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**Confinement-Induced Molecular Stresses and Wetting Instability in Ultrathin Polymer Films** Y. CHEIN, P.W. LEE, A.C.-M. YANG, Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan — Chain packing and molecular behavior of polymers confined below unperturbed coil sizes are still poorly understood. To explore the physical state and condensation process, molecular recoiling stresses in polystyrene films (4-100 nm) were measured through wetting instability at above  $T_g$  (100 C). The films demonstrated strikingly different instability mechanisms in regimes divided by entanglement molecular weight ( $M_e$ ). Moreover, the recoiling stress decreased with chain length above  $M_e$ , consistent with the condensation process dominated by solvent evaporation, but plunged below  $M_e$ , apparently due to diminishing deformations. A small fraction of MEH-PPV added in films manifested photoluminescence (PL) following the same trend as recoiling stress confirming stress-enhanced PL characteristic of conjugated polymers. As aging temperature lowered but still above  $T_g$ , film stability increased but recoiling stress underwent significant changes, in contrast to that below  $T_g$  where no changes was observed.

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