MoS2 nanotubes were coated with conductive polymer thiophene by atmospheric pressure radiofrequency (RF) glow discharge. MoS2 nanotubes were prepared by thermal decomposition of hexadecylamine (HDA) intercalated laminar MoS2 precursor on anodized aluminum oxide template and the thiophene was polymerized directly on surface of these nanotubes as in situ by plasma method.

The effect of plasma power on PTh/MoS2 nanocomposite properties has been investigated by means of Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM and EDX), and X-ray diffraction spectroscopy (XRD). The presence of PTh bands in the FTIR spectra of PTh/MoS2 nanotube nanocomposites corresponding XRD results indicates that the polythiophene coating onto MoS2 nanotube. The chemical structure of PTh is not changed when the plasma power of discharge differ from 117 to 360 W. SEM images of nanocomposites show that when the discharge power is increased between 117 and 360 W the average diameter of PTh/MoS2 nanotube nanocomposites are changed and the structure become more uniformly. (C) 2015 Elsevier B.V. All rights reserved.