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**Spin dynamics of  $\text{La}_{0.845}\text{Sr}_{0.155}\text{Mn}_{1-x}\text{M}_x\text{O}_3$  (M = Mn, Cu, Co) perovskites** MANH-HUONG PHAN, HARIHARAN SRIKANTH, Department of Physics, University of South Florida, Tampa, FL 33620, THE-LONG PHAN, Micro- and Nano-Structures Group, H. H. Wills Physics Lab, University of Bristol, Bristol BS8 1TL, UK — Influence of the spin-lattice coupling on the magnetoresistance and magnetocaloric properties of  $\text{La}_{0.845}\text{Sr}_{0.155}\text{Mn}_{1-x}\text{M}_x\text{O}_3$  (M = Cu, Co) perovskites has been investigated by means of electron spin resonance (ESR) spectroscopy. It was observed that asymmetrical ESR signals due to ferromagnetic correlations at temperatures  $T < T_{min}$  became Lorentzian at  $T > T_{min}$ , where  $T_{min}$  corresponds to the narrowest ESR linewidth. The temperature dependence of the ESR intensity,  $I(T)$ , for the samples was well described by an expression of  $I(T) = I_0 \exp(E_a/k_B T)$ . In the high temperature region,  $1/I(T)$  obeyed the Curie-Weiss law. The minimum linewidth,  $\Delta H_{min}$ , was determined to be 674, 890 and 750 Oe for  $\text{La}_{0.845}\text{Sr}_{0.155}\text{Mn}_1\text{O}_3$ ,  $\text{La}_{0.845}\text{Sr}_{0.155}\text{Mn}_{0.9}\text{Cu}_{0.1}\text{O}_3$  and  $\text{La}_{0.845}\text{Sr}_{0.155}\text{Mn}_{0.98}\text{Co}_{0.02}\text{O}_3$ , respectively. This indicated an improvement of the spin-lattice coupling in samples with Cu or Co addition. The strongest spin-lattice coupling resulted in the largest magnetocaloric effect in  $\text{La}_{0.845}\text{Sr}_{0.155}\text{Mn}_{0.9}\text{Cu}_{0.1}\text{O}_3$ . The addition of Cu or Co in  $\text{La}_{0.845}\text{Sr}_{0.155}\text{Mn}_1\text{O}_3$  reduced its ferromagnetism and conductivity. The mechanism of the spin-lattice coupling is discussed.

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