

2nd BIOREMIA e-Seminar

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An overview of the mechanical properties of metallic glasses

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Abstract

After a brief review of the thermodynamics and kinetics of glass formation, the mechanical behavior of metallic glasses will be surveyed using the stress-temperature deformation mechanism map, covering elastic and anelastic deformation, homogeneous and inhomogeneous flow, brittle and ductile fracture, and the effects of structural relaxation. The microscopic basis of plastic deformation is the presence of localized shear transformation zones, the action of which creates a characteristic strain pattern in the surrounding elastic matrix. Deformation experiments on colloidal glasses can be used to identify those zones directly.

