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The influence of hydrostatic pressure on the meta-magnetic transition and magnetocaloric properties of DyRu₂Si₂.¹ AHMAD IKHWAN US SALEHEEN, TAPAS SAMANTA, MOJAMMEL KHAN, Louisiana State Univ - Baton Rouge, IGOR DUBENKO, Southern Illinois University - Carbondale, PHILIP ADAMS, DAVID YOUNG, Louisiana State Univ - Baton Rouge, NAUSHAD ALI, Southern Illinois University - Carbondale, SHANE STADLER, Louisiana State Univ - Baton Rouge — We have studied the magnetic and magnetocaloric properties of the tetragonal rare-earth compound DyRu₂Si₂ as a function of applied hydrostatic pressure. At atmospheric pressure, transitions were observed at $T_t = 3.4$ K and $T_N = 29.2$ K. The isothermal entropy change (ΔS) and the adiabatic temperature change (ΔT_{ad}) were calculated from magnetization data collected at different applied pressures and from heat capacity measurements conducted at atmospheric pressure, respectively. A suppression of the magnetization was observed for $P = 0.588$ GPa and $P = 0.654$ GPa. Multi-step meta-magnetic-transitions as were observed at atmospheric pressure, were not present at these pressure values. For $P \approx 1$ GPa, the saturation magnetization increased, and the multi-step meta-magnetic transitions reappeared. This trend of pressure dependence was also apparent in the isothermal entropy change (ΔS) versus temperature (T) curves. Using a Maxwell relation, we estimated the volume magnetostriction from the pressure dependent magnetization measurements.

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