

STRUCTURE AND PHASES OF LOW NEODYMIUM NdFeB PERMANENT MAGNETS

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Structure and phases of two Nd(Pr)-Fe-B based materials with low Nd(Pr) content were compared using combination of Mössbauer spectroscopy, X-ray diffraction, and thermomagnetic curve measurement. Both the materials are of the same composition, however they differ in the method of preparation: melt-spinning or centrifugal atomization. Some differences can be seen also on the results of measurements. In the original state there is almost no difference in the content of phases (especially those of Fe₃B and Nd₂Fe₁₄B) and mean hyperfine field. However, in the atomized material there are the iron atoms of a diluted Fe(Nd, Pr, B) phase situated in a larger number of positions in comparison of the melt-spun one. After the thermomagnetic measurement inducing some kind of thermal decomposition, the main difference is in the large relative amount of α -iron atoms in the originally melt-spun material, while in the material prepared by centrifugal atomization residual Fe₃B and Fe₂B phases prevail.