

Abstract Submitted
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Crystal growth kinetics exhibit a fragility-dependent decoupling from viscosity MARK EDIGER, University of Wisconsin-Madison, PETER HARROWELL, University of Sydney, LIAN YU, University of Wisconsin-Madison — We establish the temperature dependence of the kinetic coefficient associated with crystal growth into the supercooled liquid for 7 organic and 8 inorganic materials. We show that the kinetic coefficient for crystal growth scales with the shear viscosity raised to an exponent that depends systematically on the fragility of the liquid; fragility quantifies the deviation away from an Arrhenius temperature dependence for the viscosity. For strong liquids, the exponent is -1. The greater the fragility, the larger the deviation from -1. We argue that this breakdown in scaling between the crystal growth kinetics and the viscosity is a manifestation of heterogeneous dynamics in supercooled liquids.

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