Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supplementary Information

Structure and crystallization of SiO_2 and B_2O_3 doped lithium disilicate glasses from theory and experiment

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DSC results of remelted and small bulk samples

It becomes apparent that the remelted sample as well as the sample which was drilled out of the block show the same glass transition and melting temperature that is close to the eutectic temperature. However, the crystallization onset is shifted to higher temperatures in case of the sample which was drilled out. Such a sample has only contact to the crucible at the bottom and hence the heat transfer is remarkably lower.

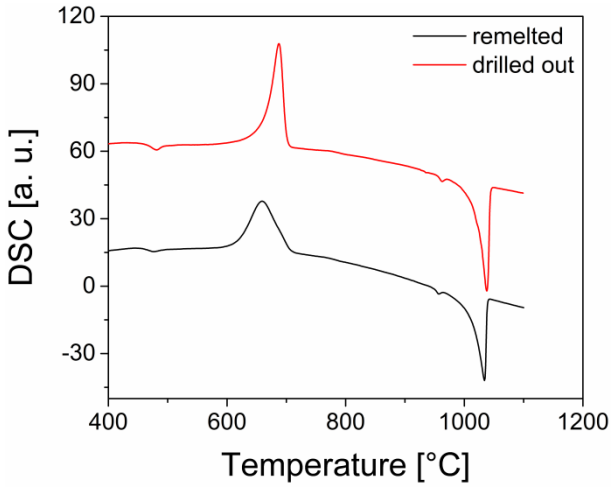

Figure S1 DSC results of a sample which was drilled out of the as-cast glass block and one remelted in the DSC crucible at 1100 °C for 5 min and quenched in air exemplarily shown for glass B1.

Viscosity model calculations

The comparison between the measured viscosities presented in Fig. 3 and the calculated ones remarkably shows that the viscosities do not match. The viscosities were measured by beam bending and rotation viscometry and there are huge discrepancies between the predicted viscosities and those obtained by beam bending viscometry (Fig. 3a). Hence, it can be concluded that the Priven model is not appropriate to predict viscosities of these glass compositions.

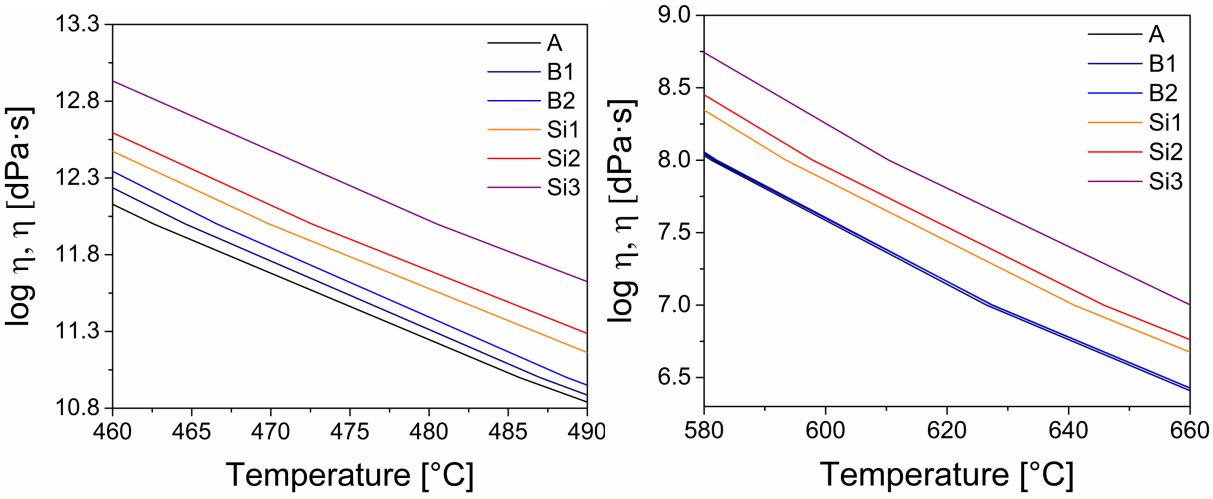

Figure S2 Viscosities predicted using the model "Priven 2000". While in the left panel the viscosities are presented for the temperature range of nucleation, the right panel shows the viscosities in the studied crystal growth range.