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Comparison of surface mobility on low and high molecular weight glasses MARK EDIGER, University of Wisconsin-Madison, KEEWOOK PAENG, Columbia University, LEI ZHU, Merck & Co., LIAN YU, University of Wisconsin-Madison — The glass transition temperature of thin polymer films and the related issue of mobility at glass surfaces have attracted considerable interest in the last twenty years. We have recently conducted experiments on both polymeric and low molecular weight glass formers that provide information about mobility near the free surface. For several polymers, measurements of dye reorientation on freestanding films show a fast population that can be consistently assigned to the near-surface region. For indomethacin (a low molecular weight glass former), we have directly measured surface diffusion by following the decay of imprinted gratings of different periods. For both high and low molecular weight glassformers, we observed enhanced mobility near the free surface (by factors up to 10^4 and 10^7, respectively) relative to the bulk dynamics. In both cases, surface mobility has a substantially weaker temperature dependence than bulk mobility near the bulk Tg.

Mark Ediger
University of Wisconsin-Madison

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