



COMPETITION BETWEEN EUTECTICS STRUCTURES CRYSTALLISATION IN THE FE-CR-NB PHASE EQUILIBRIUM

SAMIR Mansour

University of Science and Technology Houari Boumediene

Abstract

Fe-Cr-Nb ternary alloys with different concentrations of iron (60-95 at. %) are arc melted and characterized systematically by means of differential thermal analysis, optical and scanning electron microscopy coupled to an energy dispersive X-Ray microprobe analysis and X-Ray diffraction.

In the present paper, solidification sequences are proposed in relation to the observed microstructures for Fe-Cr-Nb synthesis alloys. Correlations have been established leading to the conclusion that different eutectic structures (lamellar, globular, acicular...) are involved.

Microstructures of alloy studied can be divided into three family of competition eutectic structure. For the first family, one eutectic phase are obtained for the 75 at.%Fe alloy, it takes place at 1234°C in form of Chinese script. The second type of eutectic has appeared for the 65 at.% Fe alloy in form of Chinese script, this phase is detected by DTA to 1390°C with the another eutectic at 1340°C. The last phase eutectic is obtained for the 65 at.%Fe alloy in regular form located in interdendritic space at 1382°C.

Keywords: Differential thermal analysis, Fe-Cr-Nb alloys, microstructure, eutectic structure, solidification sequences

Author did not supply full text of the paper/poster.