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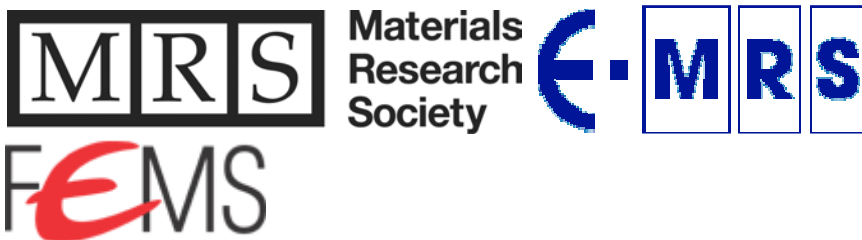
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Acknowledgments: This conference is held in honour of Prof. Dejan Raković's 65th birthday.



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Electrical properties of mechanically activated magnesium-titanate ceramics

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In this paper the influence of mechanical activation on electrical properties of magnesium-titanate ceramics has been investigated. Mixtures of MgO and TiO₂ powders at a molar ratio MgO:TiO₂ = 2:1 were mechanically activated by grinding in a high energy planetary ball mill device. Nonactivated and mixtures treated in planetary ball mill for 5, 10, 20, 40, 80 and 120 minutes were sintered at 1300°C. The influence of mechanical activation on phase composition and crystal structure has been analyzed by XRD, while the effect of activation on microstructure was investigated by scanning electron microscopy.

Electrical properties were investigated in the frequency range from 1 kHz to 5 MHz by RLC meter. Correlations between capacitance, angle of dielectric losses as well as real and imaginary part of impedance with activation time and polarization mechanism were performed.

P.S.B.13.

Influence of mechanical activation on the MgO-Al₂O₃-SiO₂ system with TeO₂

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Cordierite 2MgO+2Al₂O₃+5SiO₂ is frequently used ceramic material, that is commonly used as a carrier of electrical components due to its low dielectric constant (~ 5), and low temperature thermal expansion coefficient (20•10⁻⁷ °C⁻¹). In order to accelerate the process of sintering, 5.00 mass% TeO₂ was added to the starting mixtures. System was tested in two parallel mixtures, one with no added additives, and the other one with TeO₂. The mechanical activation of the both mixtures was performed in a high-energy ball mill in time intervals from 0 to 40 min with ball to powder mass ratio 1:40. The particle size analysis (PSA) was employed in order to determine the changes in the particle size of the mechanically treated powders. The phase composition of the starting powders as well as microstructures was analyzed by the means of X-ray diffraction method and SEM.