Abstract Submitted
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Synthesis, Structural and Electrical Properties of $Mg_xPb_{(1-x)}TiO_3$ produced by mechanosynthesis[1] JALDAIR NOBREGA, ARIANO DE GIOVANNI RODRIGUES, MICHEL VENET ZAMBRANO, PAULO SERGIO SILVA JUNIOR, JULIO CESAR CAMILO ALBORNOZ DIAZ, PAULO SERGIO PIZANI, Univ Fed de Sao Carlos, ESPECTROSCOPIA RAMAN EM MATERIAIS NANOESTRUTURADOS COLLABORATION, METALURGIA FíSICA E DE ESPECTROSCOPIA MECÂNICA COLLABORATION — Over last decades scientific studies about ceramic materials based in metallic oxides have pointed to an increasing wide range of applications. Among them, $PbTiO_3$ has been significantly applied to electronic components and optoelectronics devices. Another example can be found in the microwave dielectric $MgTiO_3$, which has been used on the production of devices. The development of a compound that combines the physical properties of these well-known materials aims the achievement of a new type of ceramics presenting distinctive applications. We report the production of $Mg_xPb_{(1-x)}TiO_3$, by means of mechanosynthesis techniques. Electric measurements were carried out in order to verify the dielectric behavior of the system. By analyzing the signatures of characteristic phases of $PbTiO_3$ and $MgTiO_3$ in X-Ray diffractograms, we could confirm that the stoichiometry of our solid solutions could be controlled by properly adjusting the amounts of the oxides used as precursors. The Raman spectroscopy allowed us to study the behavior of the soft mode, typical of ferroelectric, which is present in all composition. By determining the dependence of its energy with temperature variation, we could estimate the temperatures of phase transition for each composition.

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Jaldair Nobrega
Univ Fed de Sao Carlos

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