Magnetism and magnetocaloric effect in $La_{1-y}Nd_y(Fe_{0.88}Si_{0.12})_{13}$ compounds

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Abstract: Structural and magnetic properties of $La_{1-y}Nd_y(Fe_{0.88}Si_{0.12})_{13}$ compounds have been investigated by means of X-ray diffraction and magnetization measurements. The single-phase $NaZn_{13}$-type cubic structure is stabilized for the compounds with y = 0, 0.1, 0.3 and 0.4. All the synthesized compounds are ferromagnetic. Their Curie temperature T_C slightly increases with increasing Nd up to y = 0.3. The most striking effect of the Nd substitution, however, is in their itinerant-electron metamagnetic behavior and the magnetocaloric effect in the vicinity of T_C. The maximum entropy change decreases somewhat, but the relative cooling power increases with increasing Nd content (i.e. for y = 0.3). ?? 2003 Elsevier Science B.V. All rights reserved.

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