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Nano-rheometry near the free-surface in polystyrene KURT M. SCHREITER, JAMES A. FORREST, University of Waterloo — Recent work has suggested enhanced mobility at the free-surface of glassy polymers. Traditional rheometers are incompatible with free surfaces so they cannot be used to confirm this. Lateral force spectroscopy has failed to observe deviations from bulk behaviour because the time scales required are too fast. We describe a technique for observing near surface dynamics in the free surface of soft matter systems that overcomes these limitations. Data collected from polystyrene films shows two simultaneous and separate relaxation behaviours. One of these is consistent with a bulk glassy material and the other indicates enhanced dynamics.

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