

Abstract Submitted  
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**Molecular dynamics as observed with probes of different dimensions in thin polymer films**<sup>1</sup> JIANG ZHAO, HAO ZHANG, JINGFA YANG, FUYI WANG, Institute of Chemistry, Chinese Academy of Sciences, DI LIU, Department of Chemistry, Dalian University of Technology, China — Rotational motion of individual fluorescence molecules doped in thin films of poly vinylacetate (PVAc) was monitored by single molecule fluorescence de-focus microscopy. Perylendiimide and its derivatives of different dimension were chosen as probes for local dynamics. The results demonstrate that the local vibration mode detected by different molecules probe depends on dimension of the probes the larger probes the lower frequency. The population of rotating probes is found to increase with temperature elevation, depending on the molecular dimension as well. The comparison of the results with thermo-dynamic measurements helps to shed new light on the physical picture of glass transition.

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