Magnetic properties of the CeNi$_4$Mn$_y$Al$_{1-y}$ compounds

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The magnetic properties of the polycrystalline CeNi$_4$Mn$_y$Al$_{1-y}$ compounds have been investigated combining AC magnetic susceptibility, field-cooled and zero-field-cooled DC magnetization and magnetic relaxation measurements. The X-ray diffraction measurements show that the group CeNi$_4$Mn$_y$Al$_{1-y}$ is isostructural and crystallizes in the CaCu$_5$-type structure (P6/mmm). For 0$<y<$1 irreversible magnetism, long-time magnetic relaxation effect and evident upshift of the AC susceptibility peak with increasing frequency are observed at low temperatures. The spin-glass-like behavior originates from a disorder due to the statistical occupation of the 3g site.