



ICAMS special lecture

Prof. Dr M. Baricco

Dipartimento di Chimica IFM and NIS, Università di Torino, Torino, Italy.

Wednesday, October 27, 11 a.m. ICAMS Seminar room UHW 11/1102

Metallic glasses: state of the art and perspectives



In the recent years, the research activity addressed towards the synthesis of bulk metallic glasses (BMG), in form of ingots with a few millimetres in thickness. These materials can be obtained by casting techniques only for selected alloy compositions, characterised by a particularly high glass-forming tendency. The relationship between the general features of a phase diagram and the glass forming ability of the corresponding liquid phase will be analysed. From the assessment of the thermodynamic properties by CALPHAD approach, stable and metastable phase diagrams will be shown. Bulk amorphous alloys show interesting mechanical properties. In particular, they are characterised by a low modulus of elasticity and high yielding stress, which reach values significantly higher than the crystalline counterparts. Interesting magnetic properties have been also observed in bulk metallic glasses and they are strongly related to small variations in the microstructure. Commercialised applications of BMGs include mainly sport goods, but several uses are now under investigations. Aim of the seminar is to present recent results on glass formation and properties of bulk metallic glasses with various compositions. Examples will be reported on Al, Zr, Cu, Fe, Mg and Pd-based materials.