

## Nanoporous Templates for Energy and Optoelectric Nanomaterials

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Nanoporous templates based on the nanoporous block copolymer (BCP) and anodizing aluminum oxide (AAO) membranes have been widely used for to prepare high aligned ultrahigh density array of conducting polymer nanowires and nanotubes. Since these nanowires (or tubes) could be directly connected to the anode, they provide excellent pathway for the holes that are separated from the excitons in the polymeric solar cells. The morphology of the conducting polymer nanowires was examined by high resolution transmission electron microscopy, X-ray diffraction, and current-sensing atomic force microscopy. We found very high conductivity of nanowires along the wire direction, and this was due to the chain confinement effect. We also introduced organic-inorganic hybrid solar cells based on P3HT and ultrahigh density array of CdSe nanorods.