Electronic Supplementary Material (ESI) for Nanoscale
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Supporting Information

Visible-NIR photodetectors based on CdTe nanoribbons

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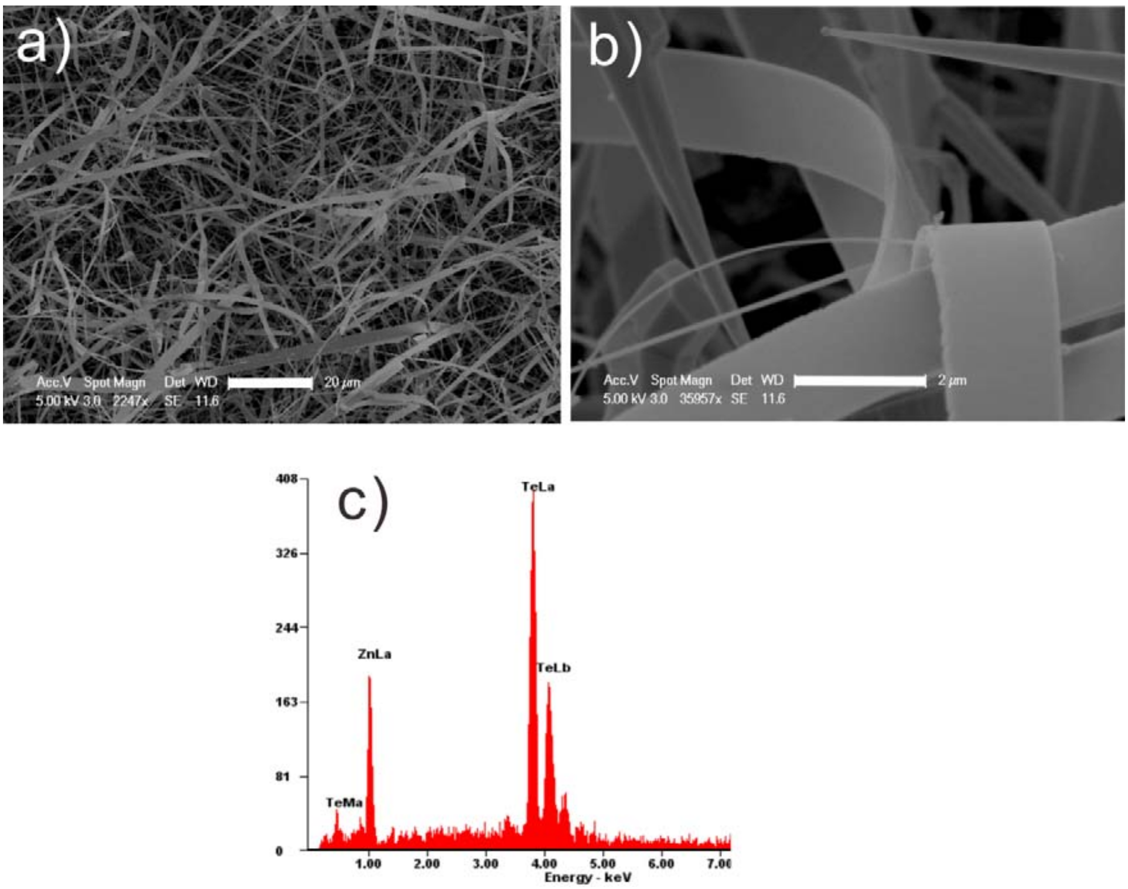

Figure S1. a) SEM morphology of ZnTe NRs. b) Enlarged SEM view of ZnTe NRs showing the thickness of NRs of about 120 nm. c) The EDS spectrum of ZnTe NRs.

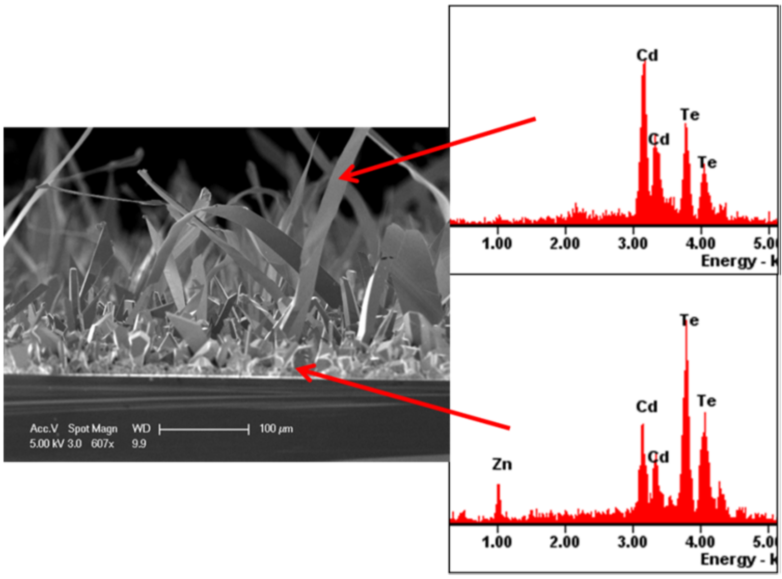

Figure S2. SEM images and EDS spectra of as-prepared CdTe NRs. Zn was observed in the buffer layer formed prior to the growth of ZnTe NRs on silicon substrates.

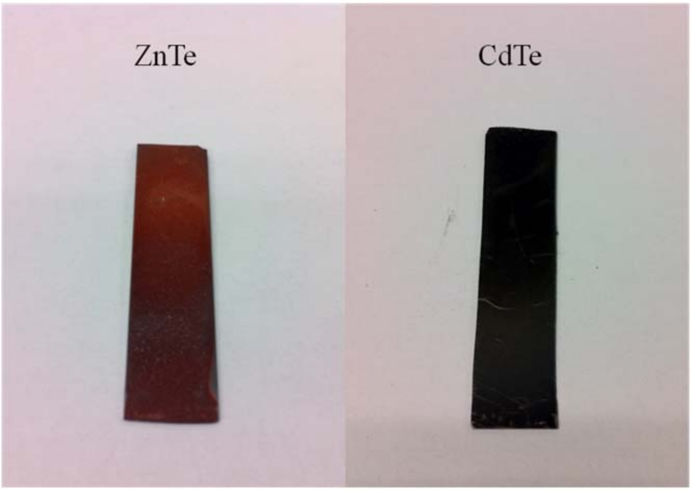

Figure S3. Optical images of ZnTe and CdTe NRs.

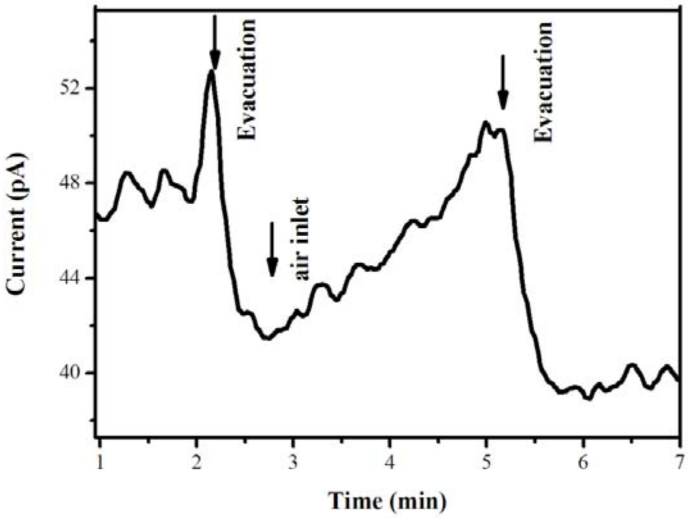

Figure S4. The variation of conductance of a single CdTe NR upon the switch of ambient between air and vacuum of 2×10^{-1} torr.

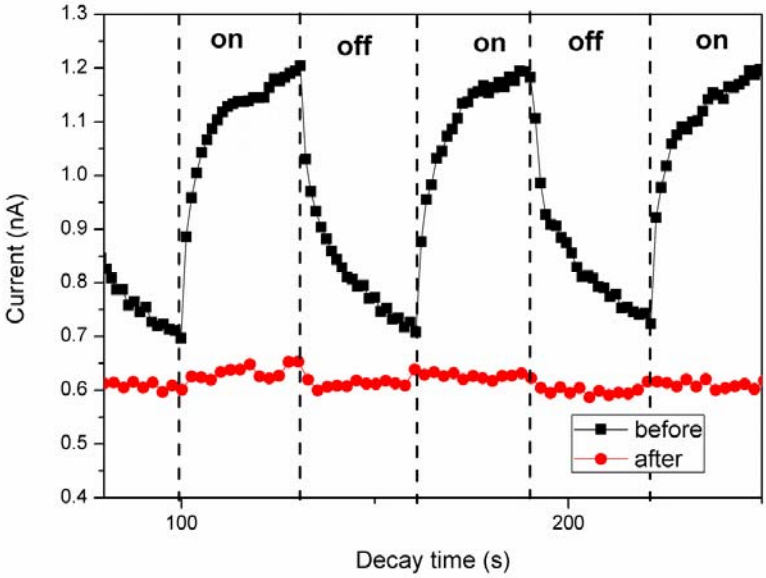

Figure S5. The photo response of the same CdTe NR device before and after 300 nm-thick SiO_2 layer coating. The bias voltages is 10 V, the wavelength of incident ligth is 400 nm, and light intensity is 637 μW/cm^2.

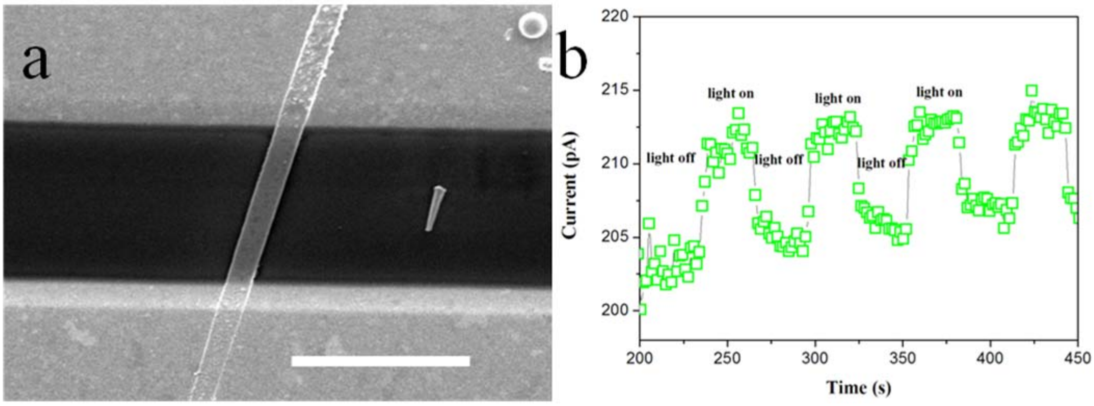

Figure S6. a) SEM morphology of a CdTe NR-based photodetector with channel length of 10 μm. The scale bar is 10 μm. b) Photo response of the CdTe NR illuminated with 400 nm light with intensity of 5.8 μW/cm^2. The bias voltage is 10 V. The responsivity is calculated to be about 20.3 A/W.

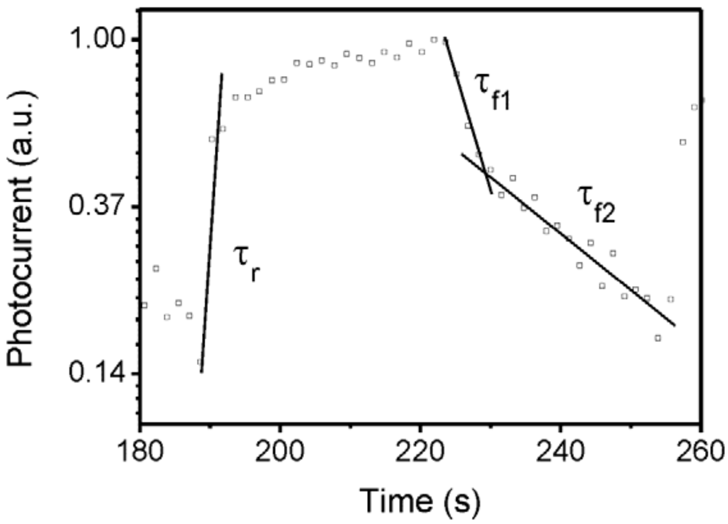

Figure S7. Time response (LnI ~ t curve) of a single CdTe NR under bias voltage of 5V. The wavelength is 400 nm and light intensity is 637 μW/cm^2. The time response curve of the CdTe NR device can be well fitted by the equation $I = I_0(1 - e^{-t/\tau_r})$ for the rising edge $I = I_o e^{-t/\tau_f}$ for the falling edge. τ_r and τ_f are the time constants for the rising and rising edges, respectively. According to the fitting, τ_r was estimated to be 1.1 s. For the falling edge, fitting gave two time constants: τ_{f1} ~ 3.3 s and τ_{f2} ~ 17.1 s.