

Prediction of alloy chemical compositions with glass forming ability in ternary systems

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Recently, a new criterion to predict the glass forming ability of metallic alloys has been proposed [1]. This new criterion takes into account the topological instability of the crystalline phases that compete against glass formation as well as electronic parameters upon alloying, the electron work function and electronic density [1]. In the present work such criterion was checked against the observed glass formation in ternary metallic systems. The chemical compositions of the alloys were selected following the predictive criterion, molten in an arc furnace and subsequently cast in a wedge cavity of a copper mold. The actual glass forming ability of the alloys was evaluated by X-ray diffraction and optical microscopy. The results were further compared with the predicted behavior of the glass forming ability according to the selection criterion.

Keywords: Topological instability, Electronic parameters, Ternary metallic systems.

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