Supplementary Information (SI) for Journal of Materials Chemistry C.

Supporting Information

Design and Implementation of an Infrared Artificial Visual Neural Synapse Based on p-WSe_2/n-Ta_2NiS_5 van der Waals Heterojunction

Pengfei Hou,*[a] Shiwen Tan [a] and Shuaizhi Zheng *[a]

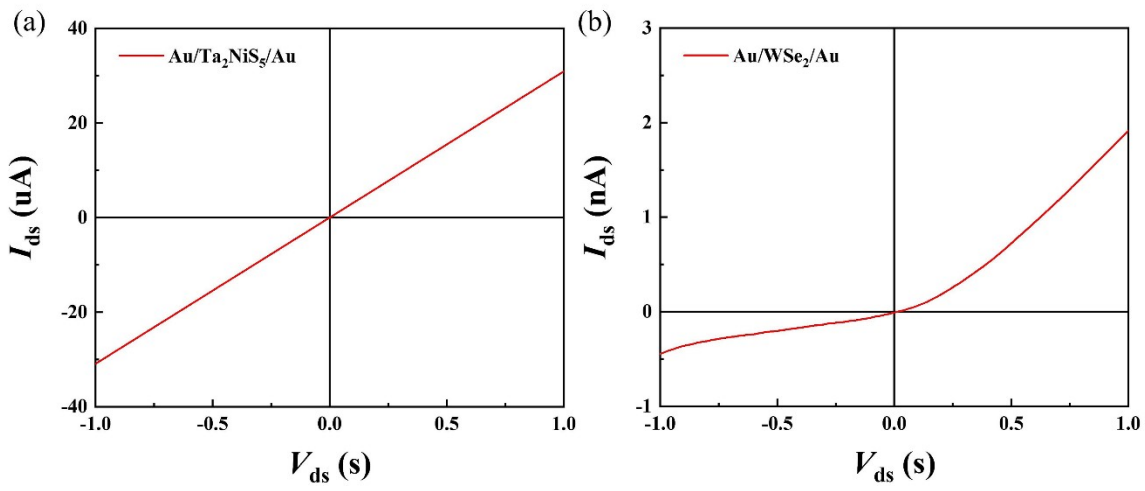

Figure S1. The linear and nonlinear current–voltage characteristics of transistors. (a) $Au/Ta_2NiS_5/Au$ transistor. (b) $Au/WSe_2/Au$ transistor.

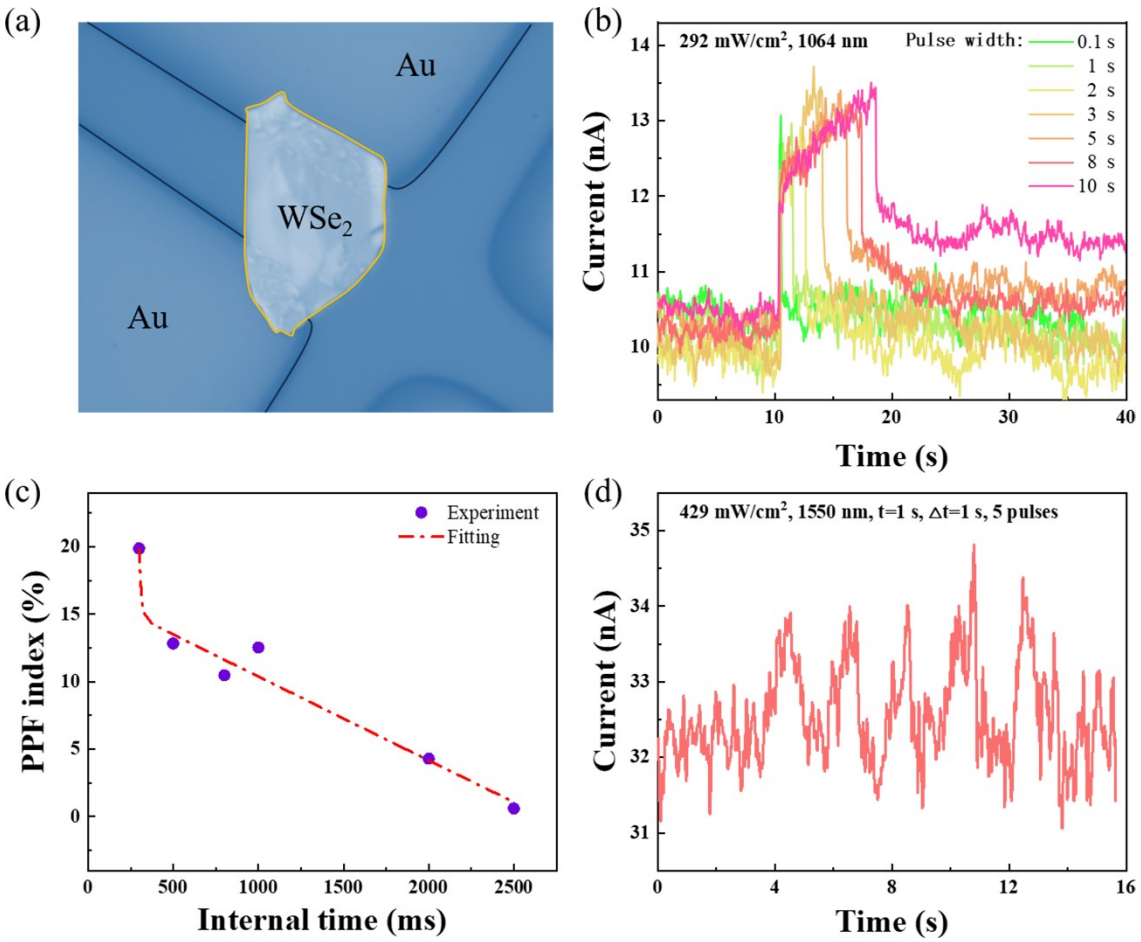

Figure S2. The optical microscope image of the Au/WSe_2/Au device. (b) The photoresponse to single light pulse (1064 nm, 292 mW/cm^2, -1 V) with different irradiation time. (c) The change of PPF as a function of Δt (1064 nm, 292 mW/cm^2, -1 V). (d) The photoresponse of five light pulses under 1550 nm (429 mW/cm^2, -1 V).

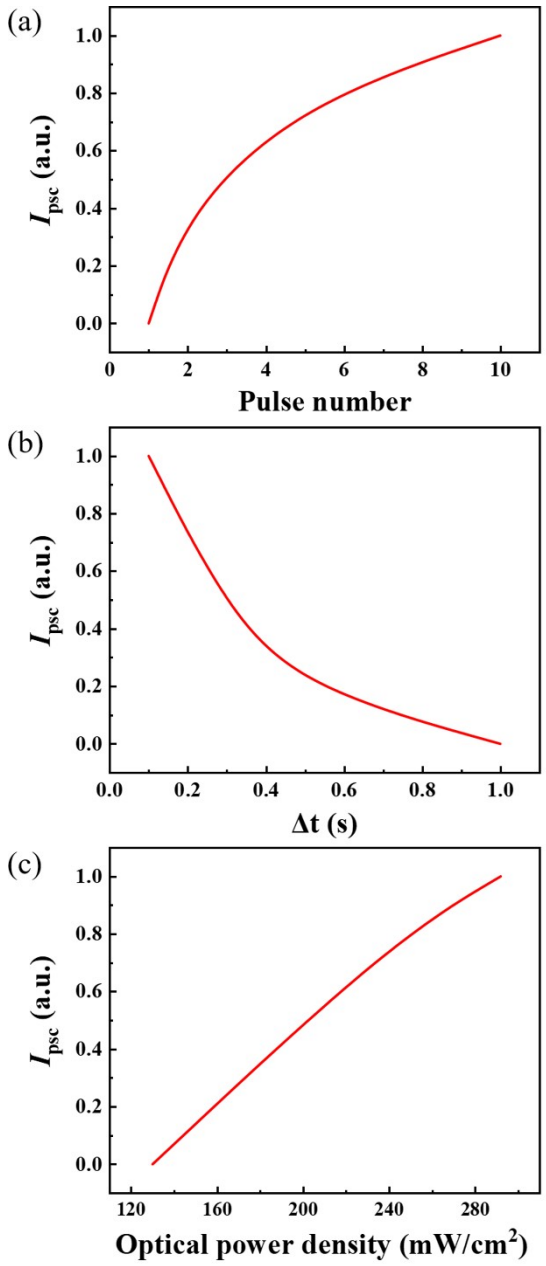

Figure S3. The influence of different light pulse variables on synaptic weights. (a) Pulse number dependent plasticity. (b) Pulse frequency dependent plasticity. (c) Pulse density dependent plasticity. The curves are the result of the fits.

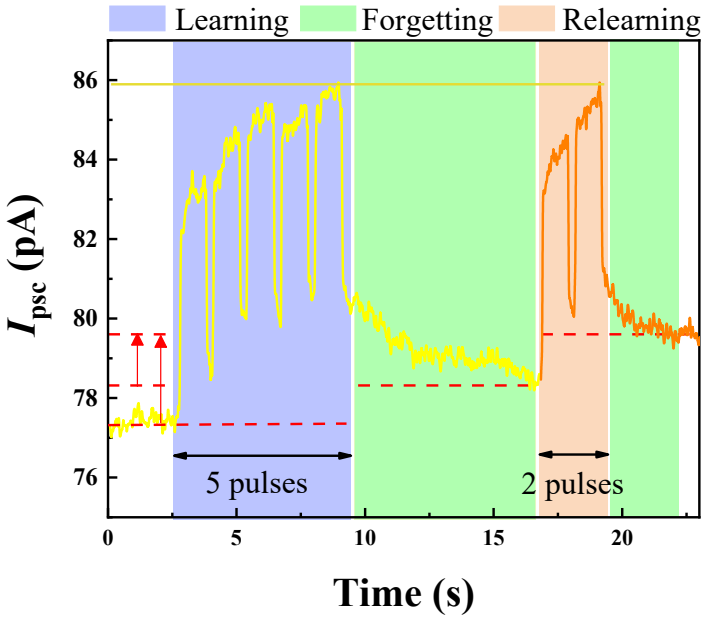

Figure S4. Simulation of learning-forgetting behavior in p-WSe_2/n-Ta_2NiS_5 heterojunction.