



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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Structural and magnetic properties of Ag-doped CuO nanopowders

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The influence of Ag doping on the crystal structure and magnetic properties of CuO nanopowders was investigated. Nanoparticles of copper–silver oxide solid solutions with composition $\text{Cu}_{1-x}\text{Ag}_x\text{O}$ ($x=0.01-0.05$) were successfully produced by using self–propagating room temperature synthesis using reaction between metal nitrates and sodium hydroxide. Prepared powders were calcinated at 700 °C for 2 h. The diffraction pattern was recorded at room temperature and atmospheric pressure in the absence of any re-heating of the sample. A fitting refinement procedure using the Rietveld method was performed which showed the incorporation of Ag^{3+} ions in the CuO crystal lattice, where they substitute Cu^{2+} ions. Magnetic behaviour of synthesized materials was investigated by SQUID magnetometer in temperature interval 2-400 K. Copper(II) oxide exhibits ferroelectricity driven by magnetic order at temperature as high as 230 K [1]. Multiferroic phase is present above the first order phase transition at $T_{N1}= 213$ K and exists up to the subsequent first order phase transition $T_{N2}= 230$ K. It was shown that disorder in the form of impurities can stabilize the ferroelectric phase what was a motivate to dope CuO with Ag in order to improve further its multiferroic properties. In $\text{Cu}_{1-x}\text{Ag}_x\text{O}$ small change of magnetic properties were observed if compared to CuO.

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THE MINERALOGY OF NATURAL FELDSPAR HYALOPHANE

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The tectosilicates, including all polymorphic forms of SiO_2 , feldspar, feldspatoids, scapolites as well as zeolites, represent one of the most represented groups of minerals in the lithosphere. The feldspars found great application in various fields of industry, especially in the field of aluminosilicate ceramics. In this paper are presented the crystallochemical and mineralogical properties of natural feldspar hyalophane.