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Towards Skyrmions: Magnetic and electrical properties of Mn_xRh_ySn Heusler compounds KUMARI GAURAV RANA, MPI for Chemical Physics of Solids, Dresden, Germany and MPI of Microstructure Physics, Halle, Germany, E. BENEDIKT, MPI for Chemical Physics of Solids, Dresden, Germany, O. MESHCHERIAKOVA, MPI for Chemical Physics of Solids, Dresden, Germany and MPI of Microstructure Physics, Halle, Germany, A. KÖHLER, D. EBKE, C. FELSER, MPI for Chemical Physics of Solids, Dresden, Germany — A variety of possible ground states and tunable magnetic and electronic properties makes Mn $_2$-based Heuslers one of the most relevant materials for spintronic devices. Mn $_2$ RhSn, a non-centrosymmetric tetragonal Heusler with enhanced spin-orbit coupling, is recently found to possess a strong spin canting of its magnetic sublattices and the found strong Dzyaloshinskii-Moriya exchange encourages studies of Skyrmions in this promising Heusler compound. We report on the evolution of magnetic and electronic properties of ordered Mn_xRh_ySn films grown on single crystalline MgO (100) substrates using DC co-sputtering. For tetragonally ordered films, a curie temperature of up to 281 K and coercive field of up to 630 Oe (out of plane) is obtained. However, an in-plane component sets in for temperatures below 100 K. The structural ordering obtained for the films grown at different substrate temperatures influences the magnetic as well as the electronic properties. The exchange energies, magneto-transport properties, hall effect will be discussed. Our work gives an insight to tailor the properties of Mn_xRh_ySn films and highlights it as a potential candidate for future spintronic devices.

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