



Intermetallic glass formation ability in Zr-Ni alloy

by Mr. Wang Dongjiang

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Abstract

Due to the limited size of the metallic glass that can be obtained under current conditions, the essential issue, the glass formation ability (GFA), has attracted a long time interest since the discovery of metallic glass. The recent discovery of the intermetallic glass which consists of two glass formation regions around the ZrCu intermetallic composition in Zr-Cu system, by W.F. Wu and Y. Li (APL 2009), exhibits a new perspective to study the GFA, as this new phenomenon cannot be interpreted within the classical glass formation kinetics. In this study, this new conception would be extended to the Zr-Ni system to investigate its generalization. The intermetallic glass formation ability in Zr-Ni system would be investigated by XRD, DSC and SEM morphology study. Quite similar as the intermetallic glass discovered in Zr-Cu system, two metallic glass formation regions were discovered around the ZrNi intermetallics composition in this study. However, the GFA in Zr-Ni system is much worse than that in Zr-Cu system as the critical size of metallic glass is much smaller in Zr-Ni system. Finally, this difference in GFA would be interpreted by the different driven force of crystallization obtained by the free energy calculation.

Mr. Wang Dongjiang Speaker

Mr. Wang Dongjiang obtained his bachelor and master degree in Materials Science and Engineering from Tianjin University, China, in 2005 and 2007, respectively. He is currently pursuing his PhD degree in Department of Materials Science and Engineering, NUS. His research interest focuses on the intermetallic glass formation ability and is now under the guidance of Professor Li Yi.

Dr Xue Jun Min Host

All are Welcome!