

# STRUCTURE AND MAGNETIC PROPERTIES OF Sm-Ni-Cu COMPOUNDS AFTER MECHANICAL TREATMENT

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We have investigated the influence of mechanical alloying on structural changes and magnetic properties of the SmNi<sub>4</sub>Cu compound. This compound crystallizes in the hexagonal structure of CaCu<sub>5</sub>, space group P6/mmm. SmNi<sub>4</sub>Cu is ferromagnetic with the Curie temperature of 36 K and the saturation magnetic moment of 0.36  $\mu_B$  at 4.2 K. The decrease of intensity and broadening of the diffraction lines have been detected after milling as a consequence of the grains' size reduction. The analysis of the as-prepared sample using EDAX has revealed a stable composition without a presence of any additional phases and elements. The obtained results show that the magnetic properties significantly depend on the milling time. The temperature and magnetic field dependences of the magnetization exhibit a presence of antiferromagnetic behavior of the milled samples. The transition temperature does not vary as a function of the milling time. This antiferromagnetism has been ascribed to a creation of the orthorhombic SmCu<sub>2</sub> phase with  $T_N = 23$  K.

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13.4 cm

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9.7 cm