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P.S.A.7.

MICROEMULSION-MEDIATED HYDROTHERMAL SYNTHESIS OF LiFePO_4 CATHODE MATERIAL

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LiFePO_4 is a material of great interest as cathode material for lithium ion batteries thanks to its good characteristics. One of the advanced techniques for LiFePO_4 powder preparation is hydrothermal synthesis. In this work, LiFePO_4 powders were prepared by a new approach, a microemulsion-mediated hydrothermal method in which microemulsion medium was further treated by hydrothermal reaction. The main advantage of the proposed route is low reaction temperature and short processing time that prevents agglomeration in the formed particles. LiFePO_4 powders were prepared by microemulsion-mediated hydrothermal method in cyclohexane/Triton X-100/n-hexanole/water at 180 °C. The product of hydrothermal synthesis was heat treated in reductive atmosphere to avoid oxidation of Fe^{2+} to Fe^{3+} . Powders were characterized by X-ray diffraction, scanning electron microscopy and galvanostatic charge-discharge cycling.

P.S.A.8.

SAMARIUM-DOPED CERIA THIN FILMS ON FTO GLASS OBTAINED BY ELECTRODEPOSITION

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Ceria-based oxides have been extensively used as oxygen ion conductors in solid oxide fuel cells, gas sensors, catalytic supports or promoters for automotive exhaust gas conversion reaction, glass polishing materials, ultraviolet absorbers. In particular, much attention has been focused recently on the preparation of rare earth ions-doped CeO_2 for enhancing its electrical, optical, magnetic or catalytic properties.

This work reports on pure ceria and Sm-doped ceria (SDC) thin films, deposited potentiostatically onto F-doped tin oxide (FTO)-coated glass substrates, from nitrate solution at room temperature. The as-grown films and films annealed at different temperatures were characterized by means of X-ray diffraction, scanning electron microscopy, energy dispersive X-ray, Raman and ultra visible spectroscopies. It was shown that samarium addition into electrolytic solution influences the electrodeposition process and induces changes in the structural, optical and morphological properties of the obtained ceria films. Effect of annealing temperature was studied and discussed as well.