nanoSeminar Series 2021

Institute for Materials Science

M.Sc. Shirong Huang

Institute for Materials Science and Nanotechnology, TU Dresden

Status Talk (PhD Thesis) on Gas Sensors

Thursday, November 4th 2021
13:15 – 14:00

Normal: Seminar Room 115, Hallwachsstr. 3 (HAL)
Pandemic version: https://tinyurl.com/nanoSeminar-GA

Gas sensors are extensively utilized in monitoring air quality, ensuring public safety, and detecting released trace gases in countless industrious fields. Accordingly, the development of highly efficient, sensitive, selective, reliable, low power consumption and low-cost gas sensors is in considerable demand. A myriad of gas sensors based on traditional metal oxide semiconductor (MOS) materials have been developed, nevertheless, the selectivity and power-consumption of these sensors are still far from satisfactory. Inspired by human olfaction, advanced nanomaterials as well as artificial intelligence technology may provide the solution to these issues. In this work, we develop pristine graphene based highly sensitive gas sensors working at room temperature. In combination with machine learning techniques, the selectivity of pristine graphene-based gas sensors is significantly enhanced, which present excellent performance towards odor discrimination and identification.

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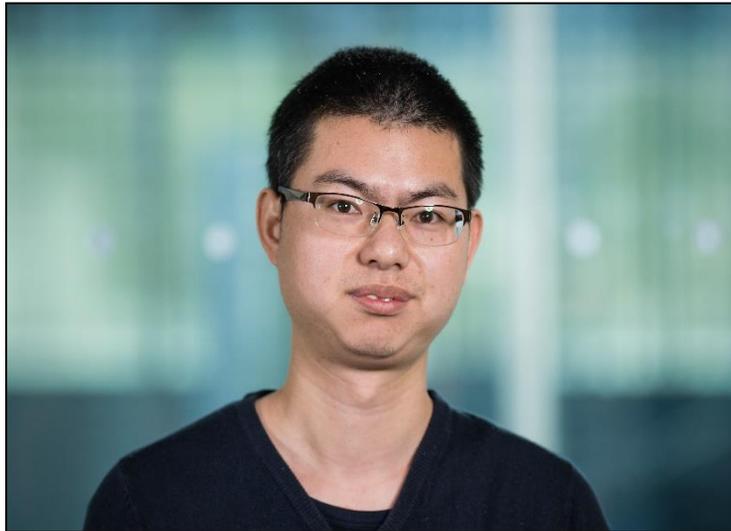
Shirong Huang received his Bachelor degree on Mechanical Engineering in 2011. After that, he joined Prof. Johan Liu's group to do his master program on "Graphene-based thermal management materials for high power electronic devices" in Shanghai University. He obtained his master degree in 2014 and later he stayed in Prof. Johan Liu's group as research associate working on the development of carbon nanomaterials (CNTs, graphene, etc.) based thermal management materials till Sep., 2017. In Oct., 2017, he joined Prof. Dr. Gianaurelio Cuniberti's chair as a PhD student. His doctoral research topic is development of graphene-based gas sensors for gas detection as well as graphene-based electronic nose (e-nose) for gas recognition.

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