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Topic: Analyze structures of metallic glasses with P contents ranging from 18 to 24 at.% by advanced techniques

Although metallic glasses have been studied for many years, until the 1970s, a widely accepted structural model for metallic glasses appeared. Since the 1980s, a covalent nature in metal-metalloid metallic glasses seems to be important in alloys such as TM-P (TM: transition metals). The P concentration dependence of TM-P alloys in the GFA (glass forming ability) was investigated, and about 20 at.% P gives good GFA in any TM-P glassy alloy. Thus, it is now interesting to examine the effect of a larger or smaller P concentration, which leads to the production of static and dynamic heterogeneity in metallic glasses. These behaviors can be studied by a powerful technique called ECM (Electron Correlation Microscopy) as well as DSC.

ECM is a TEM technique for characterizing the atomic structure in disordered materials where a spatially resolved diffraction technique is used to measure statistical fluctuations in the scattering of electrons arising from nanometer-scale ordered regions in a sample. It is believed that the application of these techniques can provide a valuable data set for researchers who want to enhance and tailor GFA and other properties of metallic glasses.