

Topic: Topological Frustration and Glass-Forming Ability of Sulfur-containing Metallic Glass-Formers

Since the early studies on metallic glasses, Glass forming ability (GFA) has always been a prominent aspect of the research due to the crucial role it plays in the manufacturing and potential application of the metallic glasses. Recently, so called “micro-alloying” has been shown to be a powerful tool to enhance and tailor not only the GFA but also other properties of metallic glasses such as mechanical, diffusivity and thermodynamic properties. However, the underlying mechanism that causes these improvements with less than 5 at. % is still an open question.

Sulfur-bearing metallic glasses are a very recent family of metallic glasses which have been developed by R. Busch and co-workers. Addition of S have been shown to be effective on several distinct alloying systems in terms of improving the GFA.

The goal of my work is to study the mechanism in which S enhances the GFA, changes the thermodynamic constraints and effects the medium-range order in the liquid and glassy phase.