**Bandstructure engineering in two-dimensional semiconductors**

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Two-dimensional (2D) layered crystals, such as black phosphorus and transition-metal dichalcogenides, have continued to attract broad interest in the field of condensed-matter physics. One of the most interesting aspects in this class of materials is their band structure that can be modulated by external parameters, such as strain and electric field, as a “tuning knob”. This widely tunable band structure is highly desirable for those who are interested in making field-effect transistors or optoelectronic devices. Another, more exciting possibility with the widely tunable band gap is to study topologically nontrivial phases of matter. In this talk, I will introduce our recent bandstructure measurements (angle-resolved photoemission spectroscopy or ARPES) on black phosphorus and MoS2. The widely tunable band gap of black phosphorus [1] can be exploited to artificially create Dirac fermions [2]. On the other hand, electron doping to MoS2 [3] could be used to find a subtle spectroscopic signature of Holstein polarons, a small composite particle that drags a cloud of self-induced lattice deformation or phonon with it [4].

[1] J. Kim *et al.,* Science **349,** 723 (2015).

[2] J. Kim *et al.,* Phys. Rev. Lett. **119,** 226801 (2017).

[3] M. Kang *et al.,* Nano Lett **17,** 1610 (2017).

[4] M. Kang *et al.,* Nature Mater. **17,** 676 (2018).