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Tunable metamagnetic transitions in double-perovskite Eu_2CoMnO_6 single crystals HWAN YOUNG CHOI, NARA LEE, Yonsei Univ, M.S. SEO, S.Y. PARK, Division of Materials Science, Korea Basic Science Institute, Daejeon 305-806, South Korea, Y.J. JO, Department of Physics, Kyungpook National University, Daegu 702-701, South Korea, Y.J. CHOI, Yonsei Univ — Double perovskite single crystals of Eu_2CoMnO_6 were first synthesized using flux method and their magnetic properties were investigated. Magnetic field dependence of magnetization reveals a metamagnetic transition in as-grown crystals. Controlling valences of magnetic ions in different gas annealing conditions leads to the complete change of shapes and locations of metamagnetic transitions in the isothermal magnetization. This remarkable variation originates from the formation of magnetic clusters with different valences of magnetic ions.

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