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Near-field study in hBN moiré superlattices. GUANGXIN NI, UC San Diego, HAOMIN WANG, State Key Laboratory of Functional Materials for Informatics, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Science, JHIHSHENG WU, UC San Diego, LINGXIU CHEN, State Key Laboratory of Functional Materials for Informatics, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Science, ALEXANDER SWINTON MCLEOD, UC San Diego, XIAOMING XIE, State Key Laboratory of Functional Materials for Informatics, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Science, MICHAEL FOGLER, DIMITRI BASOV, UC San Diego — Interlayer coupling in atomic van der Waal (vdW) heterostructures plays a rather unique role in controlling their optical and electronic properties. The character of the interlayer coupling can be manipulated by a particular stacking arrangement of the proximal layers and by adjusting the orientation of the neighboring planes. The latter method is known to trigger the long-range periodic modulations referred to as moiré superlattices. Implications of moiré patterns for the properties of twisted graphene bilayers and in graphene on hexagonal boron nitride (hBN) are being systematically explored. Moiré patterns in other vdW systems are yet to be revealed. Here we report the observation of moiré superlattices with a giant periodicity (˜500 nm) in exfoliated hBN crystals subjected to thermal treatment. A combination of atomic force topographic imaging and scanning nano-infrared spectroscopy has implicated both strain and layer rotations in the observed effects.

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