

## **APPLICATION OF THE RIETVELD METHOD TO DETERMINE THE STRUCTURE OF BULK METALLIC GLASSES**

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Bulk metallic glasses (BMGs) and composites based on them are a new class of high strength materials with unique properties. There are various types of internal stresses in BMGs due to thermal tempering and matrix/reinforcement interactions. The Rietveld method was employed in the structural analysis of these amorphous alloys with an attempt to obtain quantitative information from the glassy phase. The model is based on a monoclinic unit cell that satisfies periodic boundary conditions. The deformation degree of the unit cell, due to different atomic radii, affects the periodicity on various length scales. Short, medium, and long range disorder are introduced by microstrains that can be evaluated. The model was shown to yield reasonable fits to X-ray and neutron diffraction data. It was also applied to data obtained from high-pressure studies on bulk metallic glasses.