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Polymer Conformation Under 1-Dimensional Rigid Symmetric Confinement JAMES PRESSLY, Univ of Pennsylvania, RONALD JONES, National Institute of Standards and Technology, ROBERT RIGGLEMAN, KAREN WINEY, Univ of Pennsylvania — Understanding how polymer chain conformation is altered under nanoconfinement is critical for understanding polymer behavior in applications ranging from nanoscale lithography to polymer nanocomposites. Previous work associated with measuring polymer conformation under 1D confinement is limited to using "open face" thin films where at least one side of the confined dimension is a free surface. Studies have also been limited to measuring conformation changes parallel to the confining surfaces, which have recently been shown through simulations and theory to exhibit less change than the conformation perpendicular to the confining surface, leading to a partial and at times inconclusive understanding. Our study uses a new and unique sample geometry to simultaneously probe chain conformation parallel and perpendicular to the confining surfaces using small angle neutron scattering (SANS). The samples consist of long, narrow, and deep polymer filled channels that rigidly confine the polymer on both sides, preventing possible asymmetry due to one free and one obstructed confining surface. Here, we present our preliminary work in developing the sample geometry, performing SANS measurements, and establishing an analysis routine.

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