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Observation of double hysteresis in a $\text{MnMn}_6(\text{CH}_3\text{H}_5\text{O}_3)_3$ single-molecule magnet KLAUS GIEB, WOLFGANG KROENER, PAUL MÜLLER, Department of Physics and Interdisciplinary Center for Molecular Materials (ICMM), Universitaet Erlangen-Nuernberg, Germany, CARL-GEORG FREIHERR VON RICHTHOFEN, THORSTEN GLASER, Fakultae fuer Chemie - Lehrstuhl Anorganische Chemie I, Universitaet Bielefeld, Germany — We report on high field and low temperature magnetization measurements of a novel $\text{MnMn}_6(\text{CH}_3\text{H}_5\text{O}_3)_3$ complex. A home-made micro-Hall-probe magnetometer was used to perform the characterization at mK temperatures and fields up to 17 T. Most 3d-ion based single-molecule magnets, known up to now, have a spin ground state well separated from the first excited state, leading to the formation of giant spin at low temperatures. In contrast to this situation, the ground state ($S=6$) of the present complex can already be excited at moderate magnetic fields. Surprisingly, magnetic hysteresis was observed for both the ground state and the first excited state leading to a double hysteresis in the low temperature magnetization measurements. The blocking temperature was found to be $T_B \approx 1.3$ K. Origin and possible consequences of this unusual behavior will be discussed.

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