

## KINETICS OF CRYSTALLISATION OF FeB-BASED AMORPHOUS ALLOYS STUDIED BY NEUTRON THERMODIFFRACTOMETRY

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Kinetics of crystallization of two amorphous alloys, Fe<sub>70</sub>Cr<sub>10</sub>B<sub>20</sub> and Fe<sub>80</sub>Zr<sub>10</sub>B<sub>10</sub>, have been followed up by neutron thermodiffraction experiments done with the two axis diffractometer D20 (ILL). The structural changes are directly correlated with the increasing of the magnetization and the coercivity. Fe<sub>70</sub>Cr<sub>10</sub>B<sub>20</sub> crystallizes following a two step process: an eutectic crystallization of  $\alpha$ -Fe (bcc) and the metastable tetragonal phase (Fe<sub>0.8</sub>Cr<sub>0.2</sub>)<sub>3</sub>B followed by another eutectic transformation to the stable phase (Fe<sub>0.75</sub>Cr<sub>0.25</sub>)<sub>2</sub>B and more segregation of  $\alpha$ -Fe. These tetragonal phases are magnetically anisotropic. This behavior is similar to that of Fe<sub>80</sub>B<sub>20</sub> alloys, Cr atoms replacing the Fe positions in both crystalline phases. Fe<sub>80</sub>Zr<sub>10</sub>B<sub>10</sub> shows also a two step process in which two polymorphic transformations take place.