

## Plasticity criterion of bulk amorphous alloys : homogeneous flow rate

박경원<sup>1,2</sup>, Eric Fleury<sup>2</sup>, 이재철<sup>1</sup>

<sup>1</sup> 고려대학교 신소재공학부

<sup>2</sup> 한국과학기술연구원

Kyoung-Won Park<sup>1,2</sup>, Eric Fleury<sup>2</sup>, Jae-Chul Lee<sup>1</sup>

<sup>1</sup> *Department of Materials Science and Engineering, Korea University, Seoul 136-701, Korea*

<sup>2</sup> *Advanced Metals Center, Korea Institute of Science and Technology, Seoul 136-701, Korea*

### Abstract

We explore the sole effect exerted by the packing density of an amorphous alloy on its homogeneous deformation and subsequent inhomogeneous deformation. The experiments demonstrated that an alloy with higher packing exhibits higher degree of homogeneous deformation, whereas the same alloy exhibits lower global plasticity associated with inhomogeneous deformation in a typical compression test. We clarify this paradoxical relationship between the homogeneous and inhomogeneous deformation by exploring the relationship between the homogeneous flow rate and its effect on shear localization.

**Keywords** : amorphous alloy, atomic packing density, shear softening, homogeneous flow rate, global plasticity