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Beating the bulk: Bypassing the bulk glass transition by fast heating MARTA GONZALEZ-SILVEIRA, CRISTIAN RODRIGUEZ-TINOCO, JOAN RAFOLS-RIBE, AITOR F. LOPEANDIA, MARIA TERESA CLAVAGUERA-MORA, JAVIER RODRIGUEZ-VIEJO, Physics Department, Universitat Autonoma de Barcelona, Spain — Transformation into the supercooled liquid via propagating fronts has been thoroughly studied in several ultrastable thin film glasses. In this work we show that the transformation mechanism in vapor deposited films of IMC has profound implications in the analysis of the specific heat curves [1]. We propose an ad-hoc surface normalization of the heat capacity data that yields curves which collapse into a single one irrespective of their thickness. The surface-normalized specific heat curves are fitted with a heterogeneous transformation model to evaluate the velocity of the growth front over a much wider temperature interval than previously reported. In addition, we evaluate the transformation rate in films with lower stability. Interestingly, the transformation via parallel fronts is not an exclusive characteristic of ultrastable glasses. We observe how fast heating rates can induce this type of transformation in glassy films whose stabilities are close to the conventional glass. Although the absolute velocity of the growth front depends on stability, no change is observed in the relation between velocity and relaxation time as a function of stability.

[1] C. Rodriguez-Tinoco, et al. J. Phys. Chem. B, 2014, 118, 10795

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