

Abstract Submitted
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Topological Phases in Alkaline-Earth Borates RALPH CHBEIR, CHAD HOLBROOK, ANDREW CZAJA, PUNIT BOOLCHAND, University of Cincinnati — Raman scattering has proved to be a powerful method to probe local-, intermediate- (rings) and extended-range (structural groupings) structure in Li- and Na-Borates¹ and Ba-Borates². Along with AC calorimetric (MDSC) data on non-reversing enthalpy of relaxation, we could identify the Stressed-rigid, Intermediate and Flexible phases in these Borate glasses. These efforts are directed towards better understanding the connection between these phases and glass structure. Here we report preliminary Raman scattering and MDSC results on Sr-Borates over a wide composition range $0 < x < 45\%$, taking special care to synthesize dry and homogeneous melts by induction melting starting materials. Trends in glass transition temperatures $T_g(x)$ show a broad maximum ($T_g^{\max} = 650\text{C}$) centered near 33 mole% of SrO, and a reversibility window with a width extending from 27.5% to 37.5% and centered about the T_g^{\max} composition. Results on Topological phases in the Sr- and Ba-borates will be compared.

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