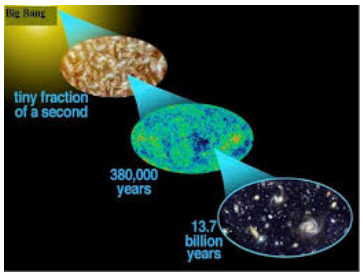

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Magnetotransport and magnetocaloric effect in Gd3In

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The electrical transport and magnetic properties of the rare-earth based binary intermetallic compound Gd3In are reported. The sample has tetragonal crystal structure with space group P4/mmm. At TC = 190 K, the sample orders ferromagnetically, however, a recentrant antiferromagnetic-like state is observed below TN = 100 K where a sharp drop in magnetization is observed. Clear signature of meta-magnetic transition is present in the isothermal variation of magnetization for an applied field of HC= 11.5 kOe at 2 K. Due to the presence of field induced transition, we have calculated the magneto-caloric effect (MCE) around the magnetic transitions using our magnetization data, which turns out to be quite eventful. MCE, expressed in terms of change in entropy (⍰S) due to the change in magnetic field (⍰), is found to be negative around TC with a maximum value of ⍰S= -5.3 Jkg-1K-1 for H = 50 kOe. On the other hand, it is positive up to H = 10 kOe around TN, and turns negative for higher values of H with a maximum value of ⍰S = -2.6 Jkg-1K-1. This is clearly due to the metamagnetic transition observed around 11.5 kOe. In the temperature variation of electrical resistivity, we observe clear signatures of magnetic transitions occurring at TC and TN, and the sample shows negative magnetoresistance throughout the temperature range (6-300 K) with a value of -12% at around 90 K for H = 50 kOe.

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