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Special Session 8: Fundamentals to  
Applications in 2D Materials

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## Special Session 8 Introduction: Fundamentals to Applications in 2D Materials

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**S p e c i a l S e s s i o n 8**

## Fundamentals to Applications in 2D Materials (SS8)

The enormous success of graphene has stimulated the research and development of complementary, atomically thin, 2D materials that can generate a broad range of novel layered compounds. In many ways, this new generation of atomically thin materials augment graphene, ushering in a variety of new attributes that can produce unprecedented electronic, optical, magnetic, mechanical, chemical, thermal, and sensing properties. The research community exploring 2D materials is rapidly expanding with new entrants from different disciplines such as materials science, physics, chemistry and electrical engineering. Encouraging work has already been reported emphasizing novel synthesis approaches for various material systems such as nitrides (e.g., h-BN), dichalcogenides (e.g., MoS<sub>2</sub>), topological insulators (e.g., Bi<sub>2</sub>Se<sub>3</sub> or Bi<sub>2</sub>Te<sub>3</sub>) and even oxides. There is enormous interest in building devices and functional materials based on these 2D materials including but not limited to their integration with graphene. The isolation, synthesis, and an overall fundamental understanding of these novel 2D materials are critical to the development of a manufacturing technology for them. Enormous scientific challenges in these areas need to be addressed through synergistic experimental/theoretical efforts. Both exploratory materials research and applications based on these materials are encouraged.

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