Supporting Information for

"Optically controllable nanobreaking of metallic nanowires"

Lina Zhou, Jinsheng Lu, Hangbo Yang, Si Luo, Wei Wang, Jun Lv, Min Qiu and Qiang Li[a)]

State Key Laboratory of Modern Optical Instrumentation, College of Optical Science and Engineering, Zhejiang University, Hangzhou 310027, China

a) Email: qiangli@zju.edu.cn

1. Other power used to irradiate the 300-nm nanowire

Besides the power used in Fig. 2(b, c, d) (39 mW, 40 mW, and 42 mW), we also irradiate the 300-nm-diameter NW with power of 37 mW and 43 mW (shown in Fig. S1). At 37 mW irradiation power (lower than the 39 mW critical power), the NW will not melt no matter how long the irradiation time is. A wider gap (2166 nm) will form when the irradiation power is increased to 43 mW at parallel polarization.

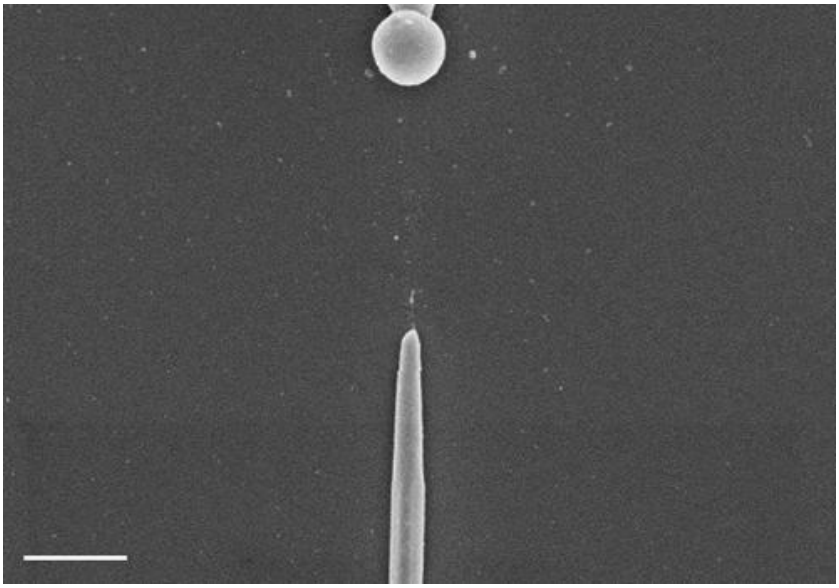

Figure S1 SEM image of a 300-nm-diameter gold NW after light irradiation with power of 43 mW at parallel polarization. Inset scale bar is 1 μm.

2. Influence of irradiation time on nanobreaking for power close to critical power

Figure S2 shows the morphological changes of a 285-nm-diameter gold NW after light irradiation with different irradiation time and fixed irradiation power (27 mW) at perpendicular polarization. It can be seen that when the irradiation time is increased from 2 ms to 4 ms, a successful nanobreaking can be obtained.

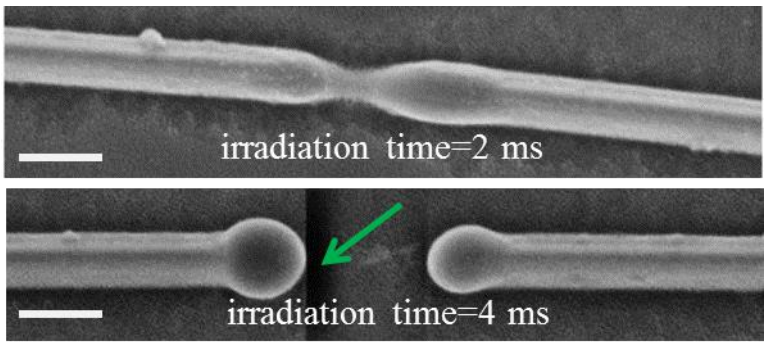

Figure S2 Morphological changes of a 285-nm-diameter gold NW after light irradiation with different irradiation time (2 ms and 4 ms) and fixed irradiation power (27 mW) at perpendicular polarization. Inset scale bars are 300 nm. (the abrupt background change indicated by the green arrow in the SEM image is due to the excess electron accumulation electrons during imaging.)