

Preface—Focus Issue on 2D Layered Materials: From Fundamental Science to Applications

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Preface—Focus Issue on 2D Layered Materials: From Fundamental Science to Applications

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This focus issue contains some of the latest original research and reviews on the electrochemical science and technology of 2D layered materials. The ability to create and manipulate atomic- and molecular-layer thick materials is expected to transform materials science and derivative technology. These 2D material systems are pushing the envelope of materials science, electrochemistry, energy storage and conversion, sensors, electrocatalysis, photochemistry, and the technologies that are under development as a result of new discoveries. As new and exotic 2D materials are being created and studied, we are witnessing developments in fundamental electrochemical science that are poised to enable a new suite of technologies. The range of uses and applications are also expanding, from a surge in the use of graphene to important developments with MXenes and related compounds in batteries and energy storage, and 2D materials used in electrocatalysis and water splitting, among others.

As the interest in the electrochemical science and technology of 2D materials is growing rapidly and entering applications, ECS has fostered the discussion and dissemination of this topic in large symposia on *2D Layered Materials from Fundamental Science to Applications* at biannual meetings. These symposia provide a forum for high-quality and cutting-edge dissemination of research papers, critical review articles, and communications covering the growth, characterization, processing, and application-oriented investigations of 2D materials. This focus issue of *The Journal of The Electrochemical Society* extends the dissemination of research into 2D layered materials to the community in a fully open access way. The latest research on solid-state science and technology of 2D materials will appear in a parallel focus issue in the *ECS Journal of*

Solid State Science and Technology, giving the community full open access to a comprehensive range of research into 2D materials.

This issue is comprised of extensive reviews, original papers, and communications on scientific and technical challenges and recent advances in 2D layered materials from graphene to transition metal dichalcogenides, 2D metal-organic frameworks, to carbon nitride and other oxide 2D materials. The papers include, but are not limited to, new research on electrodeposition, electrosynthesis and electrochemical characterization, electrocatalysis, advances in 2D materials in supercapacitors and sensors, and other applications of 2D materials. Moreover, the contributions to these two issues were made from all over the world, giving a perspective on the extent of research ongoing for over a decade.

We would like to express our sincere appreciation to the authors for their contributions to this special focus issue, and to the reviewers for their critical and valuable comments that contributed to the high quality of the work readers will enjoy in this issue. The current COVID-19 pandemic has not only affected our lives, but has impacted the research and publication process, and so we would like to extend our appreciation to everyone involved in making this focus issue a success. We would also like to thank the ECS editorial staff for their professionalism and commitment throughout the development and production of this issue from its inception to publication.

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