Investigation on the Interfacial Phenomena of Nano-materials: from Two-dimensional Materials to Organic/Inorganic Materials

분자 동역학 시뮬레이션(Molecular dynamics simulation)을 활용한 나노 물질의 계면 현상 연구 분야에 대하여 이해곤 연구원의 박사 학위 논문 본 심사를 개최합니다. 주제와 관련하여 공동연구에 관심이 있으신 연구자 분들의 많은 참여 부탁드립니다.

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내용

Nanomaterials have received tremendous attention in the last few decades. Interest in nanomaterials systems from the fact that they have superior properties to conventional bulk materials, or they have new properties that conventional materials do not have as their dimensions change. Due to these unique properties of nanomaterials, many attempts have been made to apply these attractive materials to various industries. The reprehensive applications include an integrated circuit, water purification, drug delivery, biochemical immune system, and advanced energy storage. In order for nanomaterials to be well utilized in the above-mentioned applications, an in-depth understanding of the interfacial forces and interactions between nano-materials are required. There are five types of representative interfaces mainly formed in each application. It can be classified into two cases. Nanomaterials form interfaces with phases (ie, solid, liquid, and viscoelastic phases) or with themselves (ie, between organic nanomaterials and between inorganic-organic nanomaterials). Therefore, in this thesis, the authors tried to understand what happens at these interfaces. Here, the interfacial phenomena occurring at various types of nanoscale interfaces were investigated by using molecular dynamics simulations.

Multiscale Fluid Dynamics Lab (MFDL)