Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information.

Tip-Enhanced Raman Spectroscopic Measurement of Stress Change in Local domain of Epitaxial Graphene on the Carbon Face of 4H-SiC (000-1)

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(1) SEM images of TERS active tips

Figure S1 shows three typical SEM imeges of TERS tips showing strong, normal, and weak TERS signals. The curvature of a tip top looks the most important factor to obtain hihger TERS enhancement, because we observed that tips generating stong TERS signals have alway smaller curvatures. Now we plan to quantitatively reproduce the curvature dependence of TERS enhancement factors by the relationship among SEM imeges of tips, TERS experimental results, and FDTD (Finite-difference time-domain) calcilations [S1].

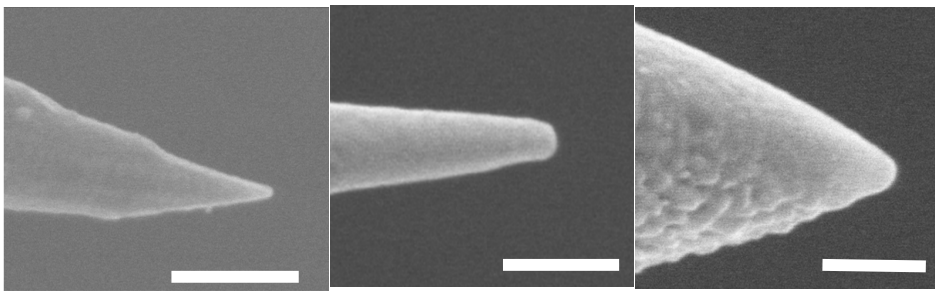
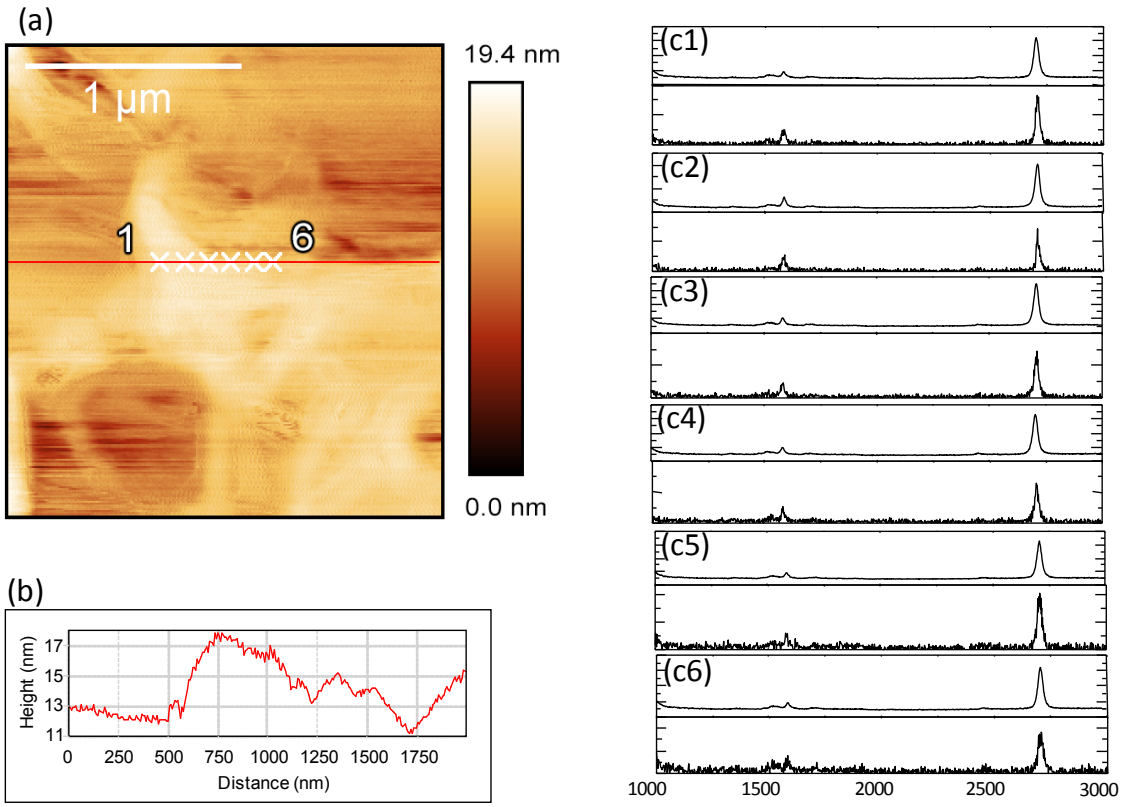


Fig. S1 SEM images of TERS tips generating (a) strong, (b) normal, and (c) weak TERS signals. Scale bars are 500 nm.

(2) Position-dependent TERS spectra with AFM image

Figure S2(a) shows an AFM image of a SiC surface. Surface roughness of the surface is indicated in Fig. S2(b). Position 1 to 6 dipicted in Fig. S2(a) correspond to the detection positions of normal Raman spectra (upper panels) and TERS spectra (lower panels) in Fig. S2(c1-c6). We cannot find any correlation between the peak shift and the ΔFWHM of the G band at different position 1 to 6, because the line detection does not cross ridge structures.



References for Supporting Information

[S1] Z. Yang, J. Aizpuruac, and H. Xu, J. Raman Spectrosc. 2009, 40, 1343–1348