Electronic Supplementary Material (ESI) for RSC Advances

Supplementary Information

Conductive Microrods Preparation by Self-Assembly and Polymerization

Sangwoo Park†, Tae-Geun Kwon†, Soo-In Park, Seonhyung Kim, Jinyoung Kwak, and Sang-Yup Lee*

Department of Chemical and Biomolecular Engineering, Yonsei University
Seoul, Korea 120-749.

1. NMR study

Chemical structure of DPH was confirmed through NMR spectroscopy. The molecule was dissolved in DMSO and then ^{1}H NMR spectrum was obtained (Bruker, 600MHz High Resolution NMR Spectrometer). Figure S1 shows the ^{1}H NMR spectrum. Spectrum showed peaks at δ 1.51 (m, 4H); 2.11 (m, 4H); 2.59 (m, 4H); 4.14 (s, 4H); 5.95(m, 4H, -CH of pyrrole) 6.71 (m, 4H, -CH of pyrrole). Disappearance of carboxylic acid peak means that carboxyl group of Py-COOH and NH_2 group of adipic acid dihydrazaide were reacted successfully each other. Other peaks indicate that pyrrole and hydrazide were remaining intact.

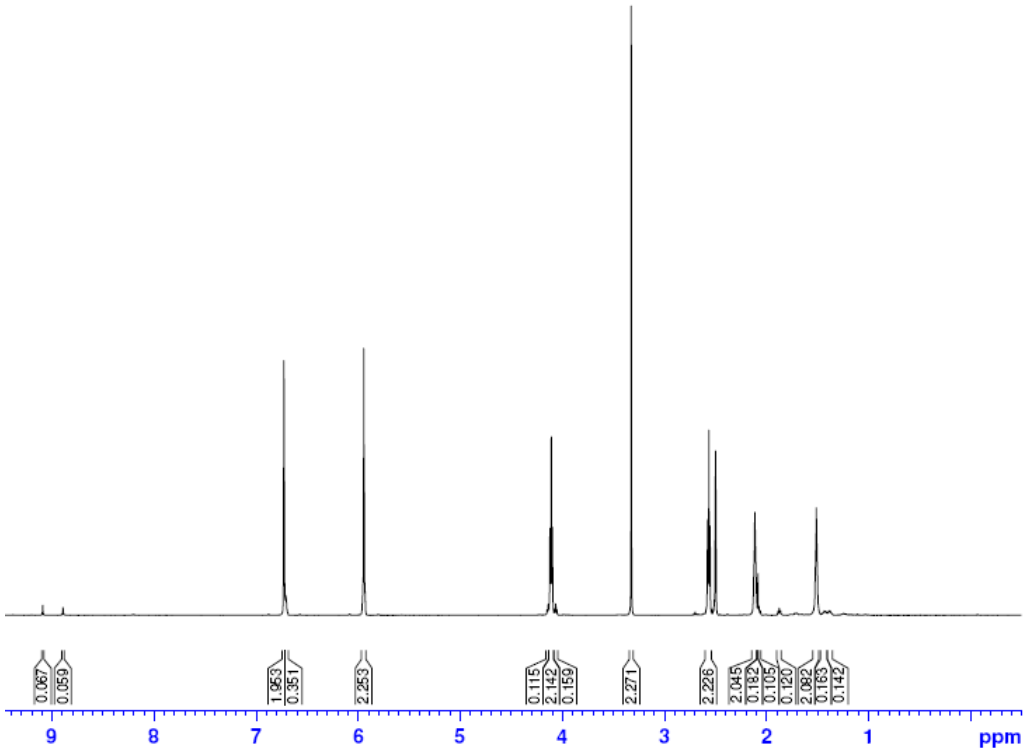

Figure S1. NMR spectra of the product, molecule **1**.

2. SEM images of porous structure prepared by polymerization of molecule 1

When the DPH was polymerized in the nitromethane (NM) without EISA procedure, porous network structure was obtained. The DPH was dissolved in NM and then $FeCl_3$ NM solution was added slowly to the solution. The polymerization was performed overnight to complete the reaction. After drying to remove NM, the porous material was obtained. Figure S2 shows SEM images of prepared material.

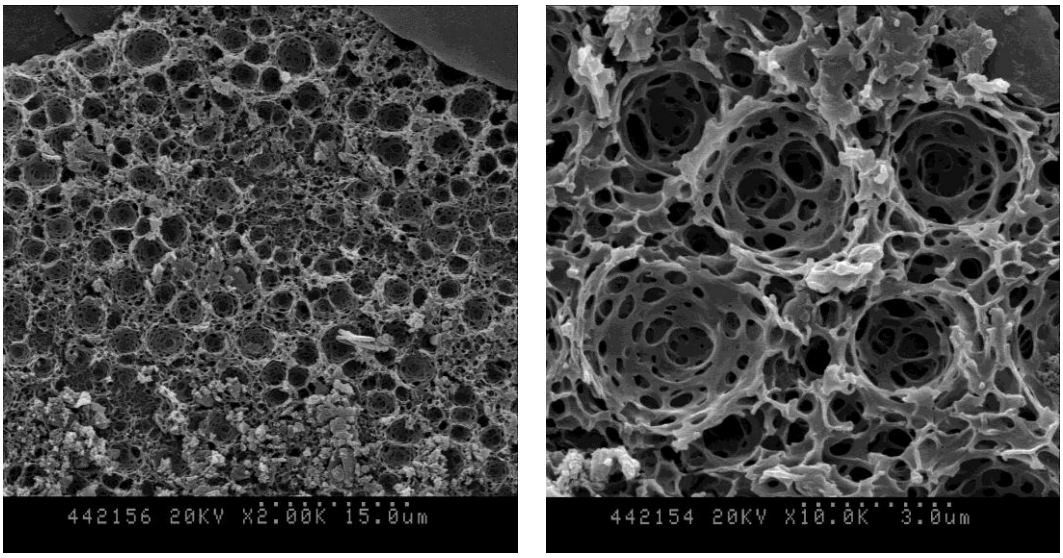

Figure S2. SEM images of porous material

3. Optical band gap estimation

The optical band gaps of pristine and polymerized DPH microrods were estimated using the diffuse reflectance spectroscopy (DRS). The band gaps were obtained from Tauc's plot with the Kubelka-Munk theory.