

Programme & The Book of Abstracts

Seventeenth Annual Conference

YUCOMAT 2015

Herceg Novi, Montenegro, August 31 – September 4, 2015

organised by

MATERIALS RESEARCH SOCIETY OF SERBIA

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20th Anniversary YUCOMAT Conference

SEVENTEENTH ANNUAL CONFERENCE

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August 31-September 4, 2015
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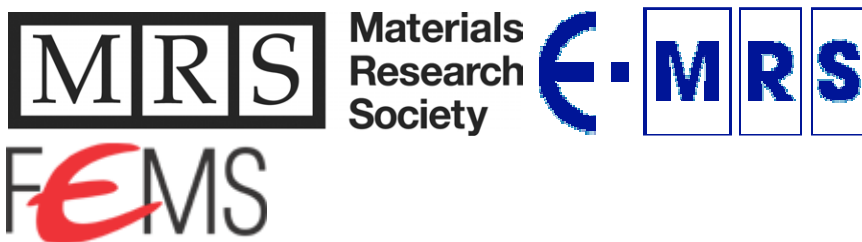
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P.S.B.1.

Valence State Ce(Yb), Electron Structure and Physical Properties of New Ternary Intermetallic Compounds

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High-energy spectroscopy (XES, XAS and XPS) has been used to study the electron structure of the investigated new ternary intermetallic compounds. In recent years there has been a continually increasing interest in investigation of ternary compounds with crystallize in the YNi_9Si_2 , $CeGa_2Al_2$, $Yb_2Fe_4Si_9$, $ThMn_{12}$ and AlB_2 , which have a large variety of ground state properties. LIII -absorption spectra Ce(Yb) in ternary compounds were obtained at 80K and 300K using a tube spectrometer. The mixed valence state of Ce(Yb) was obtained in the investigation compounds. The measurements were carried out both with classical methods as well with the Mossbauer effect in order to establish parameters of the hyperfine interactions (only for confirm Fe atoms compounds). The calculations of electron energy bands $E(k)$ and partial DOS for compounds new $R.E.M_2X_2$ were performed by the semi relativistic linear muffin-tin orbital method without considerations of spin-orbit interactions A satisfactory agreement between theoretical and experimental data is achieved.

P.S.B.2.

Preparation of NdFeB Magnetic Nanoparticles by Surfactant-Assisted High Energy Ball Milling

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Improved permanent magnets are essential for emergent applications in electronic and electric devices. Different attempts have been made to produce nanoscale anisotropic rare-earth magnetic powder based on Nd-Fe-B material. Recently, high energy surfactant assisted ball milling has been proven to be an effective technique to produce anisotropic hard magnetic Nd-Fe-B nanoparticles. In this paper we are presenting our experimental results on high energy ball milling in planetary mill "Puverisette 7 premium line" from "Fritsch". Except milling material, there are several variables which influence the milling process for the selected mill type. They are: mechanical properties of the milling media material (bowls, balls, etc.), ball-to-powder ratio (BPR), extent of filling of the milling bowl, milling atmosphere, milling speed and duration, and type of solution and surfactant for wet milling. We are going to give influence of all these parameters on obtained NdFeB magnetic materials with nanosized dimensions starting from $Nd_2Fe_{14}B$ HDD (Hydrogenated Disproportionated Desorbed) material.

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