

Abstract Submitted
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A New Pressurizable Dilatometer for Measuring the Time-Dependent Bulk Modulus of Polymers¹ YAN MENG, PAUL O'CONNELL, GREGORY MCKENNA, SINDEE SIMON, Chemical Engineering Dept., Texas Tech University — A new piston-cylinder type pressurizable dilatometer controlled by a stepper motor has been developed to measure the time-dependent bulk modulus of polymeric materials. A perfluorinated oil, which surrounds the sample, is used as the confining fluid. By subtracting the volume contribution of the confining fluid from the total volume, the volume response of the polymeric sample can be obtained as a function of temperature, pressure, and time in the glass transition region. We are particularly interested in comparing the width and time scales of the bulk and shear responses in the transition region in order to test Leaderman's hypothesis that the two responses have different molecular origins. PVT measurements and the time-dependent bulk modulus for a polystyrene (Dylene 8) will be reported.

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