

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Transport Properties of La-doped SrTiO<sub>3</sub> Ceramics Prepared Using Spark Plasma Sintering**<sup>1</sup> ARASH MEHDIZADEH DEHKORDI, Department of Materials Science and Engineering, Clemson University, Clemson, South Carolina, SRIPARNA BHATTACHARYA, TERRY M. TRITT, Department of Physics and Astronomy, Clemson University, Clemson, South Carolina, HUSAM N. ALSHAREEF, Materials Science and Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia — In this work, thermoelectric transport properties of La-doped SrTiO<sub>3</sub> ceramics prepared using conventional solid state reaction and spark plasma sintering have been investigated. Room temperature power factor of single crystal strontium titanate (SrTiO<sub>3</sub>), comparable to that of Bi<sub>2</sub>Te<sub>3</sub>, has brought new attention to this perovskite-type transition metal-oxide as a potential n-type thermoelectric for high temperature applications. Electronic properties of this model complex oxide, SrTiO<sub>3</sub> (ABO<sub>3</sub>), can be tuned in a wide range through different doping mechanisms. In addition to A site (La-doped) or B site (Nb-doped) substitutional doping, introducing oxygen vacancies plays an important role in electrical and thermal properties of these structures. Having multiple doping mechanisms makes the transport properties of these perovskites more dependent on preparation parameters. The effect of these synthesis parameters and consolidation conditions on the transport properties of these materials has been studied.

<sup>1</sup>The authors wish to acknowledge financial support from the KAUST-Clemson Faculty Initiated Collaboration (FIC) fund.

Arash Mehdizadeh Dehkordi  
Department of Materials Science and Engineering,  
Clemson University, Clemson, South Carolina

Date submitted: 12 Dec 2011

Electronic form version 1.4