

Structure of the Water/Graphene Interface

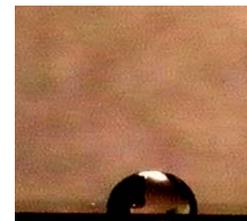
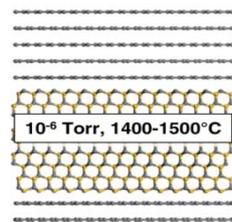
Motivation and Goal of Study

Motivation: How does the interfacial region differ in structure, dynamics and reactivity as a function of fluid properties and time?

Goal: To develop a fundamental atomic-scale understanding of interfacial structures and processes at the carbon-electrolyte fluid interface.

Approach: Initial measurements at Argonne's Advanced Photon Source explore the structure of atomically flat carbon substrates, for example epitaxial graphene layers on SiC substrates, in contact with fluids, including water and ionic liquids, through the application of high resolution X-ray interface scattering techniques.

Water on Epitaxial Graphene



Epitaxial graphene is synthesized by vacuum decomposition of a SiC wafer. The water contact angle (right) demonstrates that the graphene layer is non-wetting

Interfacial Structures of Water at Epitaxial Graphene Surface

High resolution X-ray reflectivity performed at the Advanced Photon Source is used to probe the interfacial structure between SiC and graphene layers. Preliminary analyses retrieve a well-defined structural model with good agreement with measured reflectivity signals. Some modulation of the interfacial water density profile is observed.

