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RSE-SEE

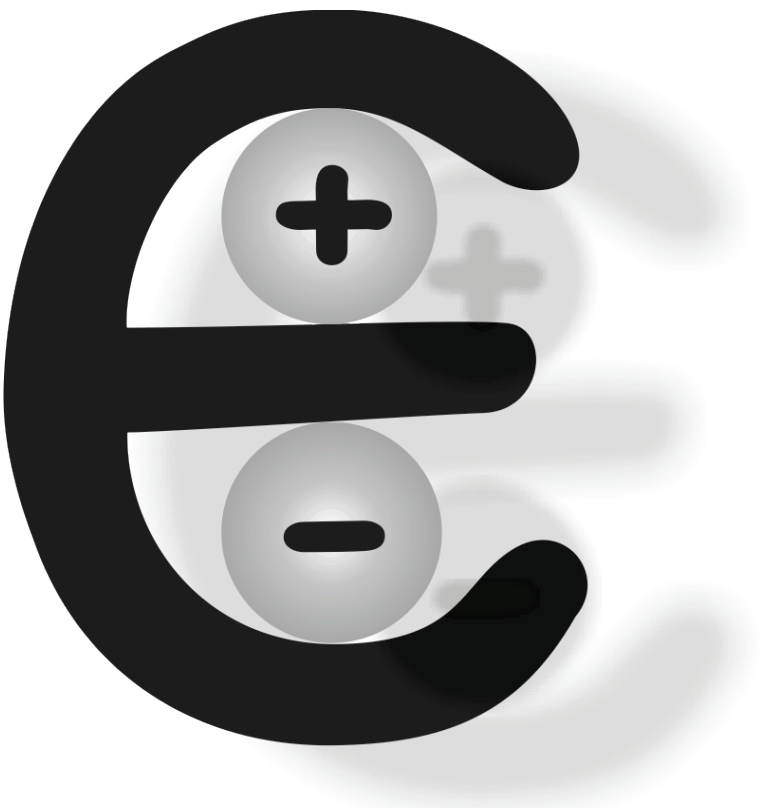
South-East Europe

Second Regional Symposium on Electrochemistry

South-East Europe

Program &

Book of Abstracts



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POSTER PRESENTATIONS

ECS-P-01

Electrochemical performance of $Li_{1.2}V_3O_8$ in saturated aqueous solution of $LiNO_3$

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The $Li_{1.2}V_3O_8$ was synthesized by modified sol-gel method and treated at several temperatures. Electrochemical performance of $Li_{1.2}V_3O_8$ was investigated by galvanostatic cycling in saturated aqueous solution of $LiNO_3$. The sample treated at 300 ^oC consisted of uniform rod-shaped particles, 100–150 nm in diameter and 300–800 nm in length. It displayed the best electrochemical performance: the initial discharge capacity amounted to 136.8 $mAhg^{-1}$ and capacity fade upon 50 charging/discharging cycles was only 12 %. This is significant improvement compared to the product obtained by solid state reaction, published by other authors. There is the literature evidence that $Li_{1.2}V_3O_8$ synthesized in similar way displays enhanced electrochemical properties in organic solutions, too.

ECS-P-02

Oxidation of formic acid on bulk and nanosized Pt-Co alloys

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Bulk Pt_3Co and nanosized Pt_3Co and PtCo alloys supported on XC-72 high area carbon were investigated as the electrocatalysts for the oxidation of formic acid. Cyclic voltammetry in 0.1 M $HClO_4$ and stripping voltammetry of CO_{ads} in the same electrolyte show a small difference in the potentials of Pt-oxide formation and reduction and CO_{ads} oxidation. Based on these results, we concluded that electronic modification of Pt by Co atoms, which was theoretically predicted and experimentally proved on solid/gas interface, is exhibited in the electrochemical environment. Promotion of HCOOH oxidation rate on bimetallic Pt-Co surfaces with respect to pure Pt was found to be up to factor of eight in the case of PtCo/XC-72 catalyst. This moderate increase of the reaction rate is ascribed mostly to the ensemble effect, because partial leaching of Co increased Pt:Co ratio at the bimetallic surfaces, diminishing the efficiency of the ensemble effect.