ICAMD 2005
The 4th International Conference on Advanced Materials and Devices
Dec. 5 ~ 7, 2005, Jeju, KOREA
Ramada Plaza Jeju Hotel
http://www.icamd2005.or.kr

PROGRAM & ABSTRACTS

Organized by
Applied Physics Division, The Korean Physical Society
Quantum Photonic Science Research Center
Center for Strongly Correlated Materials Research
Quantum-Functional Semiconductor Research Center
Electron Spin Science Center
Center for Nanotubes and Nanostructured Composites
Yonsei Nanomedical National Core Research Center
Asia Pacific Center for the Theoretical Physics
Nano Thin Film Materials Laboratory, Cheju National University
Center for Advanced Plasma Surface Technology

Sponsored by
Korean Ministry of Science and Technology
Korea Science and Engineering Foundation
Korea Research Foundation
Hanyang University
Research Institute for Basic Science, Cheju National University
Samsung Advanced Institute of Technology
Jusung Engineering Co., Ltd.
New Power Plasma Co., Ltd.
PLASMART Co., Ltd.
Novel System Co., Ltd.
ICD Co., Ltd.
Nano-rectifier of $\pi$-conjugated polymer nanowires: fabrication and characteristics

D. H. Park, Y. K. Hong, Y. B. Lee, B. H. Kim and J. Joo *

Department of Physics, Korea Univ., Seoul, KOREA

We synthesized heterojunctions of the two different $\pi$-conjugated polymer nanowires of poly (3,4-ethylenedioxythiophene) (PEDOT)-polypyrrole (PPy) and PEDOT-polythiophene (PT), respectively. Heterojunctional polymer nano-systems were synthesized in the nanoporous of anodic alumina oxide (AAO) template through sequential electrochemical polymerization method. To discern the formation and structure of the heterojunctional nano-systems, we used scanning electron microscope (SEM) and transmission electron microscope (TEM). Structural and optical properties of the heterojunctions nanowires were examined by using Fourier transform-infrared (FT-IR) spectroscopy and ultraviolet and visible (UV/Vis) spectra. From the $I$-$V$ characteristic curves, heterojunctions $\pi$-conjugated polymer nanowires shows a rectification effect.

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


*J. Joo, Anam-dong 5-1, Sungbuk-ku, Seoul 136-701, Korea; jjoo@korea.ac.kr; phone +82-2-3290-3103; fax +82-2-927-3292