**Thermodynamic criteria for bulk metallic glass forming composition in Calcium based alloy system**

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**Abstract:**

The complex nature of glass formation in metallic glasses has led to the development of various glass forming ability (GFA) parameters and its correlation with the different potential physical and chemical properties. Numerous experimental results have revealed that the thermodynamics and kinetic parameters play an important role in designing good glass forming composition. In present work, the thermodynamic modeling is used to successfully pin point glass forming composition in Ca based alloy systems. Thermodynamic parameters and derived from enthalpy of chemical mixing (), normalized mismatch entropy (), and normalized configurational entropy () has been used aspredictive GFA parameters. Further, variation of parameter was studied and compared to reported compositions. Variationinbehavior on thermal stability () and critical size () reflects linear sensitivity. Also, linear correlation is noticed between and . Furthermore, variation of with instability parameter is also studied. In addition to this, variation in with , , is also investigated and found identical results as that with .All these observations are compared and explained using experimentally reported compositions. Owing to results obtained it can be concluded thatparameter plays a decisive role for designing bulk metallic glass (BMG) forming compositions with wide supercooled liquid region along with maximum possible casting thickness of the alloy. The approach suggested here would allow one to get a reasonable prediction about BMG forming composition.