Supporting Information

High-Aspect-Ratio Silicon Metasurfaces: Design, Fabrication, and Characterization

Yao Yao [1], Zhuo Wang [1], Zhiyan Zhu [2], Yu He [1], Shulin Sun [2], Lei Zhou [1] and Qiong He [1,*]

[1] State Key Laboratory of Surface Physics, Key Laboratory of Micro and Nano Photonic Structures (Ministry of Education) and Department of Physics, Fudan University, Shanghai 200433, China; 19110190005@fudan.edu.cn (Y.Y.); zhuowang15@fudan.edu.cn (Z.W.); 21110190006@m.fudan.edu.cn (Y.H.); phzhou@fudan.edu.cn (L.Z.)

[2] Shanghai Engineering Research Centre of Ultra Precision Optical Manufacturing, Department of Optical Science and Engineering, School of Information Science and Technology, Fudan University, Shanghai 200433, China; 21110720021@m.fudan.edu.cn (Z.Z.); sls@fudan.edu.cn (S.S.)

* Correspondence: qionghe@fudan.edu.cn; Tel.: +86-21-31242282

A: Influence of parameters process on the fabrication quality of silicon metasurfaces.

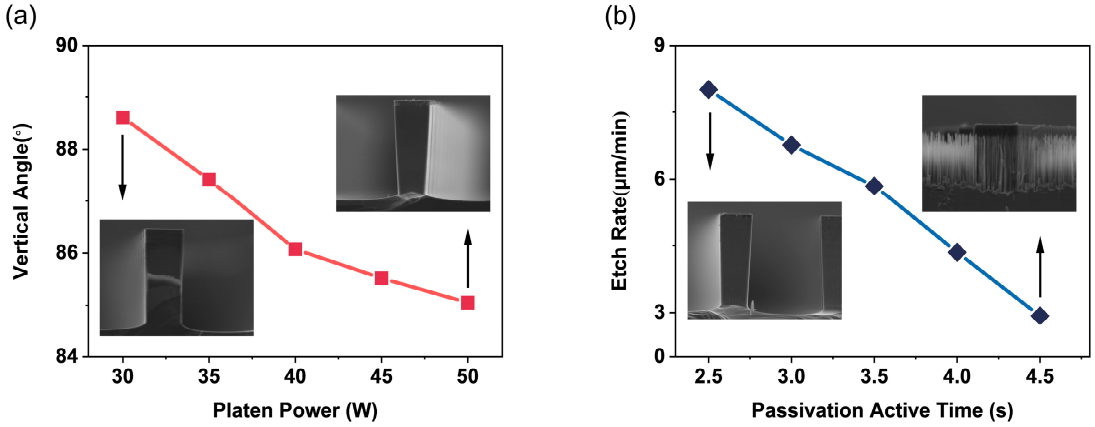

Figure S1. (a) Profiles of sidewall characterized by the vertical angle as function of platen power;(b) etch rate as a function of passivation active time

B: Optimized broadband meta half-wave plate

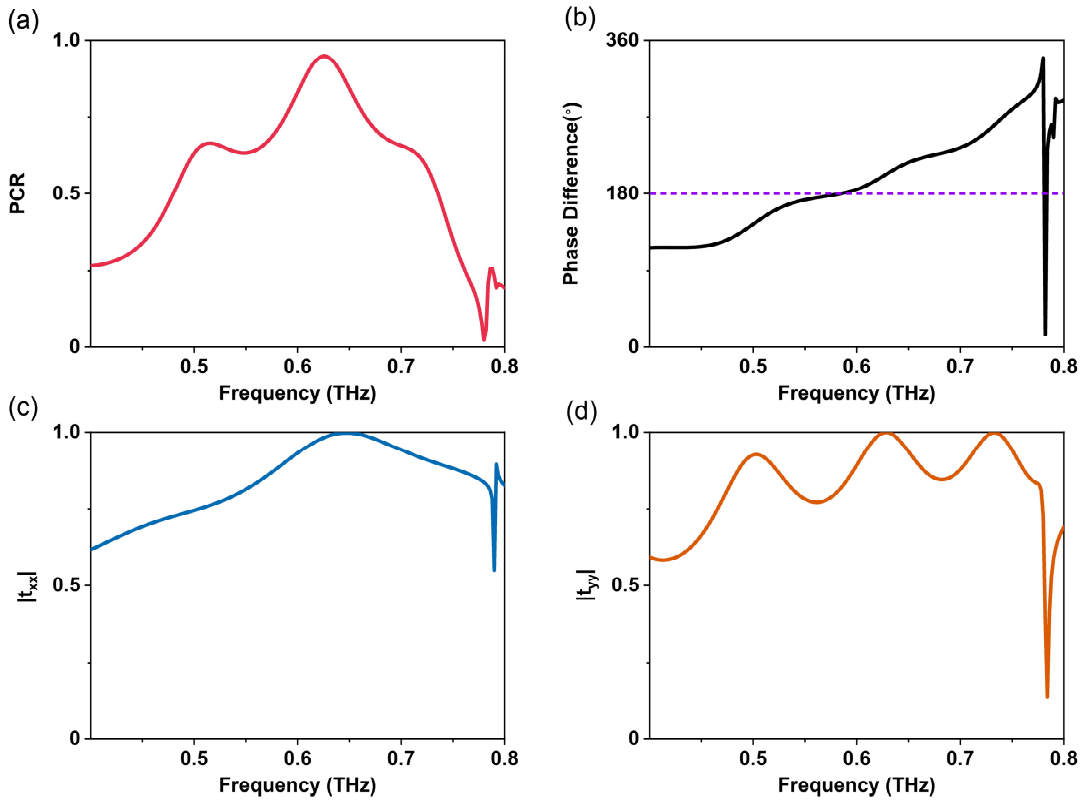

Figure S2. The optimized broadband meta half-wave plate: polarization conversion ratio (a), phase difference (b) between x-and y-polarized transmissive THz wave, transmission amplitudes for x-polarized (c) and y-polarized (d) transmissive, with the following geometrical parameters:$H = 400,\ P = 130,\ h = 38,\ d_1 = d_2 = 120,\ d_3 = 62, w_1 = 33,\ w_2 = 50$, all in units of μm