The Serbian Society for Ceramic Materials

Institute for Multidisciplinary Research (IMSI), University of Belgrade

Institute of Physics, University of Belgrade

Center of Excellence for the Synthesis, Processing and Characterization of Materials for use in Extreme Conditions "CEXTREME LAB" - Institute of Nuclear Sciences "Vinča", University of Belgrade

Faculty of Mechanical Engineering, University of Belgrade

Center for Green Technologies, Institute for Multidisciplinary Research, University of Belgrade

Faculty of Technology and Metallurgy, University of Belgrade

Faculty of Technology, University of Novi Sad

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June 11-13.2019. Belgrade Serbia

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Branko Matović
Zorica Branković
Aleksandra Dapčević
Vladimir V. Srdić

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P-4

INFLUENCE OF Co^{2+} IONS ON PHOTOCATALYTIC PROPERTIES OF $MgFe_2O_4$ FERRITES

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In this work, spinel magnesium cobalt ferrites ($Co_xMg_{1-x}Fe_2O_4$, x = 0.0, 0.1, 0.3, 0.5, 0.7, 0.9) were synthesized by a sol-gel combustion method. Magnesium nitrate, cobalt nitrate and iron nitrate were used as oxidizers and citric acid was used as a reducing agent. The effects of cobalt ions on structural and morphological properties were investigated and characterized by X-ray diffraction (XRD), Raman spectroscopy, Field emission scanning electron microscope (FESEM) and Fourier transform infrared (FT-IR) spectroscopy. A cubic spinel structure formed with a varied distribution of cobalt and magnesium ions on tetrahedral and octahedral sites that depended on their content. All ferrite powders consisted of multigrain agglomerates. Optical properties were investigated by UV- *vis* spectrophotometry. The photocatalytic activity of as prepared samples was evaluated by measuring the rate of photodegradation reaction of methylene blue (MB) under visible light irradiation. After 240 min, compared to other samples, the sample labeled as $Co_{0.1}Mg_{0.9}Fe_2O_4$ showed the best rate of photodecomposition of MB resulting in reduction of 90% of its initial concentration.