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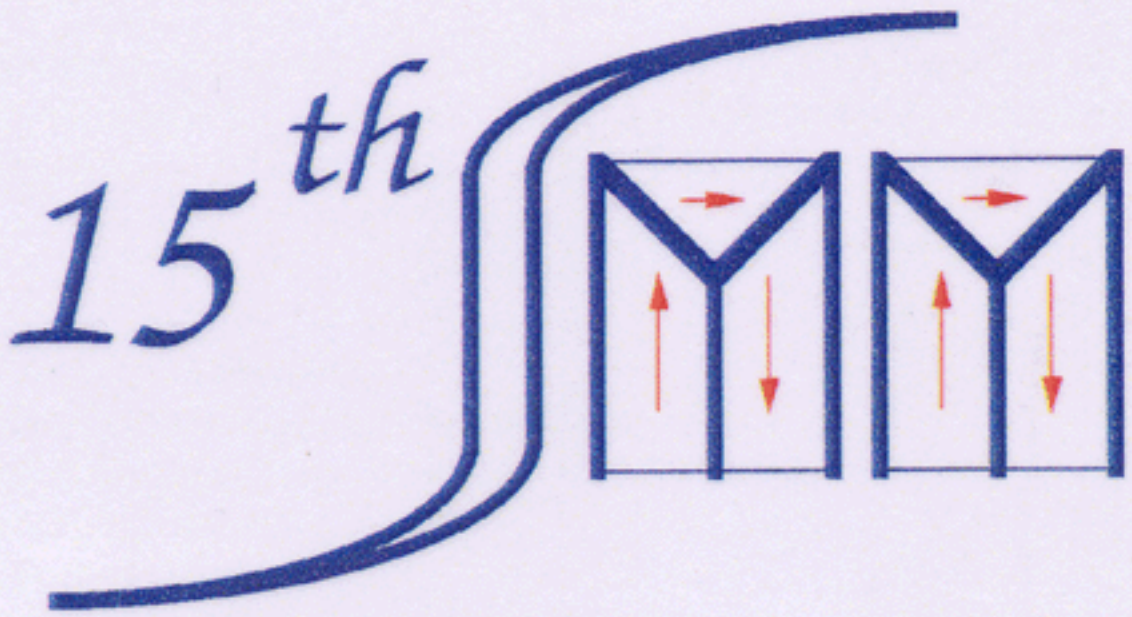

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BOOK OF ABSTRACTS

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Distributions of hyperfine parameters in nanocrystalline $Fe_{83}B_9Nb_7Cu_1$ alloys

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The effects of crystallographic change induced during annealing process upon the magnetic properties of nanocrystalline $Fe_{83}B_9Nb_7Cu_1$ alloy were investigated by using X-ray diffraction and Mössbauer spectroscopy. Special focus was concentrated on the structures of interfacial layer, which is a region between a nanocrystallite and amorphous matrix. As-quenched amorphous ribbons were flash annealed at temperature range of between 350℃ and 550℃ to obtain different stages of crystallization. Revised Vincze method was used to extract the distributions of hyperfine parameters. Mössbauer spectra consist of both sharp sextet due to bcc-Fe phase and two binomially distributed sextets due to amorphous matrix and interface layer, respectively. Averaged hyperfine field and its distribution width for amorphous phases were 120 and 45 kOe, and were nearly constant. Averaged quadrupolar line broadening for interfacial layers were about 0.1 mm/s and it can be inferred that interfacial layers have a considerable crystalline order. The flash annealing starts the crystallization at 400℃, and maximum fraction of crystalline phase produced by annealing was as high as 53 % at 550℃.