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Effects of high magnetic fields on the spin-glass states in disordered manganites NOBORU MIURA, PETER KERSCHL, NADJA V. KOZLOVA, KONSTANTIN NENKOV, KATHRIN DOERR, IFW, Dresden, Germany, ALEXANDER KIRSTE, MICHAEL VON ORTENBERG, Humboldt University, Berlin, Germany, DAISUKE AKABOSHI, YASUHIDE TOMIOKA, YOSHINORI TOKURA, CERC, AIST, Tsukuba, Japan, IFW, DRESDEN TEAM, HUMBOLDT UNIVERSITY, BERLIN TEAM, CERC, AIST, TSUKUBA TEAM — Magnetization and magnetoresistance were measured in single crystals of random alloys $RE_{1-x}AE_xMnO_3$ (RE and AE denote the rare-earth and alkaline-earth ions at the perovskite A-site) in pulsed high magnetic fields up to 50 T with a long time duration ($\sim$10 ms) and up to 140 T with a short time duration ($\sim \mu$s). The crystals exhibit the spin glass behaviors at low temperatures in zero field. In high magnetic fields, $Sm_{1-x}(Ba_{1-y}Sr_y)_xMnO_3$ showed prominent metamagnetic transitions, whereas $RE_{1-x}Ba_xMnO_3$ (RE=Sm, Eu, Gd) showed a smooth magnetization saturation with just kinks in the derivative of the magnetization. Moreover, in the metamagnetic phase transitions, peculiar time dependence and the pre-history dependence were found in the hysteresis of the magnetization. It was also found that the magnetization is accompanied with a colossal magnetoresistance. These behaviors were interpreted in terms of the developments of the clusters and the orbital orders by magnetic fields, which are dependent on the average A-site ionic radius and the randomness.

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