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Conducting polymer nanofibers for high sensitivity detection of chemical analytes. ABHISHEK KUMAR, IGNATY LESHCHINER, Department of Chemistry, Moscow State University, Russia , SUBHALAKSHMI NAGARAJAN, RAMASWAMY NAGARAJAN, JAYANT KUMAR, Center for Advanced Materials, University of Massachusetts Lowell — Possessing large surface area materials is vital for high sensitivity detection of analyte. We report a novel, inexpensive and simple technique to make high surface area sensing interfaces using electrospinning. Conducting polymers (CP) nanotubes were made by electrospinning a solution of a catalyst (ferric tosylate) along with poly (lactic acid), which is an environment friendly biodegradable polymer. Further vapor deposition polymerization of the monomer ethylenedioxy thiophene (EDOT) on the nanofiber surface yielded poly (EDOT) covered fibers. X-ray photo electron spectroscopy (XPS) study reveals the presence of PEDOT predominantly on the surface of nanofibers. Conducting nanotubes had been received by dissolving the polymer in the fiber core. By a similar technique we had covalently incorporated fluorescent dyes on the nanofiber surface. The materials obtained show promise as efficient sensing elements. UV-Vis characterization confirms the formation of PEDOT nanotubes and incorporation of chromophores on the fiber surface. The morphological characterization was carried out using scanning electron microscopy (SEM) and transmission electron microscopy (TEM).

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