

355e Ionization of Self-Assembled Surfaces of Bowl-Shaped Cavitands

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Self-assembly of complex molecular motifs is of increasing interest in the creation of novel functional interfaces. In this context, cavitands or molecules that possess a molecular-sized cavity have been the focus of recent studies for preparing interfaces suited for molecular recognition. We have investigated selective molecular interactions on nanometer length-scales using surfaces formed by the self-assembly of a macrocyclic synthetic host, calix[4]resorcinarene. These host molecules contain a bowl-shaped cavity and permit targeted recognition of chemicals. To establish the broad principles for the design of these novel surfaces, we will discuss ionization of the macrocyclic hosts that occurs at a solid-liquid interface and is probed using surface analytical techniques such as surface plasmon resonance. The applications of these ionized hosts in creating nanostructures such as molecular multilayers and molecular cages as well as complexation with metallic ions will be presented.