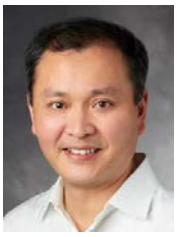
TECHNISCHE UNIVERSITÄT DRESDEN

Collaborative Research Centre 1415 „Chemistry of Synthetic Two-Dimensional Materials"

Seminar

DATE: 14 July 2022
TIME: 3:00 PM
LOC: IFW / Lecture Hall (1st floor)



GUEST SPEAKER:

Prof. Dr. Hongjie Dai
Stanford University, Department Chemistry, School of Humanities & Sciences

TITLE:

"Carbon-Based Nanoscience"

ABSTRACT:

This talk presents Prof. Hongjie Dai's work on carbon-based nanosciences in the past 25 years at Stanford University. Prof. Hongjie Dai will review the group's work on oriented carbon synthesis, physics and electronic devices of single-walled carbon nanotubes including field effect transistors and electronic sensors, and synthesis of high quality graphene nanoribbons with smooth edges. Moreover, he will then present the work on carbon-based nanomaterials for renewable energy research, including the synthesis of inorganic nanomaterials on graphene and carbon nanotubes for electrocatalysis/seawater splitting and batteries. Finally, he will present his group's work on enabling rechargeable Al-battery, and the recent Na/Cl_2, and Li/Cl_2 batteries, all of which employ novel carbon materials as the positive electrodes.

PROFILE OF PROF. DR. HONGJIE DAI:

Hongjie Dai research spans chemistry, physics, and materials and biomedical sciences, leading to materials with properties useful in electronics, energy storage and biomedicine. Hongjie Dai made pioneering contributions to low dimensional carbon materials incl. carbon nanotubes and graphene nanoribbons. Recent developments include near-infrared-II (NIR-II, also called short-

wave infrared SWIR) fluorescence imaging, ultra-sensitive diagnostic assays, a fast-charging aluminum battery, Na/Cl_2 and Li/Cl_2 rechargeable batteries and inexpensive electrocatalysts that split sea-water into oxygen and hydrogen fuels. Born in 1966 in Shaoyang, China, Hongjie Dai began his formal studies in physics at Tsinghua University (B.S. 1989) and applied sciences at Columbia University (M.S. 1991). He obtained his Ph.D. from Harvard University and performed postdoctoral research with Dr. Richard Smalley. He joined the Stanford faculty in 1997, and in 2007 was named Jackson–Wood Professor of Chemistry. Among many awards, he has been recognized with the ACS Pure Chemistry Award, APS McGroddy Prize for New Materials, Julius Springer Prize for Applied Physics and Materials Research Society Mid-Career Award. He has been elected to the American Academy of Arts and Sciences, National Academy of Sciences (NAS), National Academy of Medicine (NAM) and Foreign Member of Chinese Academy of Sciences.