Special Issue

Physicochemical Characterization of 2D Materials

Message from the Guest Editors

Two-dimensional materials are becoming a hot topic in the modern research community, mostly due to their promising chemical, electrical, physical, and optical properties. Since the first discovery of graphene, an increasing number of 2D materials have been reported. In addition to graphene, these include TMDCs, silicene, phosphorene, MXenes, metal oxide nanosheets, etc. A fundamental question that remains unclear has to do with understanding the origin of the aforementioned promising properties. Two-dimensional materials can be developed through a variety of physicochemical techniques/ approaches, which can generally be classified as either top–down techniques such as mechanical exfoliation, solution processing, and electromechanical exfoliation or bottom–up techniques such as chemical vapor deposition (CVD), hydrothermal synthesis, and pulsed laser deposition (PLD). To understand the origin of these promising physicochemical properties, a comprehensive investigation of structure–property relationships in 2D materials is required, which can be facilitated by a combination of experimental characterization techniques and theoretical modeling.

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Editor-in-Chief

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