

Chemical Vapor Deposition Growth of Monolayer WSe₂ with Tunable Device Characteristics and Growth Mechanism Study

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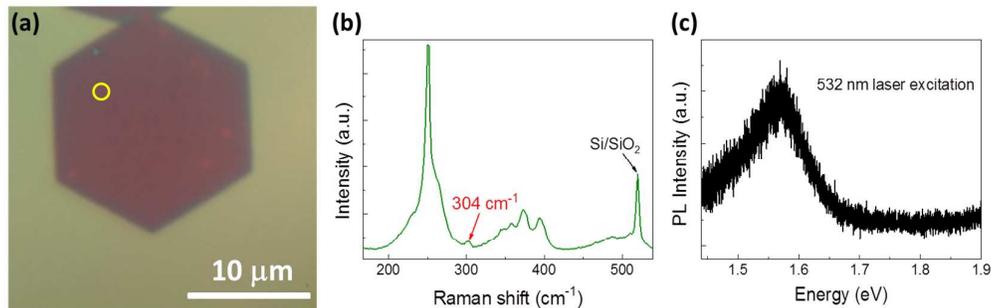


Figure S1. Characterization of a few layer hexagonal WSe₂ flake grown at 1050 °C.

(a) An optical microscopy image of the same flake shown in Figure 4f. (b), (c) Raman and PL spectra taken from the hexagonal flake (yellow circle position in the image a).

The existence of the B_{2g}⁻¹ peak at 304 cm⁻¹ in Raman spectrum¹ and very weak PL intensity reveal that this flake is a few layer WSe₂.

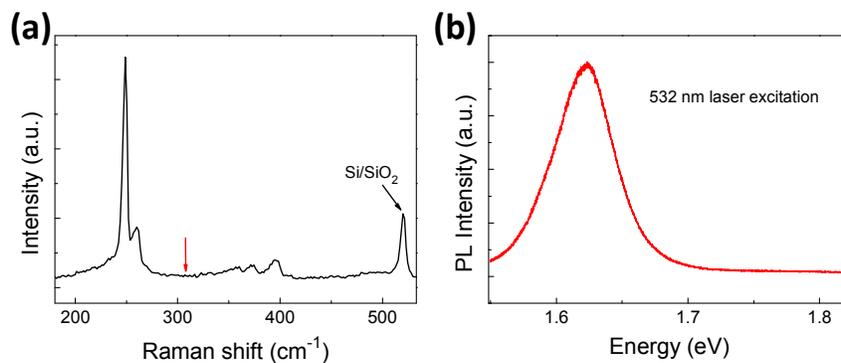


Figure S2. Typical Raman spectrum (a) and PL spectrum (b) of WSe₂ flakes grown at 950 °C for a long growth duration of 5 hrs. The absence of the B_{2g}¹ Raman peak at ~304 cm⁻¹ and strong PL intensity reveal that the samples are monolayer WSe₂ flakes.

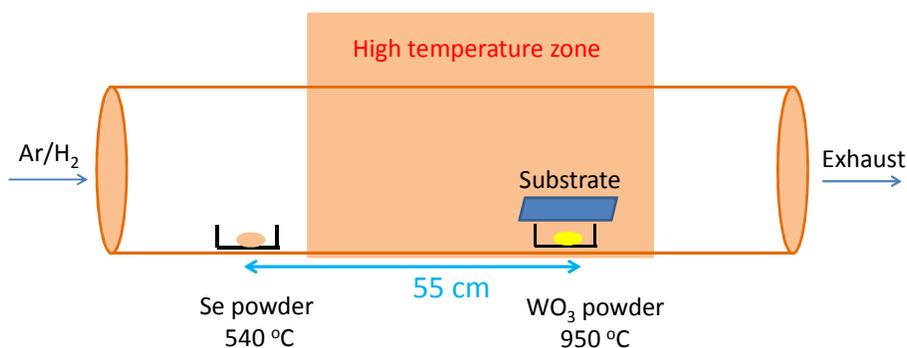


Figure S3. A schematic of the three-zone CVD setup used for the growth of WSe₂ flakes in this study.

References.

1 Luo, X.; Zhao, Y.; Zhang, J.; Toh, M.; Kloc, C.; Xiong, Q.; Quek, S. Y. Effects of Lower Symmetry and Dimensionality on Raman Spectra in Two-Dimensional WSe₂. *Phys. Rev. B.* **2013**, *88*, 195313.