

Reversible superhydrophobic to superhydrophilic conversion of conducting polypyrrole films. Xu, Lianbin; Mulchandani, Ashok; Chen, Wilfred; Yan, Yushan. Department of Chemical and Environmental Engineering, University of California at Riverside, Riverside, CA, USA. Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, 2005 (2005), COLL-352. Publisher: American Chemical Society, Washington, D. C. CODEN: 69GQMP Conference; Meeting Abstract written in English. AN 2005:189052 CAPLUS (Copyright 2005 ACS on SciFinder (R))

Abstract

Highly porous conducting polypyrrole (PPy) films were electrochem. prep'd. in acetonitrile electrolyte contg. perfluorooctanesulfonate (PFOS). The PFOS-doped (oxidized) PPy films exhibited superhydrophobic behavior with a water contact angle (CA) of 152°. Reducing the PFOS-doped PPy by neg. charge led to neutral (undoped) PPy films, which were superhydrophilic (CA \approx 0°). By controlling the electrochem. potential, PPy films were switched between neutral state and oxidized state reversibly, resulting in reversibly switchable superhydrophobic and superhydrophilic surface. Details on the prep'n. and characterization of the PPy films are presented including SEM (SEM), energy dispersive X-ray spectroscopy (EDS), FT-IR spectroscopy, UV-Vis spectroscopy, X-ray diffraction (XRD), contact angle, and cond. measurements.