

UNIVERSITY OF CALIFORNIA, IRVINE

DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

SPECIAL SEMINAR

(CAR)BORANE CLUSTERS FOR MODIFICATION OF METAL SURFACES



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CHEMISTRY
THE CZECH ACADEMY OF
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1:00 - 2:00 PM

ISEB, Conference Room 4020

Abstract: Carborane clusters have become an important class of molecules for self-assemblies. Their rigid molecular structures and rich isomeric forms enable to investigate particular physical properties of their 2-D assemblies while keeping the surface pattern either identical or close to identical. The respective self-organized monolayers exhibit fewer types and lower total number of surface defects, partly as a consequence of their low conformational freedom. In our laboratories we have been using these molecules as basic constituents for better understanding of some of the most fundamental self-assembly principles and intermolecular interactions that lead to a certain supramolecular structure and function. We shed more light on several key aspects such as the interaction of these molecules with flat gold, silver, and copper surfaces, we analyzed and showed the effect of their dipole moment orientation and magnitude on the surface properties (such as work function changes) and, not the least, we opened these monolayers to further chemistries by introducing additional functional groups that are exposed from the surface. This interdisciplinary contribution summarizes several of the above-mentioned aspects but also shows how these species can be advantageously used to generate new types of stable interfaces for further research and applications in bio-medicinal sciences.

Bio: Dr. Baše attained his Ph.D. degree from the Institute of Chemical Technology in Prague and works as a senior scientist at the Institute of Inorganic Chemistry of the Czech Academy of Sciences, where his group focuses on functionalized cluster molecules as constituents of self-assembled materials. Over his carrier he has established and leads several official (either agreement-based or grant-supported) international collaborations with institutions in the USA, India, Germany, Switzerland, and elsewhere. In 2019, Dr. Baše was a Fulbright-Masaryk senior scholar to the University California in Los Angeles. Further information can be found on <https://tbase.iic.cas.cz/>

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