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Thermoelectric Properties of $R_{1-x}\mathbf{Sr}_x\mathbf{CoO}_3$ Perovskites[1] S. BOONA, B. DABROWSKI, S. KOLESNIK , O. CHMAISSEM, Physics Department, Northern Illinois University, DeKalb, IL 60115 — Cobalt oxide materials have recently shown promise for use in thermoelectric applications due to enhancement of the Seebeck coefficient (S) by the spin and orbital degeneracy of the Co^{3+} and Co^{4+} ions. We have studied Sr substituted RCoO$_3$ (R = rare earth elements) perovskites that exhibit increased transition temperatures to the low-spin ground state, which is required for achieving enhanced S. We have found that Gd is the smallest R for which the homogenous Sr substitution is possible. We will present structural and thermoelectric properties of these materials with $0 < \quad x \quad < 0.5$. We will describe our search for materials with optimal degeneracy ratios, which are stable within practical operating temperature ranges for thermoelectric applications.

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