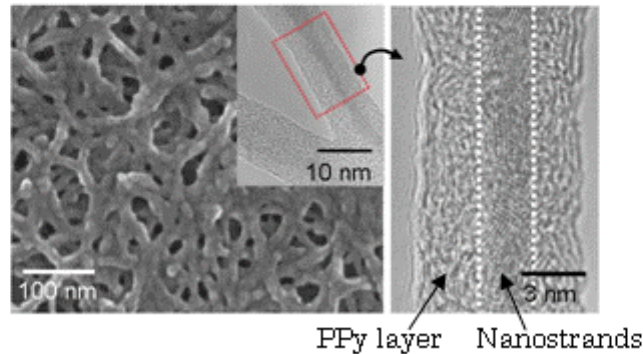


# Mesoporous Separation Membranes of Polymer-Coated Nanostrands

Extremely long and thin nanocomposite fibers were prepared by oxidative polymerization of pyrrole (or aniline) around the surfaces of copper hydroxide nanostrands. The individual nanostrands of 2.5 nm were uniformly coated with a uniform polypyrrole layer of 3 to 4 nm, giving hybrid core-shell fibers of about 10 nm in diameter and a few micrometers in length. The as-prepared nanocomposite fibers were dispersive in water and were able to be converted into the thin free-standing films. The films had a thickness of a few tens of nanometers, and provided a mechanically stable nanofiber network with abundant pores of a few nanometers, and available for protein separation under the pressure of at least 90 kPa, retaining extremely high filtration rates for water. The coating process described here is simple and can be extended to prepare other functional composite nanofibrous thin films with pore size in mesopore scale.



SEM and TEM images of PPy coated nanostrands