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Topological phases in Ba-Borate glasses[1] CHAD HOLBROOK, ANDREW CZAJA, PUNIT BOOLCHAND, University of Cincinnati — Twelve compositions in the $(BaO)_x(B_2O_3)_{100-x}$ pseudo binary, in the 15% <x <40% range, were synthesized by induction melting Boric acid and anhydrous $BaCO_3$, taking care to handle the materials in a dry ambient environment. Modulated- DSC and Raman scattering experiments were undertaken systematically as function of BaO content (x). Calorimetric measurements reveal T_g(x) to show a broad maximum and the non-reversing enthalpy to show a Gaussian-like reversibility window[2], both centered near x = 28%. Raman scattering displays rich lineshapes with modes similar to those observed in Na-Borates[2]. Modes near 808 cm^{-1}, 770 cm^{-1}, 740 cm^{-1} and 705 cm^{-1} are observed, and identified with breathing modes of pure and mixed rings from characteristic structural groupings[2]. These preliminary results suggest that glasses at x <24% are in the stressed-rigid phase, in the 24% <x <30% in the Intermediate Phase and at x >30% in the flexible phase.

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