^{57}Fe AND ^{119}Sn MÖSSBAUER EFFECT STUDY OF Fe-Sn-B AMORPHOUS ALLOYS

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Amorphous metallic alloys (the so-called metallic glasses) exhibit interesting magnetic properties which allow their use in many a practical applications (for example electric transformers, sensors, etc.). One of the first systems, which were prepared by the method of rapid quenching, is the Fe-B metallic glass. Recently, possibility of nanocrystallization of this system with incorporation of few at.% of Cu is investigated. Our interest is focused on the effect of Sn addition upon hyperfine interactions and structural features of the $Fe_{100-x}Sn_5B_x$ (x = 15, 17, 20) alloy. As-quenched ribbons are XRD amorphous for x = 15 and 17 whereas for x = 20 traces of quenched-in crystallites are revealed. Progress of crystallization is followed on samples annealed for 30 min at temperatures that cover the first crystallization peak of the DSC (differential scanning calorimetry) curve. Mössbauer spectra were recorded at room temperature. Using ^{57}Fe and ^{119}Sn Mössbauer spectrometry, inspection of both types of nuclei and their local arrangements is possible. The obtained Mössbauer spectra are evaluated by distributions of hyperfine magnetic fields in addition to crystalline components. The evolution of crystalline fraction as well as average values of hyperfine magnetic fields and isomer shifts is discussed as a function of the alloy composition and temperature of annealing.

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