

Supporting Information

Surface plasmon enhancement in silver nanowire and bilayer two-dimensional materials

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1. Preparation of Ag/tBLM phototransistor

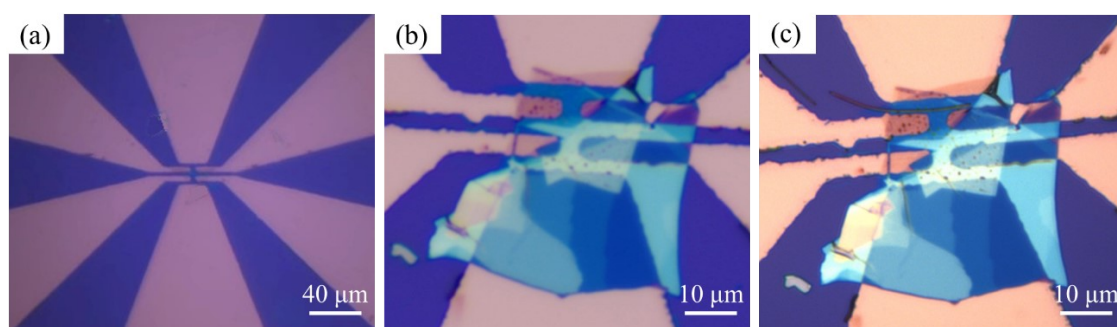


Fig. S1. Device fabrication. (a) Optical microscope diagram of electrodes. Optical microscope diagram of the device (a) before the transfer of Ag NW and (b) after the transfer of Ag NW.

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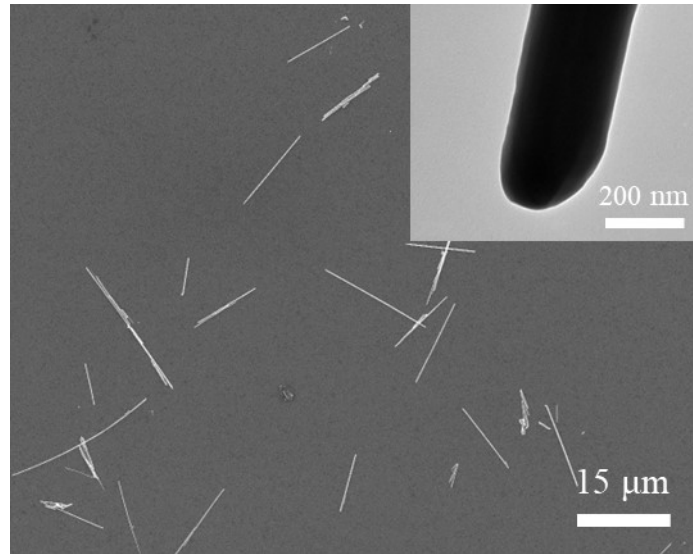


Fig. S2. SEM image of the Ag NWs. Inset: TEM image of single Ag NW.

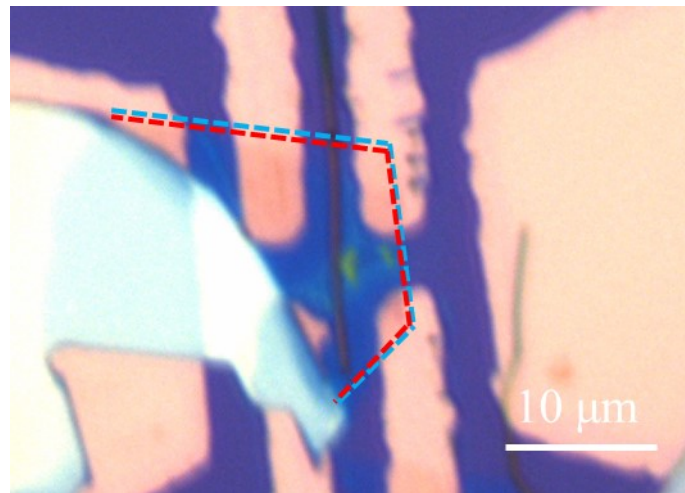


Fig. S3. Optical microscope diagram of the Ag/pBLM device.

2. PL spectrum characterization

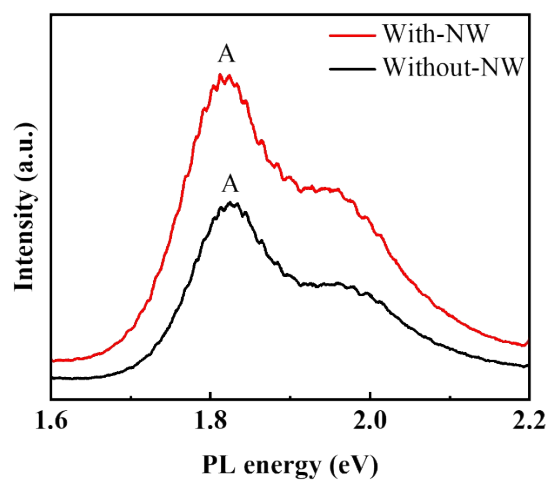


Fig. S4. PL spectra comparison of the Ag/pBLM composite structure.

3. Raman spectrum characterization

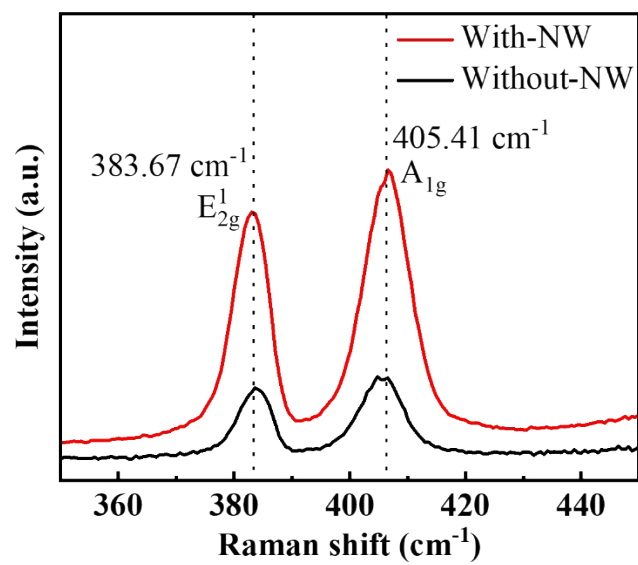


Fig. S5. Raman spectra comparison of the Ag/pBLM composite structure.

4. PL intensity mapping

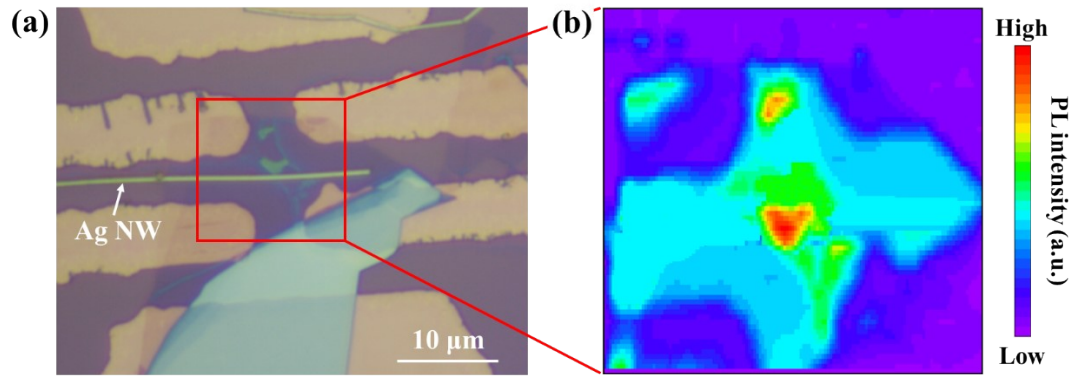


Fig. S6. (a) Optical microscope diagram and (b) PL intensity mapping of the Ag/pBLM phototransistor.

5. Output characteristic test

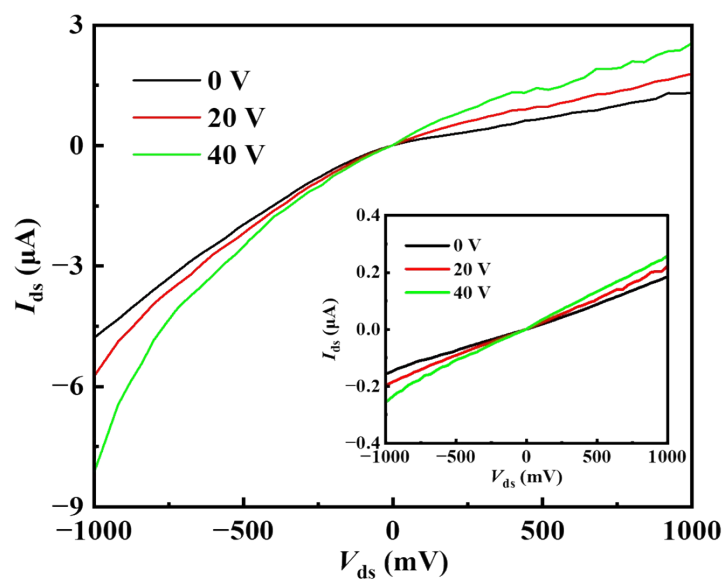


Fig. S7. Output characteristic curves of the Ag/pBLM device under the 520 nm laser. Inset: Output characteristic curves without light.

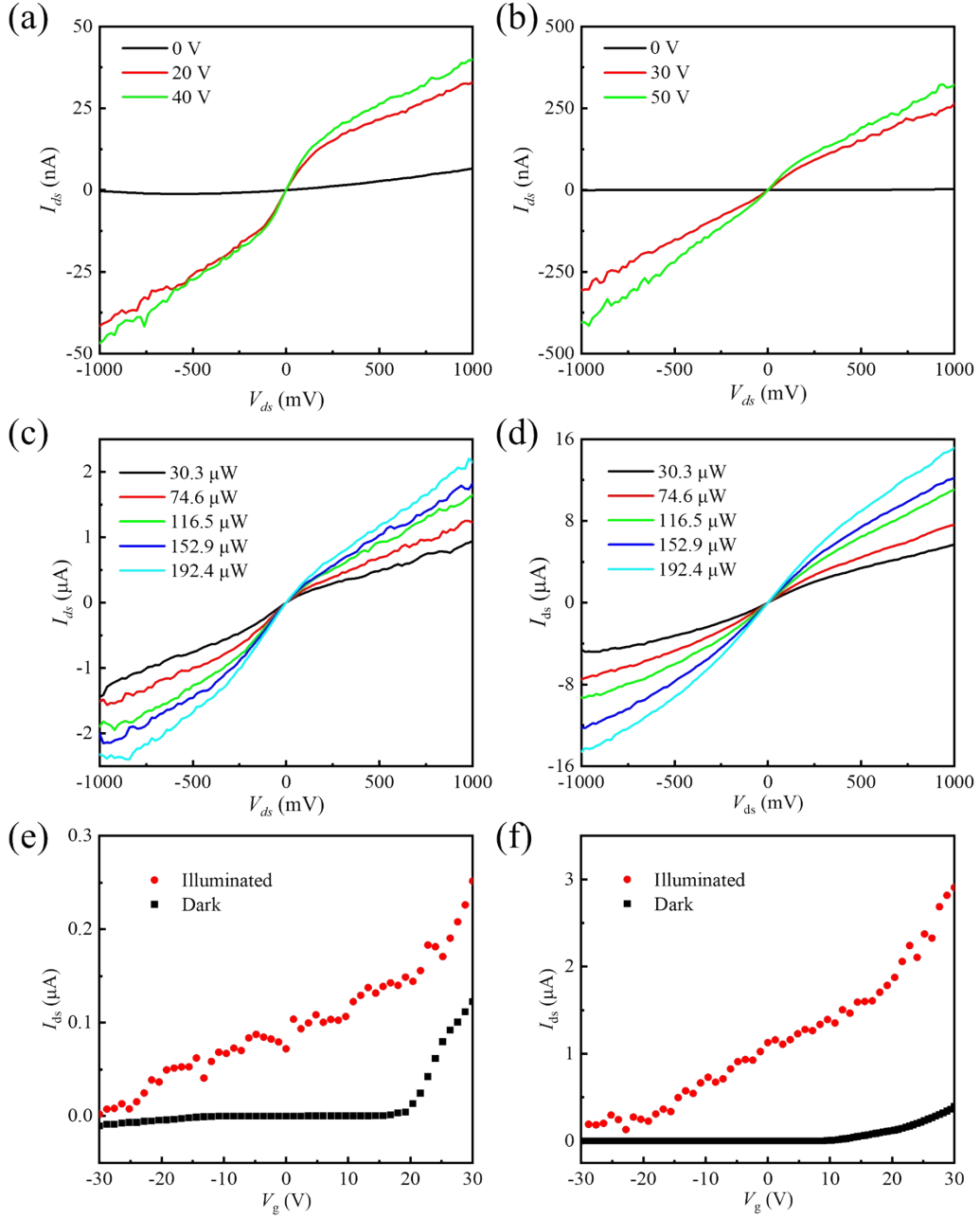


Fig. S8. Comparison of photoelectric performance in MoS₂ phototransistors. Output characteristic curves without light of (a) pBLM and (b) tBLM. Output characteristic curves under the light of different power of (c) pBLM and (d) tBLM. Transfer characteristic curves with and without light of (e) pBLM and (f) tBLM.

The photoresponsivity of the tBLM phototransistor is 13.05 mA/W, compared with the 0.67 mA/W of the pBLM phototransistor. In addition, the specific detectivity of the tBLM phototransistor was enhanced from

1.69×10^6 to 1.83×10^7 Jones under the effect of interlayer twist.

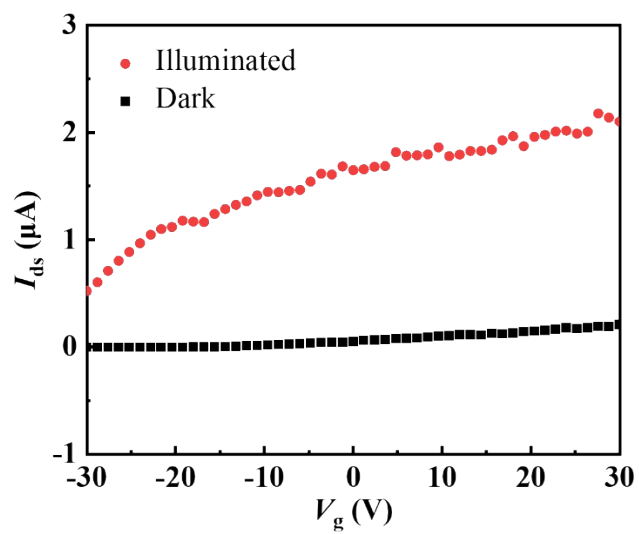


Fig. S9. Transfer characteristic curves of the pBLM device.