MEMS Material Testing Equipment (Revised Sep 2019)

MEMS has shared materials testing equipment available for use in Jubel Hall, Room 231. If you are interested in using this equipment, please contact Jessica Wagenseil (jessica.wagenseil@wustl.edu) or Ruth Okamoto (rjo@wustl.edu):

**Instron 5583 electro-mechanical Universal Testing Machine.** The 5583 has a load frame capacity of 150 kN (33.7 kip). It can be used for tension, compression and bending tests. Load cells with ranges of 500 N (112 lb), 5000 N (1124 lb), or 150 kN (33.7 kip) are available. The cross head speed range is 0.002 to 500 mm/min. Accessories include wedge grips, pneumatic grips, compression platens, a dynamic extensometer (Instron 2620-602), and a 3-point bending setup, which accommodates specimens up to 6 in. long. Instron Bluehill software is used to control the test parameters, record and store data.

**MTS 858 Mini Bionix servo-hydraulic test system.** The recently upgraded MTS system uses a FlexTest 40 controller. It has a load frame capacity of 25 kN (5.5 kip). It is equipped with an MTS model 242.025 hydraulic actuator with a capacity of 10 kN (2.2 kip) and displacement range of 100 mm and a HYD-RO-AC torsional actuator (model SS001-1V) with a torsional capacity of 244 N·m (2100 in-lb) and angular rotation of 280°. It is equipped with a 550 lb/250 in-lb combined axial/torsional load cell and an additional 8 channel A/D board for external inputs. The system uses MTS TestSuite™ software to control the test parameters, record and store data.

**TA Instruments AR-G2 rheometer for characterizing viscous fluids and viscoelastic solids.** The G2 has a torque range (0.003 uN-m to 200 N-m), axial force range (0.005 – 50 N), angular velocity 0-300 rad/sec, oscillatory frequency up to 100 Hz. A Peltier plate is used to control sample temperature (2 to 100 ℃). Accessories include flat plate (8, 20, 40, 60 mm dia), cone (20 mm, 40 mm) and crosshatched (8, 20, 40, 60 mm dia) geometries and TA Rheology Advantage™ software for test control and data acquisition and analysis.