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A spectroscopic ruler to measure chain conformations at the solid-liquid interface SUBHALAKSHMI KUMAR, JANET WONG, SUNG CHUL BAE, STEVE GRANICK, Department of Material Science and Engineering, University of Illinois at Urbana-Champaign — There do not appear to exist prior measurements of the conformations of polymers adsorbed to dilute coverage at the solid-liquid interface, in spite of abundant theoretical predictions. Here direct information is obtained by monitoring the fluorescence energy transfer between dyes located at the two ends of adsorbed polymer chains. The basic idea is that the farther the chain ends are spaced, the less efficient, and slower, is energy migration between these dyes. It occurs on the nanosecond time scale and is measured here by time-correlated single photon counting. From corresponding experiments performed with the same polymer chains labeled at one sole end, the contribution of rate of energy transfer to rotational anisotropy is decoupled from intrinsic rotational motion of the dyes themselves.

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