Surface Enhanced Raman Scattering of Alkyne Conjugated MoS$_2$: A Comparative Study between Metallic and Semiconductor Phase

Rajeshkumar Anbazhagan$^a$, Adhisankar vadivelmurugan$^a$, Hsieh-Chih Tsai$^{*a}$ and Ru-Jong Jeng$^{*b}$

a. Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taipei 106, Taiwan.

b. Institute Polymer Science and Engineering, National Taiwan University, Taipei 106, Taiwan

[*] To whom correspondence and reprint requests should be addressed.

Prof. Hsieh-Chih Tsai
E-mail: h.c.tsai@mail.ntust.edu.tw
Tel:+886-2-27303625

Prof. Ru-Jong Jeng
E-mail: rujong@ntu.edu.tw;
Tel: +886-2-33665884
Figure S1: Uv-visible absorption spectrum of T-MoS$_2$ and Li-MoS$_2$. 
Figure S2: SERS of 1μM R6G in different MoS$_2$ system.
Figure S3: Raman spectrum of only R6G molecule.

Figure S4: SERS intensity of the band at 611 cm\(^{-1}\) versus increasing concentration of R6G in Li-MoS\(_2\) and T-MoS\(_2\), and fitting to a Langmuir curve.
Figure S5: XPS binding energy spectrum of P-MoS\(_2\). a) Mo 3d, b) S 2p binding energy.
Figure S6: Raman spectrum of Li-MoS$_2$ and T-MoS$_2$. 
Figure S7: Optical and SERS spectrum of T-MoS$_2$-Alk. a and c) Optical image and corresponding SERS spectrum b and d) of T-MoS$_2$-Alk.
Figure S8: Cell viability of Li-MoS$_2$-Alk.