Advancing Memory Technologies with 2D Materials

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Two-dimensional (2D) materials, offer exceptional mechanical strength, atomic-scale thickness, with good conductivity allowing for miniaturization of nonvolatile memory while enhancing performance. In this talk, an exploration of research conducted on several prominent 2D materials, including graphene, molybdenum disulfide (MoS2), covalent organic frameworks (COF) and conjugated microporous polymers (CMP) is highlighted. Using the state of art equipment at Khalifa University housed in the United Arab Emirates (UAE) and the regions first cleanroom fabrication facility that allows for growth and fabrication of advanced 2D materials. The talk addresses current challenges faced in growth, synthesis, and design of 2D materials for memory technologies. These materials provide avenues for engineering novel memory applications, such as high-performance, flexible electronics, and next-generation wearables. The use of 2D nanomaterials could allow for development of next generation memory devices. Moreover, 2D materials are poised to transform the landscape of memory with a potential to form the cornerstone of an entirely new class of memory technologies.