mm* (D_{4h}) square structure by tunneling and/or thermal excitation. This result is supported by measurements of electrical conductivity and of N(1s) chemical shift in X-ray photoelectron spectra.