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Universal Scaling of Dynamic Heterogeneities in Aging SiO₂¹

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We investigate the aging dynamics of a strong glass former and find a strikingly simple scaling behavior. Using molecular dynamics simulations, we quench the system from high temperature to 2500 K, below the glass transition and investigate dynamic heterogeneities as function of waiting time, the time elapsed since the quench. We find that both the dynamic susceptibility and the probability distribution of the local incoherent intermediate scattering function can be described by simple scaling forms in terms of the global incoherent intermediate scattering function. The scaling forms are the same that have been found to describe the aging of several fragile glass formers. A similarity of fragile and strong glass formers had also been found on a microscopic level via analysis of single particle jumps. Furthermore we find for the scaling of dynamic heterogeneities that the aging dynamics is controlled by a unique aging clock which is the same for Si and O atoms.[JCP 144, 234510 (2016)]

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