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Coercivity of Melt-Spun $\mathbf{Gd_{100-x}Fe_x}$[1] PAUL SHAND, ANDREW MEYER, University of Northern Iowa, DAVID SCHMITTER, Providence College, GEOFFREY ROJAS, JEFFREY SHIELD, JARED GOERTZEN, University of Nebraska-Lincoln, DANIAL HASKEL, Argonne National Laboratory, DIANDRA LESLIE-PELECKY, University of Texas at Dallas — We have measured the coercivity of melt-spun $Gd_{100-x}Fe_x$ ($0 \leq x \leq 40$) alloys over the temperature range 2 K$\leq T \leq$340 K. Previously performed structural measurements revealed that the system consists of crystalline hcp-Gd grains surrounded by a non-crystalline Gd or Gd-Fe phase composed of $Gd_{100-x'}Fe_{x'}$, where $x' > x$ is the iron concentration in the amorphous region. The two-phase structure is responsible for an unusual dependence of the coercivity on temperature in which non-zero coercivity is observed above the hcp-Gd T_c with a peak near 320 K. The coercivity decreases as the hcp-Gd grains order, then increases with decreasing temperature. This behavior is explained by the presence of Fe-rich magnetically correlated regions.

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