

Programme & The Book of Abstracts

Twentieth Annual Conference

YUCOMAT 2018

Herceg Novi, Montenegro, September 3–7, 2018

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TWENTIETH ANNUAL CONFERENCE

YUCOMAT 2018

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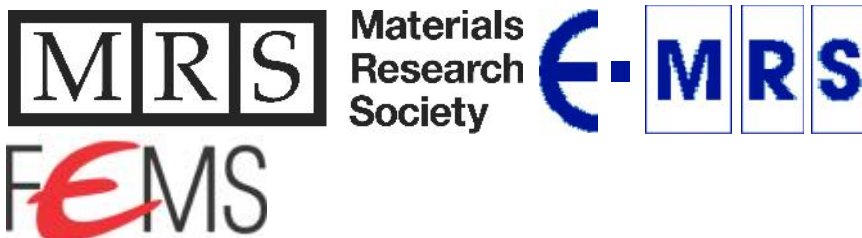
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Study of the interaction between graphene oxide and 12-tungstophosphoric acid in their nanocomposite

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The rich surface chemistry and large surface area of graphene oxide (GO) provide a platform for various functional materials that synergistically enhance charge storage properties of the composite. In present work we have investigated interaction between GO and 12-tungstophosphoric acid (WPA) in their nanocomposites as a function of different mass ratio of constituents. For this purpose, the Fourier transform infrared spectroscopy (FTIR), X-ray photoelectron spectrometry (XPS), temperature programmed desorption method (TPD) and thermogravimetric/differential thermal analysis (TGA-DTA) methods were used. FTIR spectra have shown shifts and splitting of characteristic bands of WPA as a result of interactions with GO. Both XPS and TPD methods have shown an initial decrease of the total amount of surface oxygen groups of GO, with a minimum at around 10 wt.% of WPA, above which a restoration of the amount of surface oxygen groups was noticed. TGA-DTA analysis revealed an improved thermal stability of the material up to 25 wt.% of WPA; at higher loading of WPA the thermal properties of nanocomposite became alike to the ones of individual components. The obtained results suggest optimal conditions for preparation of GO-WPA nanocomposites for electrochemical charge storage applications.

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