Abstract Submitted
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Characterization of dry B_2O_3 glass[1] K. VIGNAROOBAN, D. NOVITA, PING CHEN, P. BOOLCHAND, University of Cincinnati — A sample of Puratronic B_2O_3 (Aesar) was vacuum (10^{-6}Torr) melted in a Pt crucible at 520 $^\circ$ C for 3 days and slow cooled to room temperature to obtain a glass. All sample manipulations were performed in a N_2 gas purged glove box. T_g of the sample from inflexion point of the reversing heat flow in an m-DSC experiment ,using a scan rate of 3 $^\circ$ C/min, gave a value of T_g (mDSC) = 308(1) $^\circ$ C. A traditional DSC experiment, using a scan rate of 10 $^\circ$ C/min, gave a value of T_g(DSC) = 309(2) $^\circ$ C. Our T_g (DSC) value is 12 $^\circ$ C to 20 $^\circ$ C higher than previous reports[2] using the same scan rate. Vibrational features in IR reflectance in the 1200-1600 cm^{-1} range (LO and TO modes) , and in the 3200-3600 cm^{-1} range (free and bonded water) evolve as transparent platelets are exposed to laboratory environment, providing evidence for water reactivity of dry samples. Raman scattering[3] results complement IR reflectance ones. We confirm[2] density of dry samples (1.805(4)gms/cm^3) to be somewhat less than wet ones (1.815(4) gms/cm^3). [2] Ramos et al. JNCS 221, 170 (1997). [3] F. Galeener et al, PRB 22, 3983 (1980).

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