Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Room-Temperature Fabrication of SiC Microwire Photodetector on Rigid and Flexible Substrates via Femtosecond Laser Direct Writing

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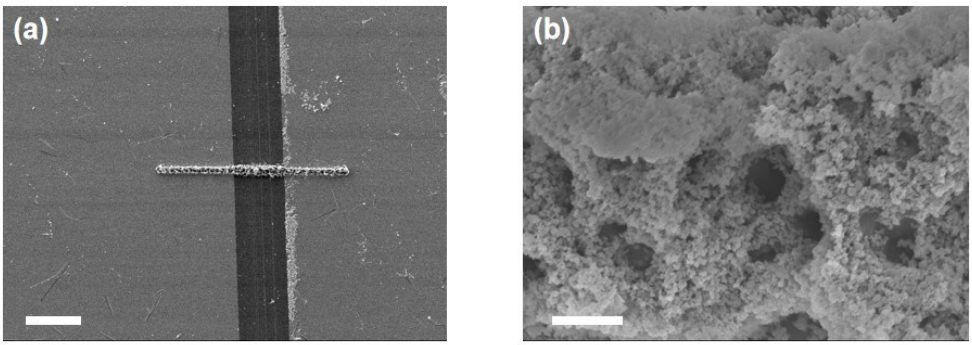

Fig.S1 (a) Typical SEM image of PD with an individual microwire. (b) High-

magnification SEM image of the microwire. Scale bars: (a) 10 μm, (b) 1 μm.

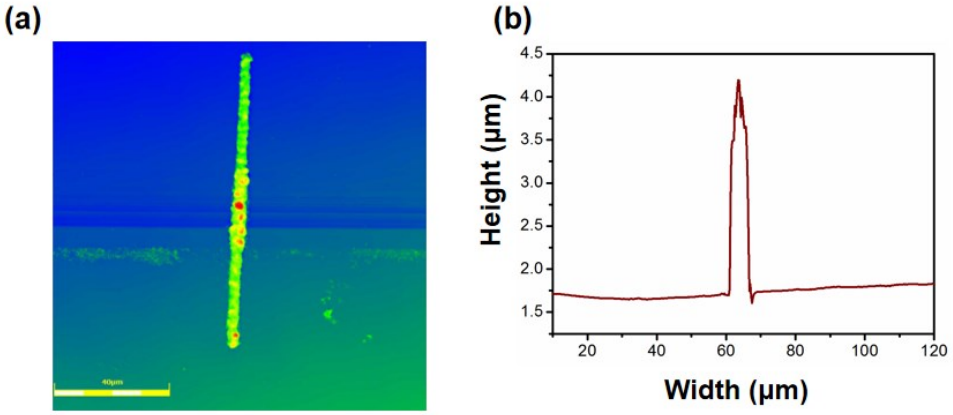

Fig.S2. (a). Laser confocal microscope image of SiC microwire. (b). The height and width of SiC microwire.

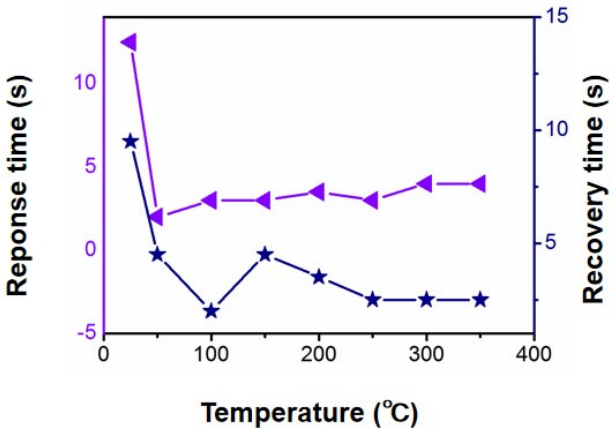

Fig.S3 Response time and recovery time of the SiC-based photodetector at a varying temperature from 25 ℃ to 300 ℃ at a bias of 1 V.

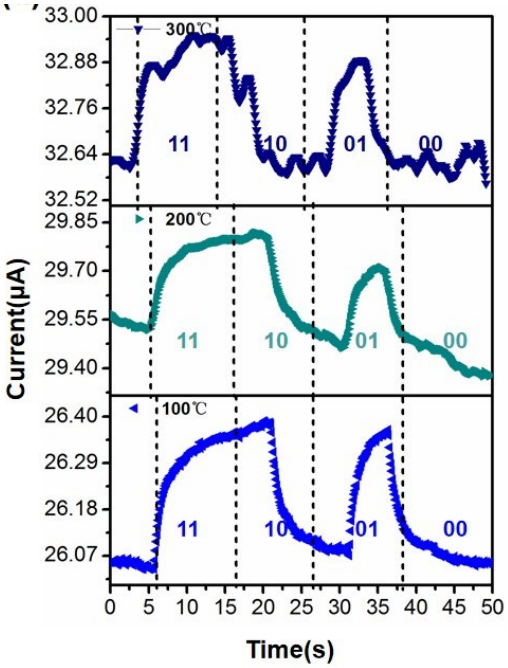

Fig.S4 (a). Optical communication application of SiC-based photodetector at different temperatures.

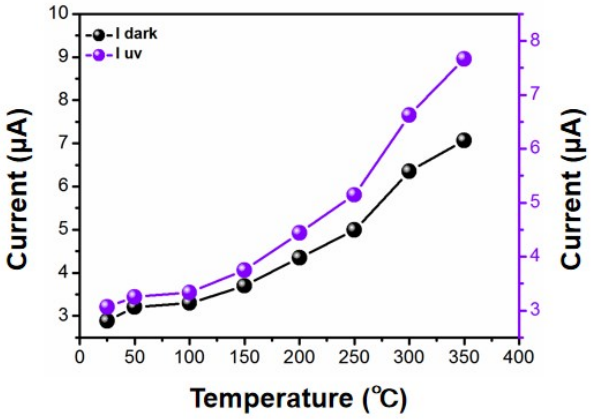

Fig.S5 The I_{dark} and I_{uv} of the SiC photodetector at varying temperature from 25 ℃ to 300 ℃ at a bias of 1 V.

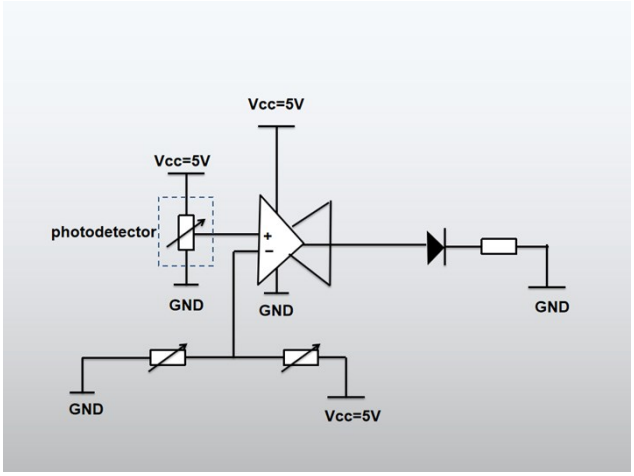

Fig.S6 Circuit diagram of artificial circuit.

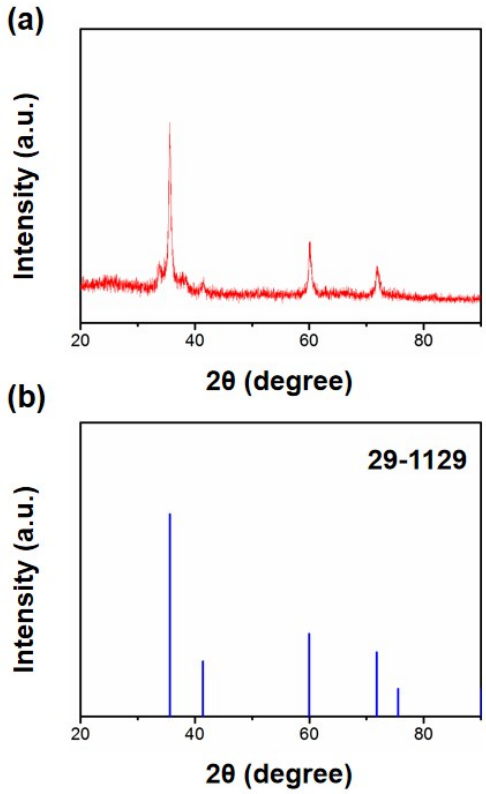

Fig.S7. XRD patterns of the SiC.

Table S1 Sensing performance comparison of some photodetectors

Photodetector; Responsivity (A/W); Response time (s)/ Recovery time (s); Detectivity (Jones); Bias (V); Max. Service temperature (℃); Fabrication time of sensing area (min); Fabrication temperature (℃);Refs.

GaN; 0.037; ＜0.03/＜0.03; 3.6×10^{11}; 200; 125; 435; 930; 1

Sb2S3; 1152; 0.037/0.037; 2×10^{13}; 1; 147; 60; 150; 2

GeS; 6800; -; 5.6×10^{14}; 4; 150; 120; 200; 3

SiC nanowire;-; 2.1/10.8; -; -; 150;1080; 1500; 4

3C-SiC nanobelt; 6.37×10^{5}; 0.05/0.05; -; 5; 300;＞30; 1400; 5

SiC; 55.85; 4/2.5; 1.22×10^{8} ; 1; 300; 0.5; Room temperature; This work

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