Abstract

The work presents the microstructure characterisation of the new Fe-Si-P-base melt-spun glass forming alloy investigated by means of transmission electron microscopy. The results are compared with the tests obtained by other complementary methods such as X-ray diffraction and Mössbauer spectroscopy. The phases occurring during the crystallization of the glassy matrix are identified and characterised in terms of long range order and short range order. The thermal stability of the alloy is characterised by differential scanning calorimetry. The study describes the mechanical properties of the new alloy at room temperature as well as characteristics resulting from heating the as-cast melt-spun alloy at elevated temperatures. The changes of the properties of the alloy at elevated temperatures are correlated with the microstructural changes. The work provides information on structural and mechanical characteristics of the alloy and refers to the prospective application of the new alloy.