Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION IX
New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 20-21. September 2021.

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PHONON INVESTIGATIONS IN $YVO_4:Eu^{3+}$ NANOPOWDERS

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In this work two methods of preparation of yttrium orthovanadate nanopowders were presented: Solid State Reaction (top – down approach) and Solution Combustion Synthesis (bottom – up approach). For starting structural characterization, X – Ray Powder Diffraction (XPRD) and Field Emission Scanning Electron Microscopy (FESEM) were used. We report the change in reflection spectra in europium doped YVO_4 nanopowders with comparison to its bulk analog. In UV – Vis reflection spectra we consider the change in values of band gap in these structures, after resizing it from bulk to nanomaterial. In Far – Infrared (FIR) reflection spectra, we registered the existence of Surface Optical Phonon (SOP) and different multi – phonon processes which alter the reflection spectra of bulk YVO_4. The influence of Eu ions is reflected through multi – phonon processes that occur and are connected with energy transfer from YVO_4 lattice to Eu ions. All IR spectra were modeled using classical oscillator model with Drude part added which takes into account the free carrier contribution. Since our samples are distinctively inhomogeneous materials, we use Effective Medium theory in Maxwell Garnett approximation to model its effective dieletric function.

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HUMAN USE CLAY: ORAL, SKIN TERTMAN AND BODY BATHING

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Clay has been known to, and used by, humans since antiquity. Indeed, clay hasbeen implicated in the prebiotic synthesis of biomolecules, and the very origins of lifeon earth.Bentonite is any clay composed predominantly of montmorillonite claymineral of the smectite group whose main properties are: particles of colloidal size,high degree of layer stacking disorder, high specific surface area, moderate layercharge, large cation exchange capacity, variable interlayer separation, depending onambient humidity, propensity for intercalating extraneous substances, including organiccompounds and macromolecules, and ability of some members (e.g., Li+ and Na+ exchanged forms) to show extensive interlayer swelling in water; under optimumconditi- ons, the layers can completely dissociate. It is also referred to as exfoliatedclay. Clay has also become indispensable to modern living. Clay is nonpollutingand can be used as a depolluting agent. Of great importance for the nearfuture is