Fabrication and characteristics of heterojunctions of π-conjugated polymer nanowires

Dong Hyuk Park, Yong Baek Lee, Bo Hyun Kim, Young Ki Hong, Hyun Seung Kim, and Jinsoo Joo
Department of Physics, Korea University, 5-1 Anam-dong, Sungbuk-gu, Seoul, Korea
jioo@korea.ac.kr

We synthesized heterojunctions of π-conjugated polymer nanowires of poly (3,4-ethylenedioxythiophene) (PEDOT)-polypyrrole (PPy) and PEDOT-polythiophene (PT), which were synthesized in the nanoporous of anodic alumina oxide (AAO) template through sequential electrochemical polymerization method. To discern the formation and structure of the heterojunctions nano-systems, we used scanning electron microscope (SEM) and transmission electron microscope (TEM). Structural and optical properties of the heterojunctions nanotubes were examined by using Fourier transform-infrared (FT-IR) spectroscopy, ultraviolet and visible (UV/vis), and photoluminescence (PL) spectra. We observed that the I-V characteristic curves of heterojunctions π-conjugated polymer nanowires had a rectification effect.

Figure 1. SEM image of PEDOT-PPy heterojunctional nanowires.

References