Supplementary Information

Boron Nitride Nanosheets as Improved and Reusable Substrates for Gold Nanoparticles Enabled Surface Enhanced Raman Spectroscopy

Qiran Cai,[a] Lu Hua Li,[a]* Yuanlie Yu,[b] Yun Liu,[c] Shaoming Huang,[d] Ying Chen,[a]* Kenji Watanabe[e] and Takashi Taniguchi[e]

[a] Institute for Frontier Materials, Deakin University, Geelong Waurn Ponds Campus, Waurn Ponds, VIC 3216, Australia.

[b] Advanced Membranes & Porous Materials Center, King Abdullah University of Science & Technology, Thuwal 23955-6900, Kingdom of Saudi Arabia.

[c] Research School of Chemistry, The Australian National University, Canberra, ACT 0200, Australia.

[d] Nanomaterials and Chemistry Key Laboratory, Wenzhou University, Wenzhou 325027, China

[e] National Institute for Materials Science, Namiki 1-1, Tsukuba, Ibaraki 305-0044, Japan.

* Corresponding author: luhua.li@deakin.edu.au; ian.chen@deakin.edu.au.

1. Statistics on the diameter and height of the Au particles in Figure 4a-c

The statistics on the diameter and height of the Au particles on 1L BN, bulk BN and SiO_2/Si in Figure 4a-c are shown in Figure S1. It can be seen that both the distributions and averages of the diameter and height of the Au particles on the three surfaces are similar and the direct comparison of their SERS signals in Figure 4d is justified.

2. SERS spectra of R6G on 1-3L BN

Figure S2 compares the Raman signals of R6G (10^{-6} M) on 1L, 2L and 3L BN nanosheets covered by Au particles of similar diameters and heights, demonstrating that 1-3L BN nanosheets have a comparable enhancement in Raman signal due to their similar adsorption capability. These enhancements are much stronger than those of bulk BN and the SiO_2/Si substrate (Figure 4d).

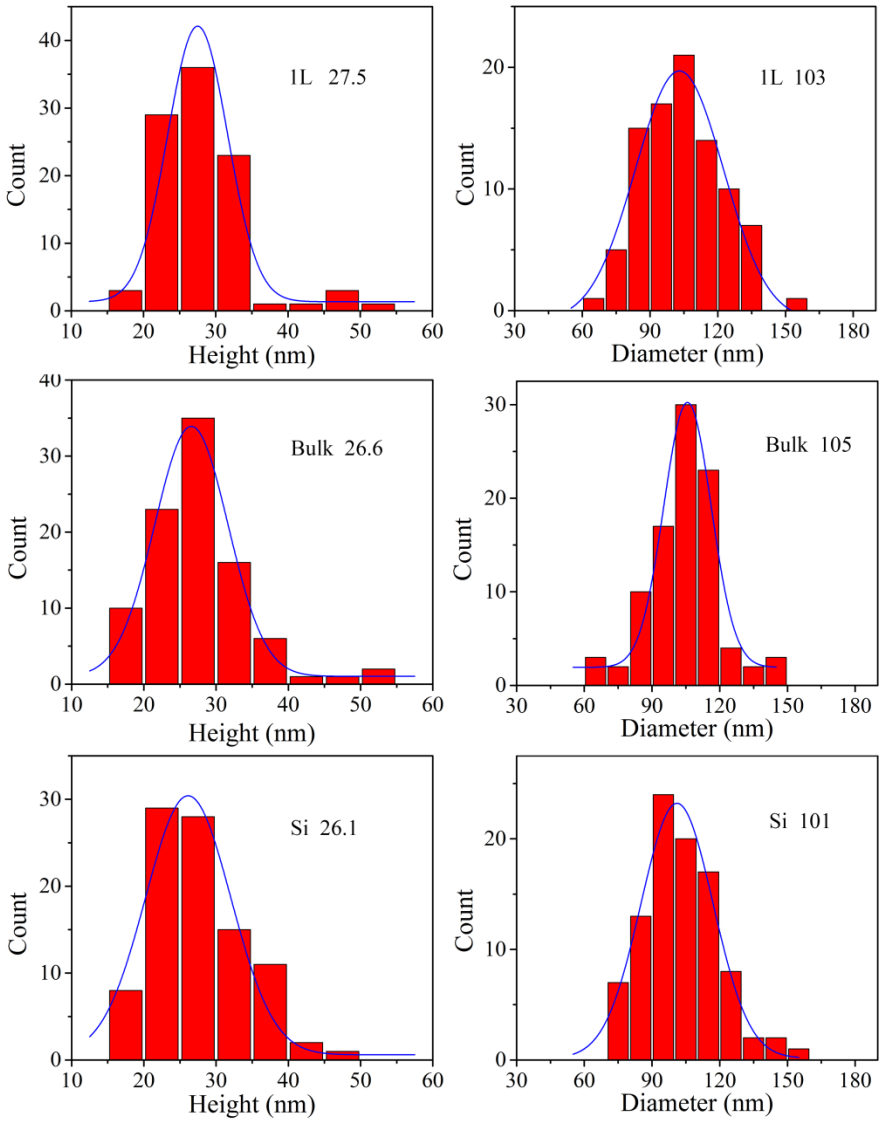

Figure S1. Statistics on the diameter and height of the Au particles on 1L BN, bulk BN and SiO_2/Si shown in Figure 4a-c.

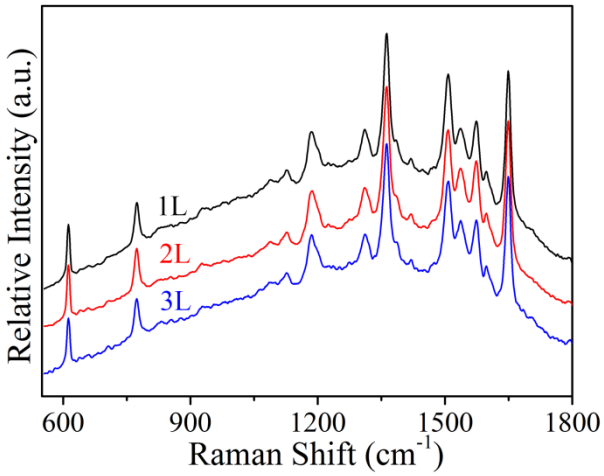

Figure S2. Raman spectra of R6G (10^{-6} M) adsorbed on 1-3L BN covered by Au particles of similar diameter and height.