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P.S.A.12

GEL COMBUSTION SYNTHESIS OF $NaTi_2(PO_4)_3$/C COMPOSITE, SUITABLE TO BE ANODE OF AQUEOUS SODIUM-ION BATTERY

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The Nasicon-type $NaTi_2(PO_4)_3$ nanoparticles covered by carbon layer was successfully synthesized by the combustion of a combustible gelled precursor, and subsequent isothermal heat treatment of the combustion product in an inert atmosphere. Upon isothermal treatments at various temperatures, both XRD and TGA/DTA measurements revealed that combustion product should be heated at least at 700 ^oC, in order to obtain crystalline phase. The electrochemical behavior of obtained composites was tested by cyclic voltammetry in aqueous $NaNO_3$ and $LiNO_3$ solution. The sodium intercalation/deintercalation kinetic of $NaTi_2(PO_4)_3$/C from aqueous electrolyte was evidenced to be faster than the lithium one, which was explained by differences in occupancy of crystallographic sites by intercalated ions. The desodiation capacity of nasicon obtained at 700 ^oC in saturated aqueous $NaNO_3$ solution amounted to ~52 $mAhg^{-1}$ and ~40 $mAhg^{-1}$ at very high scan rates of 10 mVs^{-1} and 50 mVs^{-1}, respectively.

P.S.A.13

HYDROXYAPATITE SINTERING IN THE PRESENCE OF $LiFePO_4$

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Sintering of hydroxyapatite attracts attention for decades with the final aim to obtain reliable materials for bio-applications. Various kind of sintering techniques as well as sintering additives were investigated to obtain desired functional properties. Previously, sintering was performed in the presence of lithium phosphate, with certain improvements.

This paper describes sintering behavior of hydroxyapatite in the presence of $LiFePO_4$. The added material melts around 960 °C, what is usually the temperature of hydroxyapatite intermediate sintering stage. The formed liquid phase could improve atomic motion between hydroxyapatite particles, with possibility of intergranular reinforcing phase formation. Potential interfacial reactions and its influence on microstructural properties of sintered material will be studied.