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P.S.C.17.

SPRAY PYROLYSIS SYNTHESIS OF FTO-SUPPORTED ELECTROCHROMIC FILMS

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Fluorine-doped Tin Oxide (FTO) thin films have been deposited on glass substrates using a spray pyrolysis technique from tin tetrachloride solution precursors at various substrate temperatures. The electrochromic layers of different transition metal oxides were deposited onto FTO support and electrochromic properties of the layers were investigated by electrochemical cyclic voltammetry and optical transmission measurements. The structure, phase composition and crystallinity were studied using UV- and IR spectroscopy, X-ray diffraction, scanning electron microscopy (SEM). Color/bleach kinetics and reversibility were found to depend on the thickness, structure, microstructure and chemical composition. Model electrochromic cells with different electrolytes and deposited electrodes were assembled and tested and their electrochromic parameters were determined.

P.S.C.18.

HYDROTHERMAL SYNTHESIS OF MAGNETIC NANOPARTICLES AND FABRICATION OF MAGNETIC COMPOSITE PARTICLES USING POLY(L – LACTIDE)

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Magnetic iron oxide nanoparticles ranging from 5 to 20 nm were synthesized using hydrothermal approach. Syntheses were carried out starting from non toxic chemicals at mild reaction temperatures. Different surfactants such as sodium oleate, oleic acid/oleyl amine and PEG are used as in situ surface modifiers for nanoparticles. Also, by varying the type and concentration of precursors and surfactants the size and habitus of the obtained nanocrystals was adjusted. Furthermore, prepared particles are used for fabrication of hydrophilic nano and micro composite particles using biodegradable poly(L-lactide). The qualitative analysis of the synthesized magnetic particles and composites were carried out by XRD. The particle morphology, size and structure were determined TEM, while size distribution was measured by laser diffraction. The phase composition of composite particles, in particular, surface modification was investigated by FT-IR spectroscopy. Morphology of composite particles was observed by SEM.