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Molybdenum Disulfide: From Synthesis to Applications

Guest Editor:

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Message from the Guest Editor

Since the discovery of graphene in 2004, considerable efforts have been devoted to two-dimensional materials, like molybdenum disulfide (MoS_2), tungsten disulfide (WS_2), molybdenum diselenide ($MoSe_2$). With the thickness reduced to the nanoscale, their advanced properties may undergo remarkable changes depending on the number of layers, which are obviously different from their bulky counterparts. Particularly, since the first discovery of a single-layer MoS_2 transistor in 2011, MoS_2 or WS_2-based layered materials have attracted much attention due to their unique direct-band-gap semiconducting feature once they are thinned to a monolayer. Numerous synthesis methods have been developed to grow monolayer MoS_2 and its analogues. Also, both computational and experimental results have demonstrated that the catalytic activity of semiconducting MoS_2 mainly originates from the edge sites rather than inert basal planes. In this special issue, we will publish papers on different methods to synthesize MoS_2 and its analogues, and try to uncover their promising applications in nanoelectronics, electrocatalytic water splitting, CO_2 reduction, photocatalysis, ammonia synthesis or fuel cells.

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Editor-in-Chief

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Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call "nanomaterials". These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

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