INVESTIGATION OF THE DOMAIN STRUCTURE OF SINTERED Nd–Fe–B PERMANENT MAGNETS

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9.7 cm

The Bitter pattern method was used to study the magnetic domain structure of polycrystalline sintered Nd–Fe–B permanent magnets. Observations were carried out on the surfaces both perpendicular and parallel to the alignment axis. Owing to the application of digital image processing system, clear and high contrast images of the magnetic microstructure could be obtained. In the thermally demagnetized state most of the grains were multidomain and the domain structures closely resembled those observed in bulk uniaxial crystals with strong magnetocrystalline anisotropy. Investigations of the magnetic microstructure during magnetizing cycle showed that the domain walls can relatively easily be moved within the grains and that the magnetization reversal in sintered Nd–Fe–B permanent magnets occurs predominantly by the nucleation and expansion of reverse domains at structural imperfections.

13.4 cm

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