Poly \((p\text{-penylenevinylene})\) (PPV) nanotubes and nanowires were synthesized through electrochemical polymerization of \(\alpha\text{-\(\alpha\)'-dibromo- \(\alpha\text{-\(\alpha\)'-dicholo-p-xylene in acetonitrile by using nanoporous anodic aluminum oxide templates.}\)\] The formation of nanotubes and nanowires of PPV was confirmed by using SEM and TEM experiments as shown in Fig.1. In order to compare structural and optical properties of bulky- and nano- PPV materials, we measured FT-IR and photoluminescence (PL) spectra. From the PL spectra of the systems, we observed the blue shift for the PPV nanomaterials comparing with PPV bulk samples as shown in Fig.2. The results imply the shortening of \(\pi\)-conjugated length in the PPV nano-systems.\[^{3}\] Photocurrent of the PPV nanomaterials increased \(\sim\) 10 times compared to the darkcurrent. We also present the electroluminescence of the OLED devices using PPV nanomaterials.

Figure 1. (a) SEM and (b) TEM images.

Figure 2. (a) Photoluminescence and (b) photocurrent and darkcurrent, of PPV nanotubes.

References
3. Win-Pin Chang, Wha-Tzong Whang and Ping-Way Lin, Polymer 37, 1513, 1996