

Abstract Submitted
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Surface diffusion of molecular glasses: Material dependence and impact on physical stability¹ SHIGANG RUAN, WEI ZHANG, LIAN YU, University of Wisconsin-Madison — Surface diffusion coefficients have been measured for molecular glasses tris-naphthylbenzene (TNB) and PMMA oligomers by surface grating decay. Surface diffusion on TNB is vastly faster than bulk diffusion, by a factor of 10^7 at T_g , while the process is very slow on PMMA. Along with the previous results on *o*-terphenyl, nifedipine, indomethacin, and polystyrene oligomers, we find that surface diffusion slows down with increasing molecular size and intermolecular forces, whereas bulk diffusion has a weaker material dependence. The molecular glasses studied show fast crystal growth on the free surface. A general correlation is observed between the coefficient of surface diffusion and the velocity of surface crystal growth, indicating surface crystallization is supported by surface mobility. (Zhu, L., et al. *Phys. Rev. Lett.* 106 (2011): 256103; Zhang, W., et al. *J. Phys. Chem. B* 119 (2015): 5071-5078)

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