Microscopic studies of grain boundaries in two-dimensional hexagonal boron nitride films

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Grain boundaries (GB) often play a vital role on determining the various properties of 2D materials, hexagonal boron nitride (hBN) is not an exception. Microstructures of GBs in hBN, owing to the directional B-N bonding, should possess additional freedom and thus are more complex comparing to that in graphene. In this talk, we will try to present a systematic TEM study of the GBs in CVD grown h-BN, and cover the following issues: I. The existence of overlapped GBs and their formation mechanism; II. A novel method to fabricate GBs with desired structures; III. Dynamics of GBs upon thermal excitation and beam irradiation.

[1] Y. Y. Liu, X. D. Zou and B. I. Yakobson, *ACS Nano* **6**, 7053 (2012).
[2] B. C. Bayer, S. Caneva and T. J. Pennycook et al., *ACS Nano* **11**, 4521 (2017).
[3] X. B. Ren, J. C. Dong and P. Yang et al., *Physical Review Materials* **3**, 014004 (2019).