

Magnetic studies of $\text{EuBa}_2\text{Cu}_{3-x}\text{Ru}_x\text{O}_{7-\delta}$ compounds

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Effects of an Ru addition on magnetic properties of $\text{EuBa}_2\text{Cu}_{3-x}\text{Ru}_x\text{O}_{7-\delta}$ compounds were studied. Samples of $\text{EuBa}_2\text{Cu}_{3-x}\text{Ru}_x\text{O}_{7-\delta}$ with x ranging from 0 to 0.7 were prepared by the solid state reaction technique from Eu_2O_3 , BaCO_3 , CuO and RuO_2 precursors. Temperature dependences of the zero-field cooled and the field cooled DC magnetic moment at low and high applied magnetic field and magnetization $M(H)$ curves at 77 K were measured at a low and high applied magnetic field by the QD SQUID magnetometer MPMS XL-7. The molar susceptibility χ of the samples was corrected to the effects of the sample holder and temperature-independent contributions and fitted by the Curie–Weiss law. The values of the Curie constant, the Weiss temperature and the effective magnetic moment of Eu and Ru-ions have been estimated for the lowest temperatures and above superconducting transition temperature.