T-CUP: A New High-Pressure Apparatus for X-Ray Studies - Continued	X17B1

M. T. Vaughan, D. J. Weidner, and J. Chen (SUNY, Stony Brook)

Last year we reported on the development of the TCUP apparatus[1], a two-stage device using eight-cubic anvils to generate high pressure, with x-ray access. This year we have made the following advances in this apparatus:

a) Extended the pressure range to 21 GPa, through the use of reverse-tapered 10 mm Toshiba grade F WC anvils. Figure 1 shows cell pressure *vs* oil pressure data taken on the study of ZrW_3O_8.[2]

b) Developed cell assemblies for making Equation of State measurements, including using lanthanum chromite heaters.

c) Extended the method for making strain measurements to higher pressure[2,3]. Figure 2 shows the P-T path used for the β-$(Mg,Fe)_2SiO_4$[3]

[1]NSLS Activity Report, page B-140, 1995

[2]J. Chen, *Pressure Induced Amprphization in Zirconium Tungstate*, this Report.

[3]T. Inoue, *Rheological study of hydrous γ-phase using in situ x-ray diffraction* and J. Chen, *Rheology of dry and hydrous phases of the α and β forms of $(Mg,Fe)_2SiO_4$*, both in this Report.

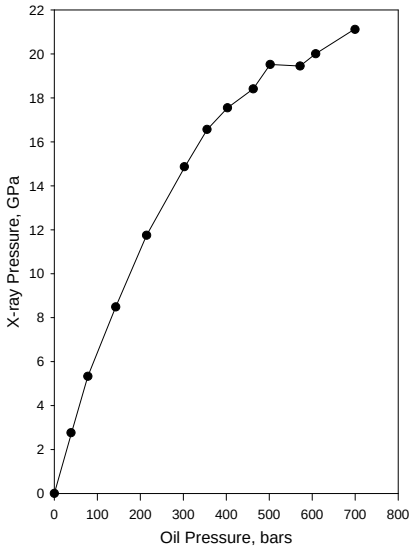

Figure 1. Pressure performance of TCUP apparatus.

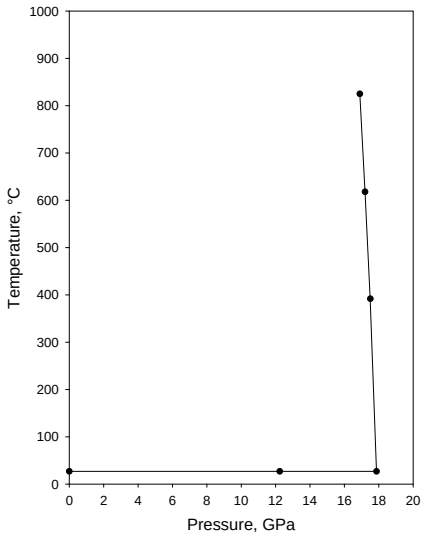

Figure 2. P-T path for one of the strain measurements.