

Abstract Submitted  
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**Improvement of the thermoelectric properties of substituted SrTiO<sub>3</sub> by synthesis conditions**<sup>1</sup> S. KOLESNIK, S. BOONA, Department of Physics, Northern Illinois University, DeKalb, IL, B. DABROWSKI, Department of Physics, Northern Illinois University, DeKalb, IL, Materials Science Division, Argonne National Laboratory, Argonne IL, K. SWIERCZEK, K. WOJCIECHOWSKI, AGH University of Science and Technology, Cracow, Poland — We have studied thermoelectric properties of polycrystalline Sr<sub>1-x</sub>La<sub>x</sub>TiO<sub>3</sub> and SrTi<sub>1-x</sub>Nb<sub>x</sub>O<sub>3</sub> (x<=0.2) synthesized by a solid state synthesis method in a H<sub>2</sub>/Ar atmosphere. The incorporation of La and Nb into the crystal structure was confirmed by x-ray diffraction and energy dispersive x-ray spectroscopy. By increasing the synthesis temperature (up to ~1570°C) and decreasing the partial pressure of oxygen, we were able to optimize the thermoelectric properties of the studied materials. The determined values of the thermoelectric figure of merit ZT~0.1 at 400 K and ~0.3 at 800 K are comparable to those of single crystals of La- and Nb- substituted compounds. Our results show that the synthesis conditions play a crucial role in tailoring of the thermoelectric properties of substituted strontium titanates.

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