STRUCTURAL RELAXATIONS AND DETERMINATION OF INFLUENCE OF STRUCTURAL DEFECTS ON THE MAGNETIC PROPERTIES OF BULK FECOB-BASED ALLOYS

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We are constantly searching for new materials that will exhibit much improved properties over those that are currently used. Such materials include amorphous alloys, which, compared with crystalline materials with the same chemical compositions, exhibit much more useful property parameters. The reason for the improvement of these properties is the specific structure of the amorphous materials. The structure of amorphous alloys is formed inherently during the process of their production. Structural relaxations, taking place during the production of amorphous alloys, occur due to small displacements of atoms, and cannot be treated as processes taking place in the isolated two-level systems of continuous energy distribution. If one process is activated, then the resulting change in local material structure influences other relaxation processes. Structural relaxations are microscopic processes which lead to the change of both the structure and some macroscopic properties of amorphous materials, and ultimately lead to their crystallization. The properties of amorphous alloys, especially in strong magnetic fields, are affected by structural defects. These defects are usually the result of the production process itself, being a by-product of the rapid solidification,"freezing" the structure. A direct observation of thestructural defects of an amorphous structure is very difficult. Therefore, the indirect method is used, which involves observation and analysis of the initial magnetization curve, according to the H. Kronmüller theorem.