

Supporting information

A two-step Chemical Vapor Deposition process for the growth of continuous vertical heterostructure WSe_2/h -BN and its optical properties

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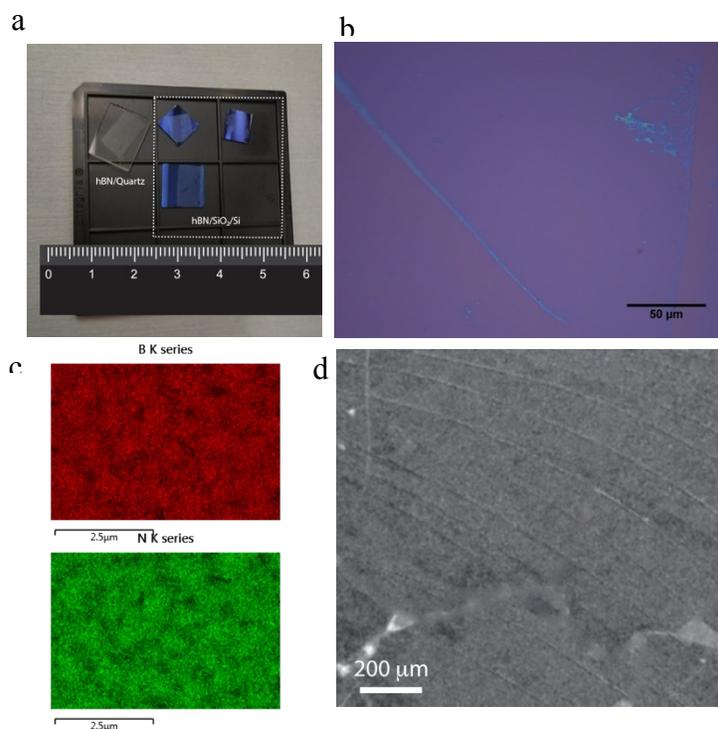


Figure S1. a) Large scale growth of hBN on quartz and SiO₂. b) Optical images of hBN on top of SiO₂/Si. c) energy dispersive X-ray (EDX) elemental mapping of Boron (B) and Nitrogen (N). d) SEM image of hBN on substrate.

TEM and SAED data:

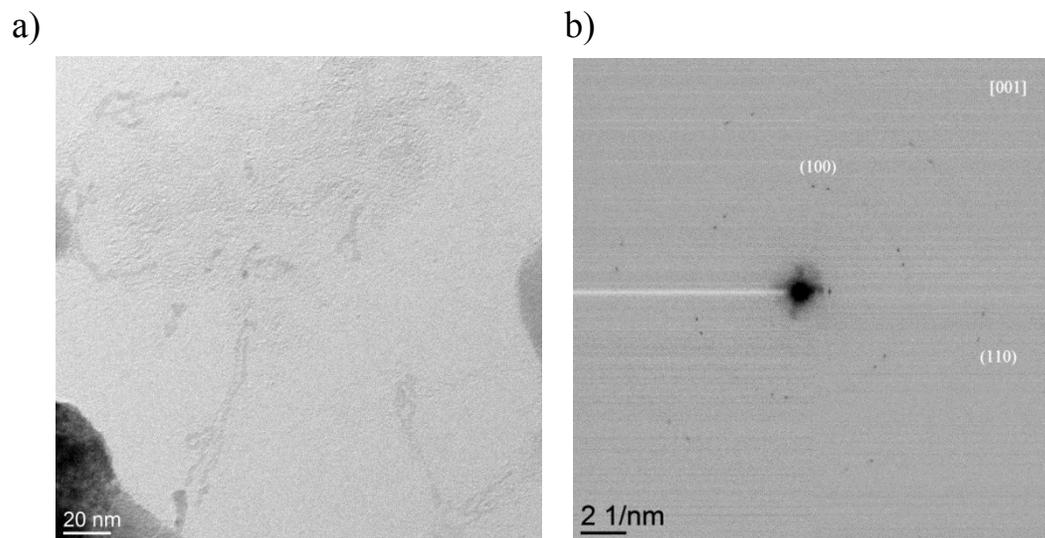


Figure S2. a) TEM image of a suspended hBN monolayer edge over Cu foil. b) The selected area electron diffraction (SAED) pattern with the expected hexagonal lattice structure of hBN monolayer.

RAMAN mapping hBN/SiO₂:

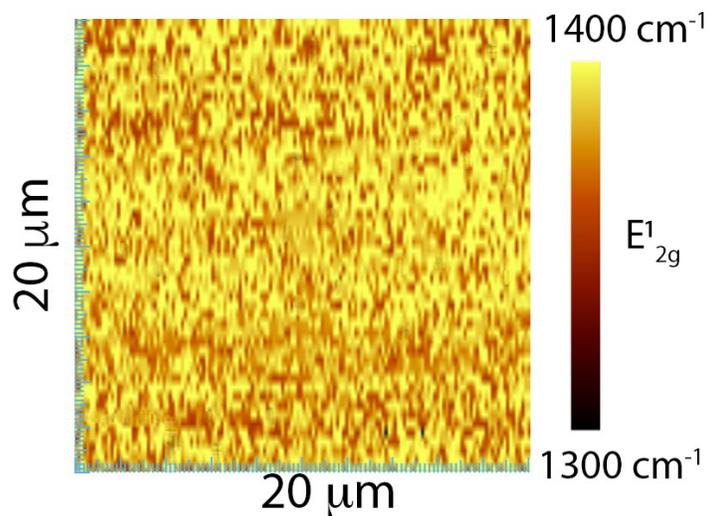


Figure S3. a) Peak intensity map of E_{2g}¹ (~1369 cm⁻¹) Raman mode of hBN film grown on top of SiO₂/Si substrate.

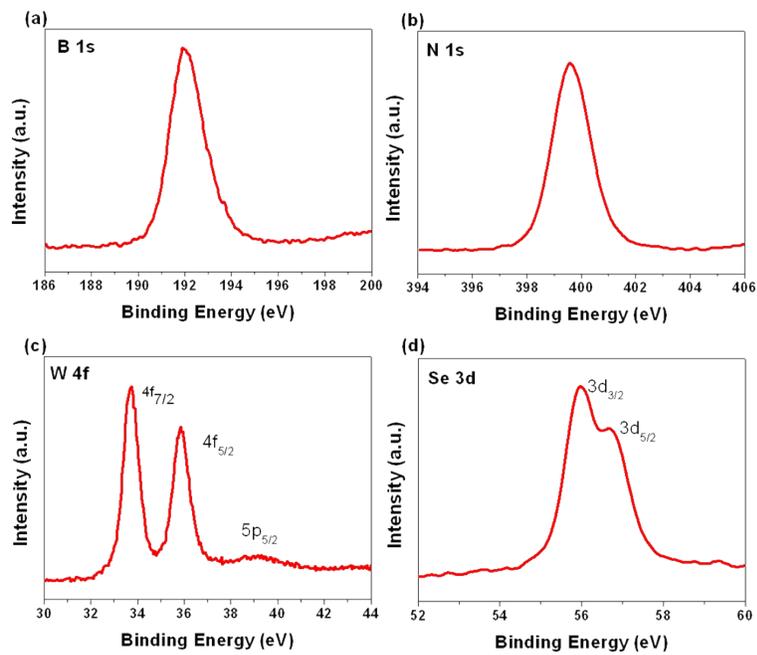


Figure 4S: XPS investigation of the WSe₂/hBN heterostructure. The XPS spectroscopic analysis of the WSe₂/hBN heterostructure shows (a) B 1s, (b) N 1s (c) W4f, and (d) Se 1s.