Programme & The Book of Abstracts

Twentieth Annual Conference

YUCOMAT 2018

Herceg Novi, Montenegro, September 3–7, 2018

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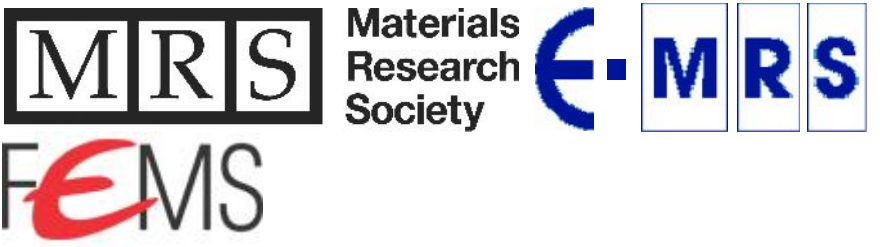

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Structural and electrochemical study of lithium iron (II) pyrophosphate

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Lithium iron(II) pyrophosphate, $Li_2FeP_2O_7$, attracts attention of researchers for application as a cathode material in rechargeable lithium batteries. $Li_2FeP_2O_7$ has somewhat higher voltage than commercial $LiFePO_4$ (3.5 and 3.4 V, respectively), thus enables higher energy density, and also provides the possibility of two-electron reaction during intercalation. Within this study, pristine $Li_2FeP_2O_7$ and its composite with carbon $Li_2FeP_2O_7$/C were synthesized, with the carbon being formed by the pyrolysis of organic precursor *in situ* during formation of $Li_2FeP_2O_7$ at high temperature. The polymer of methylcellulose was used as carbon source because of its ability to reversibly, depending on temperature, dissolve or gel in water. The structural, electrical and electrochemical characteristics of prepared powders were investigated by means of X-ray diffraction analysis, Mössbauer spectroscopy, impedance spectroscopy and galvanostatic charge/discharge testing. The results imply that in situ formation of carbon alters lattice parameters, decreases crystallite size, and facilitates lithium ion intercalation/deintercalation processes.
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