Thermoelectric Properties of $R_{1-x}Sr_xCoO_3$ Perovskites\textsuperscript{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 $0 < x < 0.5$. 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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