CRC Seminar Series

DATE: 19 November 2020
TIME: 3:00 PM – 5:00 PM
LOC: Online Zoom Meeting

GUEST SPEAKER:
Professor Dr. Andreas Hirsch
Department of Chemistry and Pharmacy & Interdisciplinary Center for Molecular Materials (ICMM), University of Erlangen-Nuremberg

TITLE:
"Chemical Functionalization of Graphene and Inorganic 2D-Materials"

ABSTRACT:
Chemical functionalization of new C-allotropes such as the 2D-graphene is of fundamental interest and opens the door to unprecedented materials applications. We will report on the development of efficient functionalization protocols for graphene using both covalent and non-covalent approaches. In particular, the reductive functionalization of graphene allows for the attachment of a variety of functional systems such as porphyrines and fullerenes to the basal plane. A fundamental challenge of graphene functionalization is the spatially resolved covalent patterning of this 2D-system. We will also emphasize our recent success in this direction. We have demonstrated that both mask assisted patterning of graphene and laser writing can be used and even be combined to generate hierarchically ordered multifunctional 2D-architectures. The potential of practical applications is enormous. This includes chemical information storage exemplified by complete write/read/erase cycles. Moreover, we will present our recent on the chemical functionalization of other 2D-materials such as particular black phosphorus (BP) and MoS_2.

PROFILE OF PROFESSOR DR. ANDREAS HIRSCH:

Andreas Hirsch received his Ph.D. in 1990 from the University of Tübingen. From 1990 to 1991 he was a postdoctoral fellow at the Institute for Polymers and Organic Solids in Santa Barbara, California in the group of Prof. Wudl. He subsequently returned to Tübingen as a research associate at the Institute for Organic Chemistry, where he received his Dr. Habilitus in 1994, for which he was honored with a variety of prizes and awards. In February 1994 he joined the Chemistry Faculty at the University of Karlsruhe as a Professor of Organic Chemistry. Since October 1995, he has been chaired Full Professor of Organic Chemistry at the University of Erlangen-Nürnberg (FAU). In 2004 he became Adjunct Professor at Rice University in Houston and Senator at the FAU. Between 2004 and 2008 he served as Fachkollegiat for Molecular Chemistry at the Deutsche Forschungsgemeinschaft DFG. In 2005 he declined an offer for a joint appointment as Welch Professor of Chemistry at Rice University Houston and Welch-Cullen Professor of Chemistry and Nanotechnology at University of Texas Health Science Center in Houston. The offer was initiated and strongly supported by Prof. Smalley (Nobel Prize in Chemistry 1996 for the discovery of the fullerenes). Between 2006 and 2007 he was Vice-Dean of the Faculty of Natural Sciences at FAU. Among his many prizes and awards are two ERC-Advanced Grants in 2009 and 2017.