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Interchain Coupling in Thin Polymer Film Studied by Fluorescence Nonradiative Energy Transfer JIE XU, GI XUE, Nanjing University, NANJING UNIVERSITY TEAM — According to many views, the glass transition temperature (T_g) changes with decreasing polymer film thickness. There is an ongoing debate on the origin of the changes. As an important parameter, however, the interchain distance of thin film was still a challenge. We used Non-radiative energy transfer (NET) method to characterize polymer interchain proximity and association in polymer thin film, by attaching carbazoyl probe (donor) or anthryl probe (accepter) to the side groups of polymethyl methacrylate (PMMA) chain, respectively. We measured the NET results of PMMA films on silicon and found that the NET results decreased with decreasing film thickness. The NET results represented the interchain distance or density. With decreasing film thickness h , the density of the films decreased, which caused an increment of the polymer chain mobility. That might help us to understand the physical nature T_g changes.

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