Electronic Supplementary Information

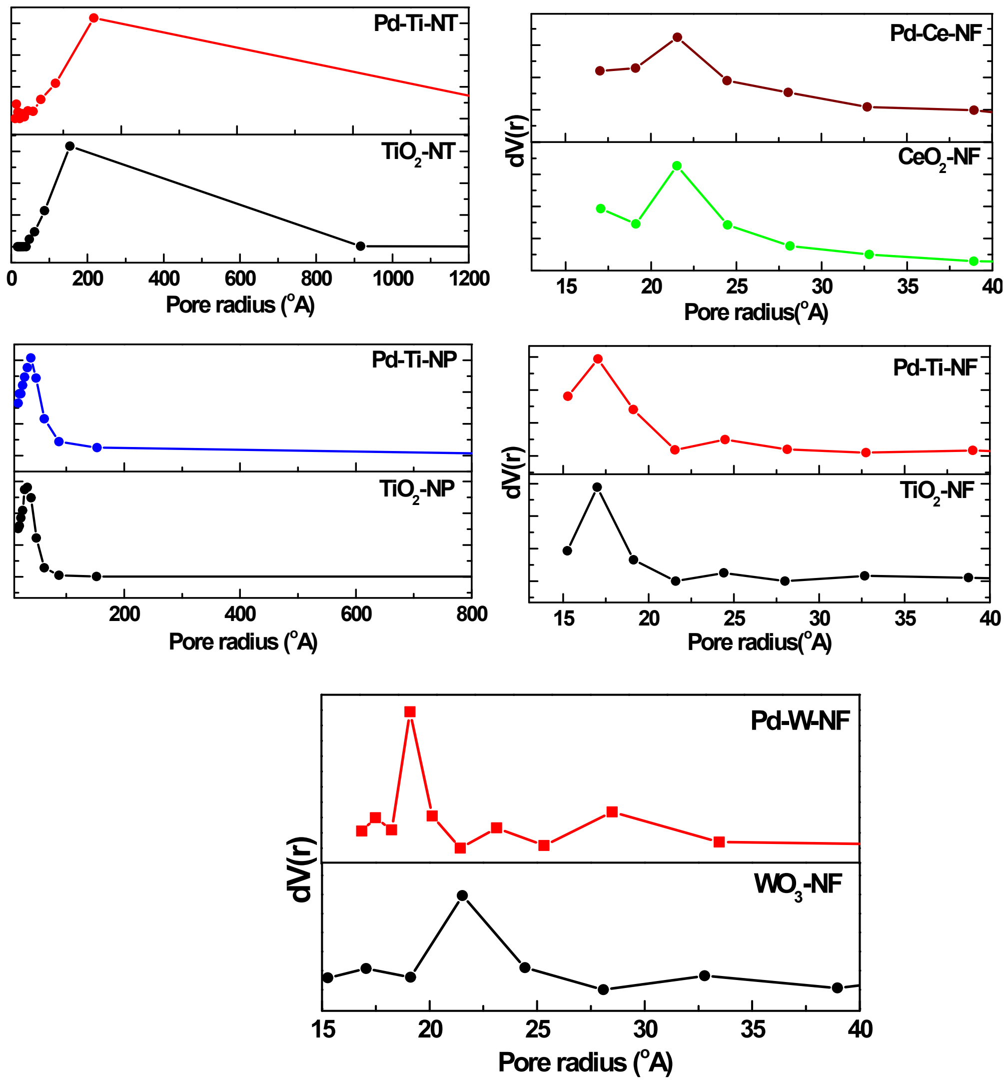

Fig. S1: Pore size distribution patterns of the bare and Pd deposited semiconductor samples

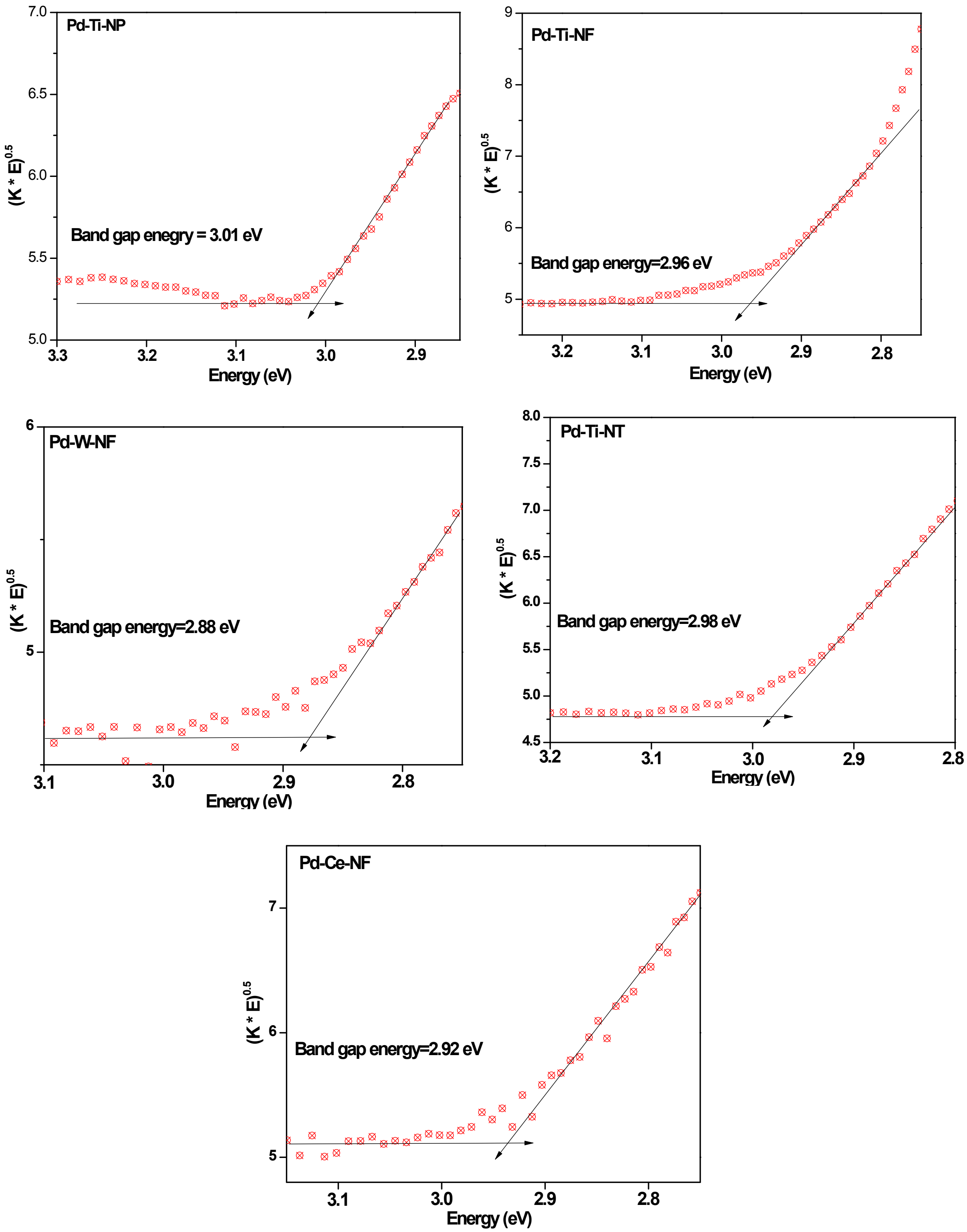

Fig. S2: Band gap energy measurements for Pd-deposited semiconductor samples

Calculation of the theoretical photocurrent of Pd-deposited semiconductor samples

The single photon energy is calculated from Equation S1

$$(\lambda) = h \text{ X}(C/\lambda) \qquad \text{(S1)}$$

Where $E(\lambda)$ is the photon energy (J), h is Planck's constant (6.626×10^{-34} J s), C is the speed of light (3×10^{8} m s^{-1}) and λ is the photon wavelength (m).

The UV photon flux is then calculated according to Equation S2

$$Flux\ (\lambda) = (\lambda)/E\ (\lambda) \qquad \text{(S2)}$$

Where $Flux(\lambda)$ is the UV light photon flux (m^{-2} s^{-1} nm^{-1}), and $P(\lambda)$ is the UV light flux (W m^{-2} nm^{-1}).

The theoretical maximum photocurrent density under UV light illumination, J_{max} (A m^{-2}), is then calculated by integrating the UV photon flux, shown in Equation S3:

$$Jmax = e\ X \int_{\lambda 2}^{\lambda 1} Flux\ (\lambda) d\lambda \qquad \text{(S3)}$$

Where λ_1 is the absorption edge of semiconductor, λ_2 is the lower limit of the UV irradiation, and e is the elementary charge of electron (1.602×10^{-19} C).

The theoretical photocurrent for synthesized Pd deposited semiconductor samples were calculated accordingly.