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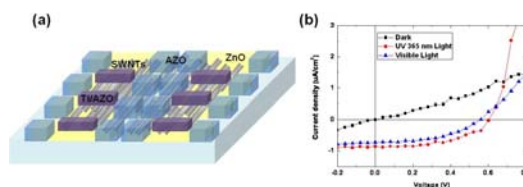
휘닉스파크  
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**EG-19\*****Fully transparent p-SWNTs/n-ZnO Heterojunction Structure**

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We have fabricated heterojunction devices consisting of SWNT and ZnO films on quartz substrate. The  $I$ - $V$  curves measured across the junction exhibit a diode-like behavior in dark, indicating that p-n junction is formed between SWNT and ZnO. On the other hand, irradiation of UV or visible light results in enhanced photocurrents as well as photovoltaic effects. These results demonstrate the feasibility of a fully transparent solar cell, since electrodes are made by depositing transparent Al-doped ZnO to obtain fully transparent devices.

**EG-20\*****Magnetic Nanoparticle - Based Separation of Metallic and Semiconducting Carbon****Nanotubes**

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We report a simple and scalable method for the separation of semiconducting single-walled carbon nanotubes (SWNTs) from metallic SWNTs using magnetic nanoparticles (MNPs) functionalized with polycationic tri-aminated polysorbate 80 (TP80). MNPs-TP80 are selectively adsorbed on acid-treated semiconducting SWNTs, which makes semiconducting SWNTs highly concentrated to over 95 % under the magnetic field. Almost all field effect transistor network devices, which were fabricated using separated semiconducting SWNTs, have exhibited a p-type semiconducting behavior with an on/off ratio of higher than  $10^4$ .

