

Electrochromic (EC) properties of tungsten trioxide (WO_3) was improved with preparing hybrids of tungsten trioxidetitanium dioxide (WO_3TiO_2) and tungsten trioxidepoly(3,4-ethylenedioxythiophene) (WO_3PEDOT) by a rotating capacitively coupled radio frequency (rf 13.56 MHz) plasma reactor. Energy-dispersive X-ray spectroscopy mapping results indicated that TiO_2 and PEDOT were coated homogeneously onto the surface of the WO_3 powders. Thin films of hybrid powders have been prepared by the physical vapor deposition method of the electron beam evaporation technique. Redox potentials, optical contrast at 700 nm, and durability during 2000 cycles of EC devices were investigated, comparatively. Hybrids of WO_3 indicated excellent coloration efficiency (cm^2/C) and switching speed values compared with untreated WO_3 . The coloration efficiency values were found to be 85.88 and 41.61 cm^2/C of WO_3TiO_2 and WO_3PEDOT , respectively. The switching speed of WO_3 (13.3 s, from bleached state to colored state) increased to 1.4 s for WO_3TiO_2 .