SCIENCE CHINA
Information Sciences

• **Supplementary File** •

Silicon-based inorganic-organic hybrid optoelectronic synaptic devices simulating cross-modal learning

Yayao LI[1], Yue WANG[1], Lei YIN[1], Wen HUANG[1], Wenbing PENG[1], Yiyue ZHU[1], Kun WANG[1], Deren YANG[1] & Xiaodong PI[1,2*]

[1]*State Key Laboratory of Silicon Materials and School of Materials Science and Engineering, Zhejiang University, Hangzhou* 310027*, China;*
[2]*Advanced Semiconductor Research Institute, ZJU-Hangzhou Global Scientific and Technological Innovation Center, Hangzhou* 311215*, China*

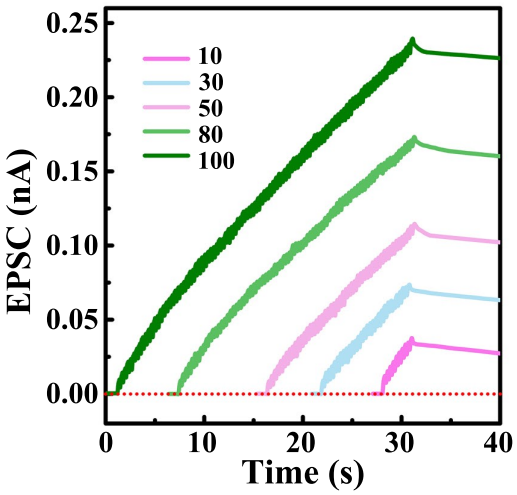

Figure S1 EPSC of a synaptic transistor triggered by i (i = 10, 30, 50, 80 and 100) optical spikes. Each optical spike has the wavelength, power density and duration of 532 nm, 3.5 mW/cm^2 and 200 ms, respectively.

* Corresponding author (email: xdpi@zju.edu.cn)

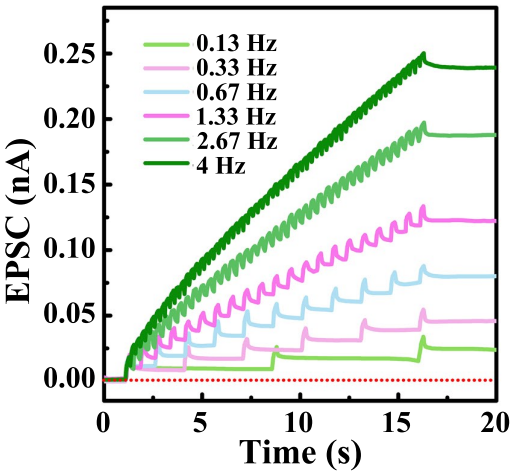

Figure S2 EPSC of a synaptic transistor triggered by optical spikes with frequencies ranging from 0.13 to 4 Hz. Each optical spike has the wavelength, power density and duration of 532 nm, 3.5 mW/cm^2 and 200 ms, respectively.

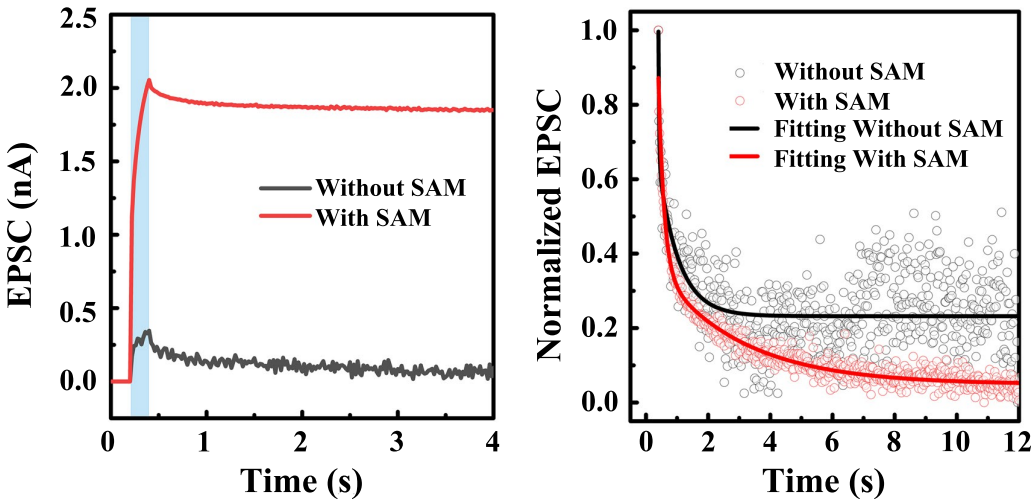

Figure S3 (a) EPSCs of the synaptic devices with/without the surface modification of the gate oxide of SiO_2. (The EPSC without the surface modification has been multiplied by 10.) (b) Normalized EPSC decay curves of the synaptic devices with/without the surface modification of the gate oxide of SiO_2. (3-aminopropyl) trimethoxysilane (APTMS) is used for the surface modification.