

Figure 1: Scanning electron micrograph of hBN growths on SiC(0001) surfaces. SEM shows triangular domains of hBN and an inset of the proposed structure, with blue balls representing nitrogen atoms and red representing boron.

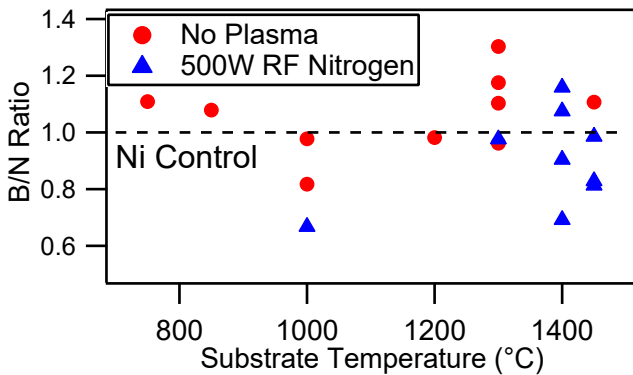


Figure 2: B/N ratio of CBE (red circles) and plasma-enhanced CBE (blue triangles) hBN as determined by XPS peak area ratios. Stoichiometry is relative to hBN films grown on nickel substrates without plasma.

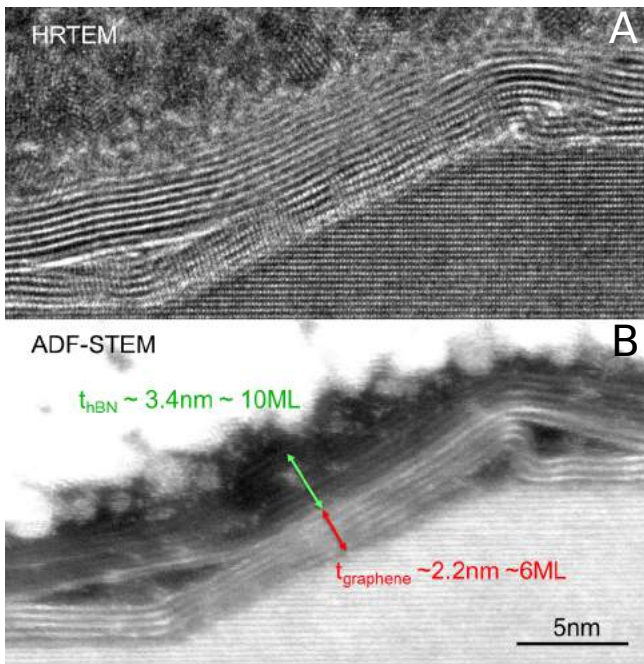


Figure 5: High resolution transmission electron microscope image (TEM) (A) and annular dark field scanning TEM (B) image of hBN/graphene/SiC(0001) heterostructure in the $\langle 10\bar{1}0 \rangle$ zone axis showing conformal 2D layers on a macrostep.

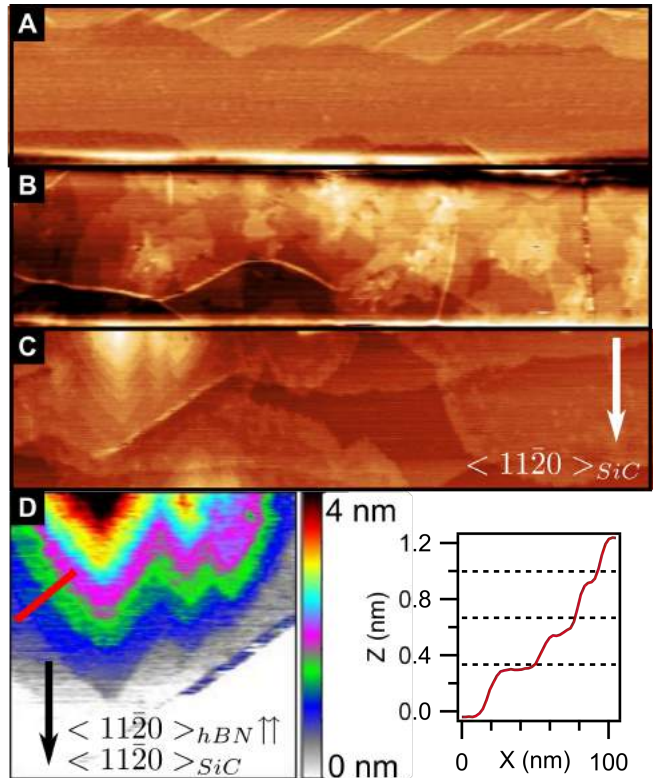


Figure 4: AFM of hBN grown by PE-CBE on epitaxial graphene substrates. A) A micrograph of the as-received substrate. B) 4nm hBN grown at 1450°C showing homogeneously nucleated hBN domains with rotational disorder in the middle of an epitaxial graphene plateau. C) A slower hBN deposition of hBN at 1450°C with multilayer hBN domain shown. D) A zoom-in of highlighted region of (C), with the direction of the SiC(0001) and proposed hBN nuclei lattice orientation. Line scan with dashed lines corresponding to expected hBN monolayer spacing. Image scales are $5\mu\text{m} \times 0.2\mu\text{m} \times 5\text{nm}$ for A-C and $0.5\mu\text{m} \times 0.5\mu\text{m} \times 4\text{nm}$ for D.

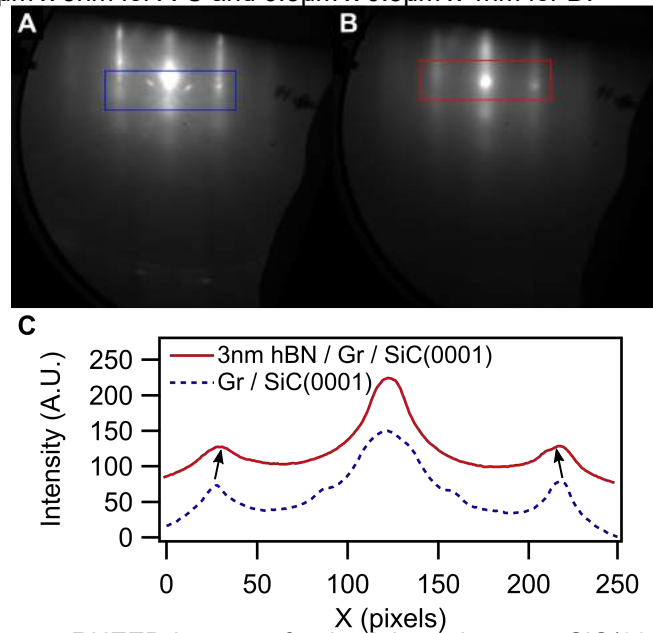


Figure 5: RHEED images of epitaxial graphene on SiC(0001) in the $\langle 10\bar{1}0 \rangle$ direction (A) and the same sample with ~3nm hBN deposited via PE-CBE (B). Averaged line scans across the first-order streaks in (C) showing a lattice expansion (reduction in streak spacing).