

Supplementary Information

Enhanced electrical and broad spectral (UV-Vis-NIR) photodetection in Gr/ReSe₂/Gr heterojunction

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S1. Raman spectra of ReSe₂ and graphenes.

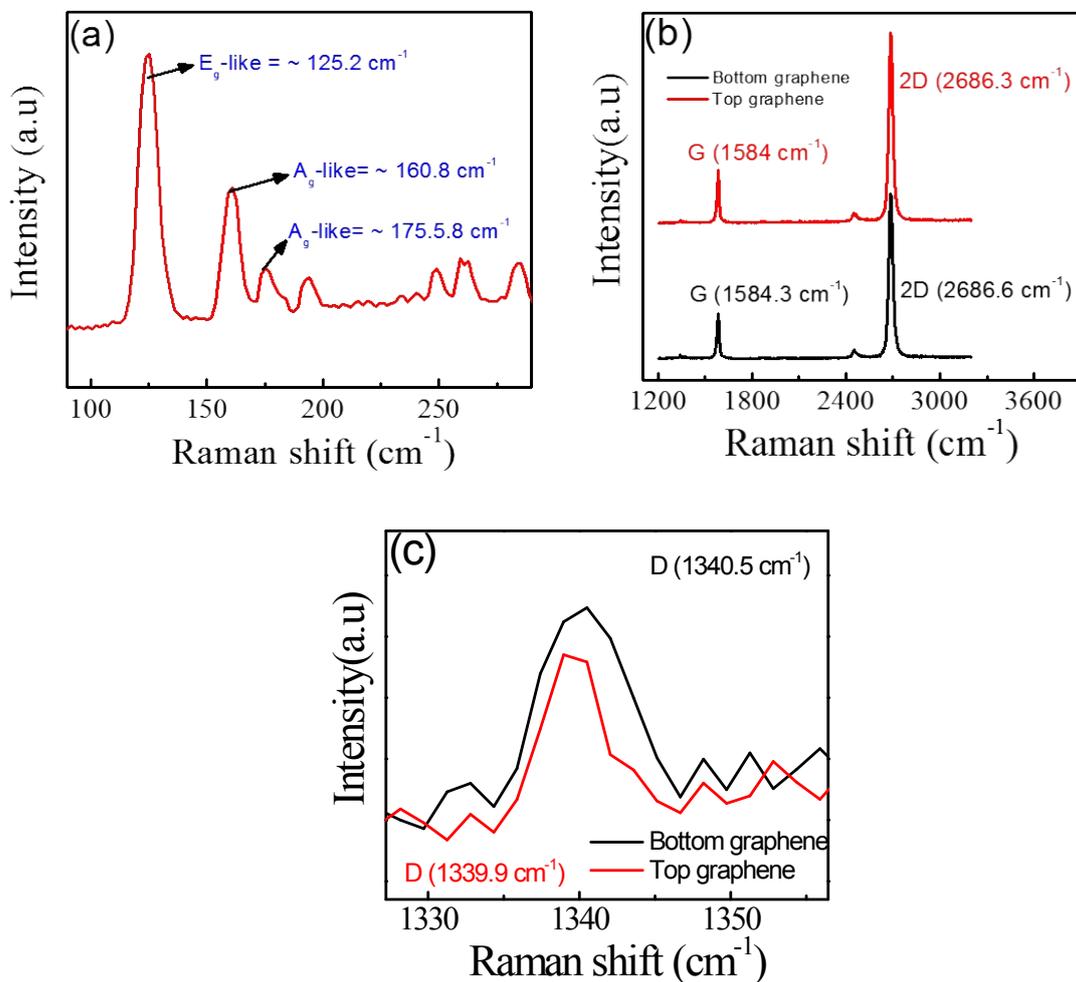


Figure S1. (a) The Raman spectrum of multilayer ReSe₂. (b) The Raman spectrum of bottom and top CVD graphenes. (c) The zoom in view of 'D' peaks of G_B and G_T. The data of Figure S1c is taken from Figure S1b.

S2. Measurement of Schottky barrier height

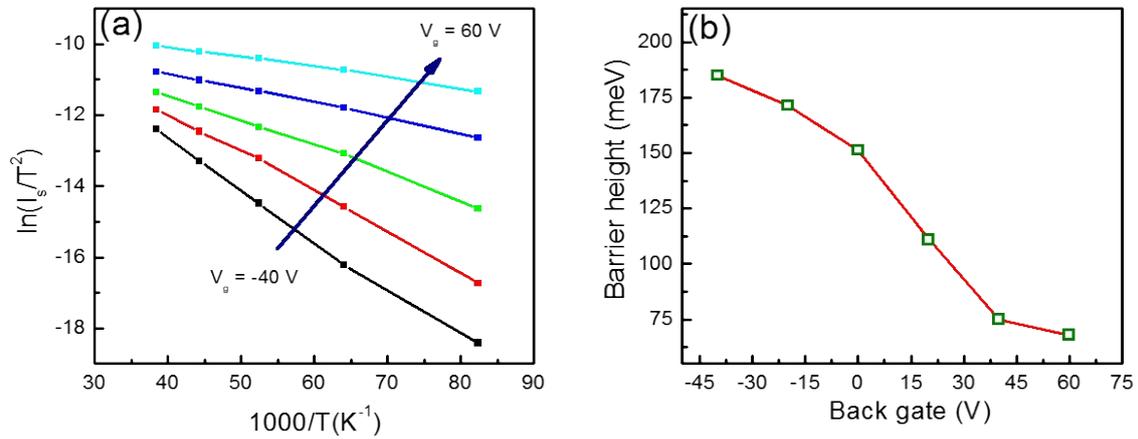


Figure S2. (a) Arrhenius plot $\ln(I_s/T^2)$ vs $1000/T$ at various back-gate voltages. (b) Extraction of Schottky barrier height values from the Arrhenius plot under each V_g .

Gate and wavelength dependent I_{sc} .

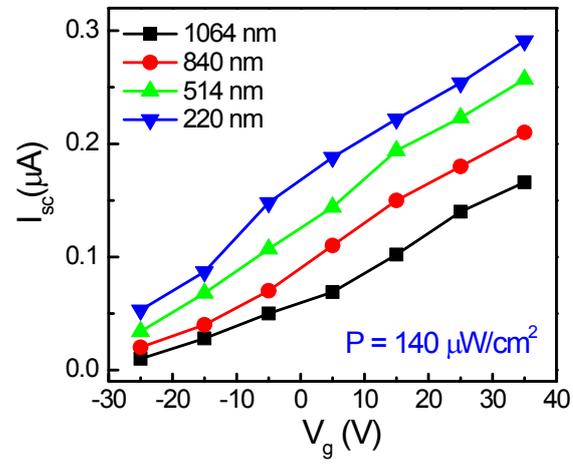


Figure S3. The dependence of I_{sc} at different back gate voltages and wavelength numbers.

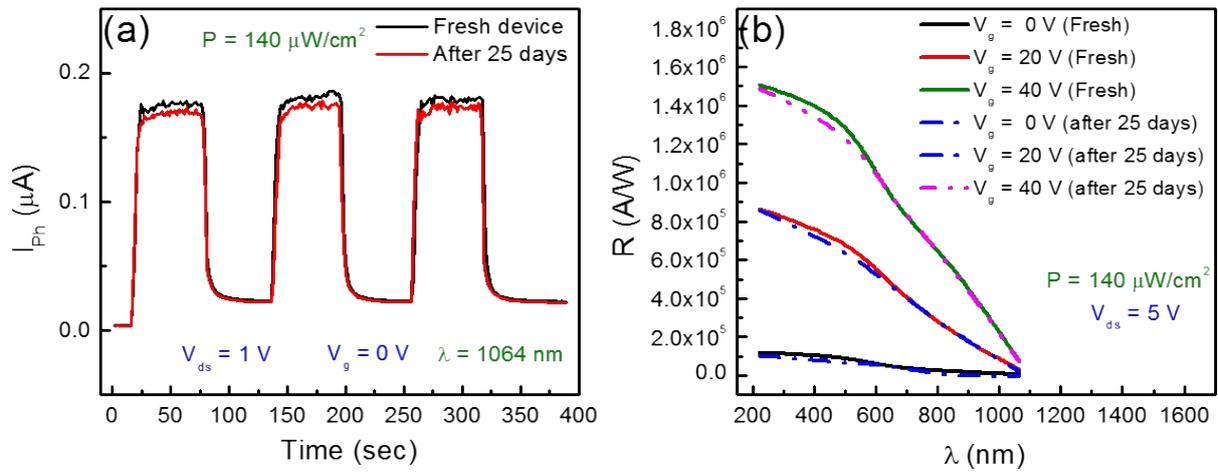


Figure S4. (a) Temporal response of our devices after 25 days at $\lambda = 1064 nm$. (b) The photoresponsivity of GT-ReSe₂-GB photodetectors at different back gate voltages. The performance of devices looks almost stable after 25 days.

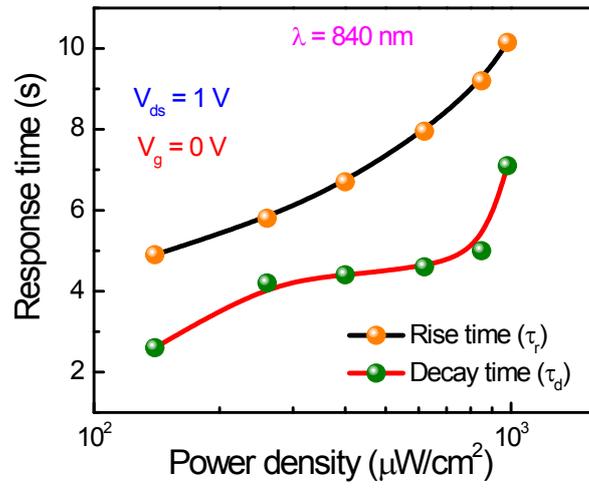


Figure 5S. Rise and decay times of G_B -ReSe₂- G_T photodetector at different power densities.