

Supporting Information of

**Strong Photoluminescence Enhancement from Bilayer Molybdenum Disulfide via the
Combination of UV-irradiation and Superacid Molecular Treatment**

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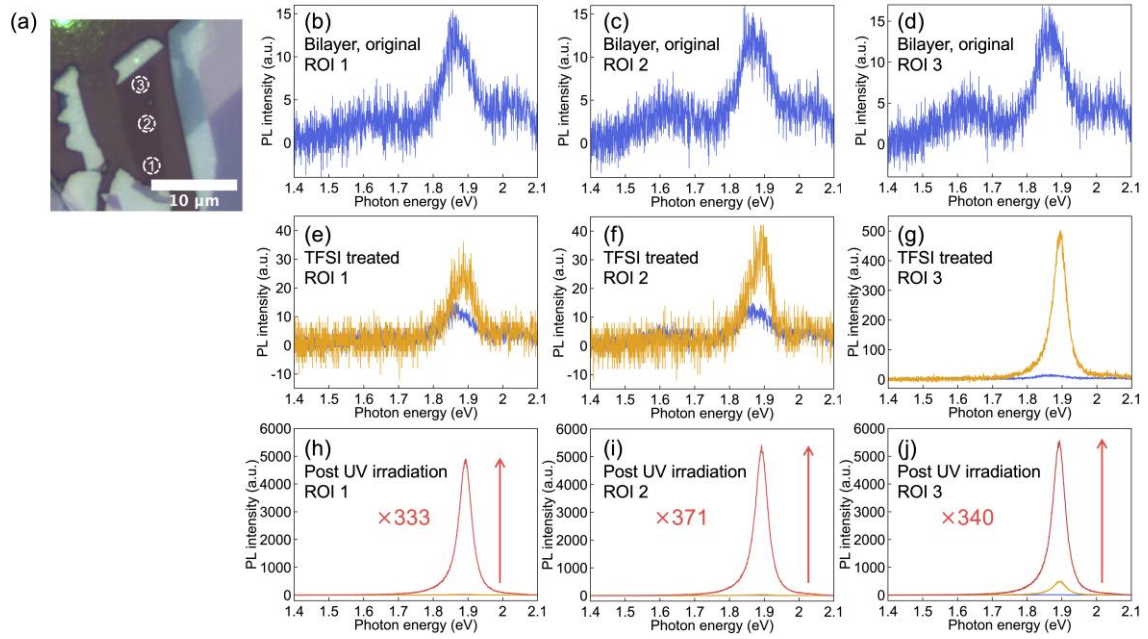


Figure S1. (a) Optical microscope image of the bilayer MoS₂ exfoliated with pressing the weight. The labels are the measurement regions (ROIs 1-3) in the plots shown in Figures S1b-j. (b-d) PL spectra for the as-exfoliated (original) bilayer MoS₂ in the region of ROI 1 (b), ROI 2 (c), and ROI 3 (d). (e-f) PL spectra for the TFSI-treated (orange) and the original bilayer MoS₂ for in the region of ROI 1 (e), ROI 2 (f), and ROI 3 (g). (h-j) PL spectra for the post-UV irradiated (red) and the TFSI-treated (orange) bilayer flake in the region of ROI 1 (h), ROI 2 (i), and ROI 3 (j). The values in Figures (h-j) are the magnitude of the PL enhancement of the post UV irradiated sample over the as-exfoliated (original) sample.

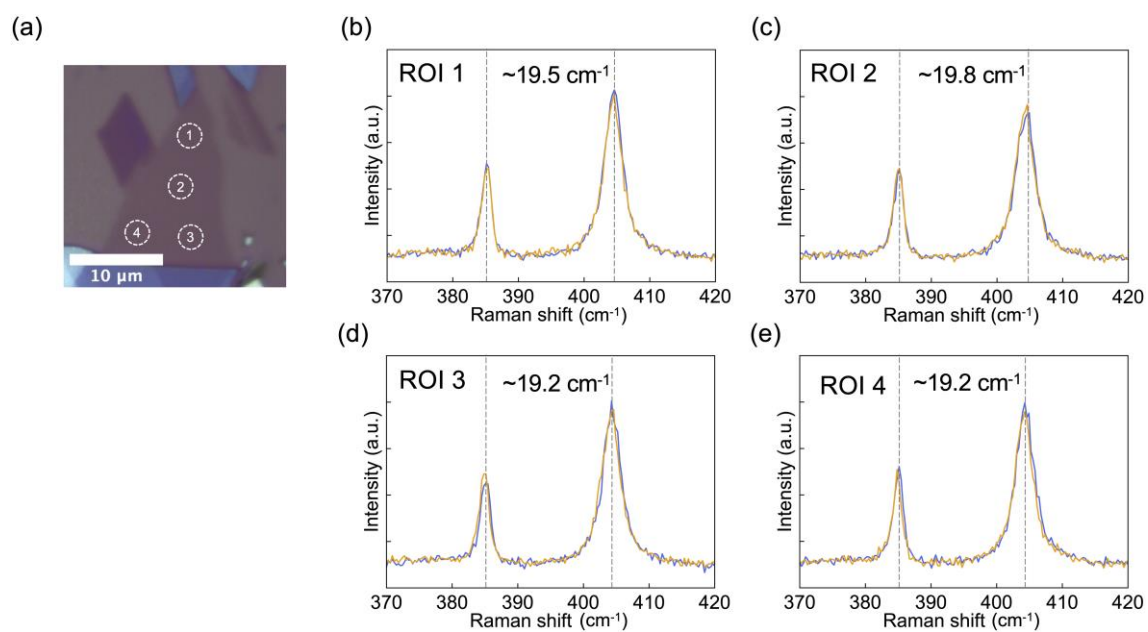


Figure S2. (a) Optical microscope image of the bilayer MoS₂ prepared with pressing the weight. The labels are the measurement regions (ROIs 1-4) in the plots shown in Figures S2b-e. (b-e) Raman spectra for as-exfoliated (original, blue) and the UV irradiated (orange) in ROI 1 (b), ROI 2 (c), ROI 3 (d), and ROI 4 (e).