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# ***UNIQUE GLASS FORMATION AND MECHANICAL PROPERTIES OF ZR-CU-BASED ALLOYS***

by Mr. Wu Wenfei

**Date:** 4 May 2009, Monday  
**Time:** 10.00am to 11.00am  
**Venue:** EA-02-11 (Executive Room)

## **Abstract**

With no long-range atomic order in structure, bulk metallic glasses (BMGs) have generated plenty of interests since their birth in late 1980s. The present work explored both the formation and mechanical properties of Zr-Cu-based BMGs from several distinct perspectives. Firstly, a unique metallic glass formation near the intermetallic composition was discovered through liquid quenching, which was regarded as impossible previously. Secondly, the flaw sensitivity issue was addressed for the first time by applying the Weibull statistics in characterising the strength scattering of BMGs. The results showed surprisingly high Weibull moduli of BMGs indeed approaching the range for ductile metals, despite of its brittleness. Thirdly, a "malleable-to-brittle" transition in BMG under both as-cast and annealed states was established. This transition existed with a critical sample size, below which the sample yielded before fracture and thus catastrophic failure was avoided.

## **Speaker Mr. Wu Wenfei**

Mr. Wu WenFei obtained his B.E. from Dalian University of Technology in 2001, and M. E. from TsingHua University in 2004. From August 2004, he started his PhD study under Professor Li Yi in the Department of Materials Science and Engineering, National University of Singapore. Currently, he is working as a failure analysis consultant in TUV-SUD-PSB Pte Ltd.

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**A/P Ding Jun Host**