

Abstract Submitted  
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**Segmental motion in polystyrene thin film: a single molecule fluorescence study**<sup>1</sup> ZHONGLI ZHENG, JIANG ZHAO, Institute of Chemistry, Chinese Academy of Sciences — Single molecule fluorescence de-focus microscopy is used to study the segmental motion by observing the rotational motion of single fluorophores chemically attached to polystyrene chain ends. The collective nature of the rotational motion was noticed: a sudden change of the fraction of rotating fluorophores was discovered at a temperature 60 degree below the glass transition temperature of polystyrene. The dependence of the critical temperature on film thickness and surface chemistry was investigated and the results show that the effect of confinement, surface interaction and free surface.

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