

Two-Dimensional Materials for Wearable Electronic and Optoelectronic Devices

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Rapid advances in synthesis of graphene and 2D materials, and fabrication methods for functional devices enable sophisticated types of functionality and their application to various emerging electronics, such as flexible, wearable and optoelectronic applications, that cannot be addressed with conventional materials. In this talk, Prof. Ahn present that two-dimensional semiconductor/semi-metal materials can play critical roles in this context, through demonstrations of complex, mechanically assembled electronic and optoelectronic devices for flexible and wearable applications. Specifically, the mechanics of graphene and MoS₂ can yield various devices in distinct, engineered wearable geometries that cannot be easily reproduced with conventional materials and/or conventional device layouts. Examples of devices include touch, tactile sensors, wearable OLED display, and 3D structured photodetector.[1-2]

References

- [1] W. Lee, *et al.*, "Two-Dimensional Materials in Functional Three-Dimensional Architectures with Applications in Photodetection and Imaging", *Nat. Communi.* **9**, 1417 (2018)
- [2] M. Choi *et al.*, " Flexible Active-Matrix Organic Light-Emitting Diode Display Enabled by MoS₂ Thin-Film Transistor", *Science Advances*, **4**, eaas8721, (2018)