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The Seebeck Coefficient in Oxygen Enriched La_2NiO_4 PAUL BACH, VICTOR LEBORAN, FRANCISCO RIVADULLA, University of Santiago de Compostela — Oxide-based devices show promise for themoelectric applications due to their chemical stability and straightforward fabrication. The $La_2NiO_{4+\delta}$ system has been predicted to show an increased thermopower coupled with an increased electrical conductivity around $\delta = 0.05$ [Pardo et al. PRB 86, 165114 (2012)] that could lead to a large thermoelectric figure of merit (ZT). We investigate the suitability of lanthanum nickelate as a candidate material for high-ZT devices through a systematic study of oxygenated thin films grown by pulsed laser deposition. We report the electrical conductivity, Seebeck coefficient, and structural morphology of La_2NiO_4 grown in a range of oxidizing atmospheres and discuss their implications for controlled engineering of thermoelectric properties. We have explored the possibility of gate-tuning these systems in order to fabricate single-oxide based devices. This work was supported by the Ministerio de Ciencia e Innovación (Spain), grant MAT2010-16157, and the European Research Council, grant ERC-2010-StG 259082 2D THERMS.

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