

Self-organized Molecular Architectures at Surfaces: Structure, Interactions, and Function

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Interfaces between organic materials and inorganic supports are critical for the design and function of new materials-based technologies, including OLEDs, organic photovoltaics, sensors, and molecular electronics. There are vast opportunities for designing structure—function relationships in these systems due to the immense library of organic compounds available. The study of molecular self-assembly at surfaces is an active field of research, but much remains to be determined with regard to the complex interplay of intermolecular and adsorbate—substrate interactions, both chemical and physical, which determine the final structure as well as the properties of the system. In this seminar, I will present several new insights into these interactions using a combination of surface analysis experiments, complemented by computational studies. I will also discuss how we are making progress towards tailored function by rational design of molecular architectures at surfaces and how this will impact developing organic materials.

Prof. Tait received his Ph.D. in Physics from the University of Washington in 2005, after which he was an Alexander von Humboldt postdoctoral fellow at the Max Planck Institute for Solid State Research in Stuttgart, Germany. Since 2008, he is an assistant professor of physical and materials chemistry at Indiana University.