

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Evidence for reentrant strain glass behavior in a ferroelastic-martensitic system Ti-Pd-V** XIAOMING ZHANG, GUIZHOU XU, ENKE LIU, WENHONG WANG, GUANGHENG WU, Institute of Physics, Chinese Academy of Sci (CAS), INSTITUTE OF PHYSICS TEAM — The concept of strain glass (SG) has recently received much attention because of its unique properties such as shape memory effect, superelasticity, and stress-tuned intelligent damping behavior. Recent in-situ TEM experiments have proved that, only local-symmetry change in the crystal structure has been observed during the SG transition, but the macroscopic symmetry or average structure is still keeping unchanged. In this presentation, we report the discovery of reentrant-strain-glass (RSG) behavior in a ferroelastic-martensitic system Ti<sub>50</sub>Pd<sub>50-x</sub>V<sub>x</sub> (x is from 6 to 12). Unlike the SG, with decreasing of temperature, the RSG system first undergoes a macroscopic martensitic transition and then the martensite variants further transforms to a frustrated glassy state below a critical temperature. The X-ray diffraction and high resolution TEM results further indicate the RSG no longer remains the average structure of the high-temperature parent phase, but rather low-temperature martensitic phase. This new discovery may open a new research field and may lead to new insights into a range of possible applications of this unique class of materials.

Xiaoming Zhang  
Institute of Physics, Chinese Academy of Sci (CAS)

Date submitted: 13 Nov 2014

Electronic form version 1.4