Magnetic structure and magnetocaloric effect in $NdNiAl_4$

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We have carried out neutron diffraction and heat capacity measurements for the polycrystalline $NdNiAl_4$ compound. The structure of this compound is orthorhombic of the $YNiAl_4$-type, space group Cmcm. It exhibits an antiferromagnetic type of order with a low Néel temperature of 9.5 K. The contribution of the transition metal to the magnetism of $NdNiAl_4$ is negligible. Using the neutron diffraction studies we have corroborated the previous observations concerning the magnetic structure. The profile analysis has been performed employing the FullProf program. Additionally, we have measured the specific heat of $NdNiAl_4$ in magnetic fields up to 9 T. Due to the metamagnetic transition known to appear in this compound at $H = 4$ T significant changes of the specific heat, magnetic entropy and the mangetocaloric effect occur after crossing this threshold.