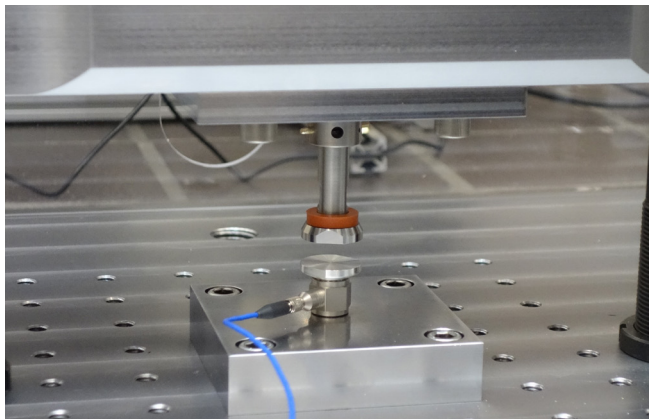
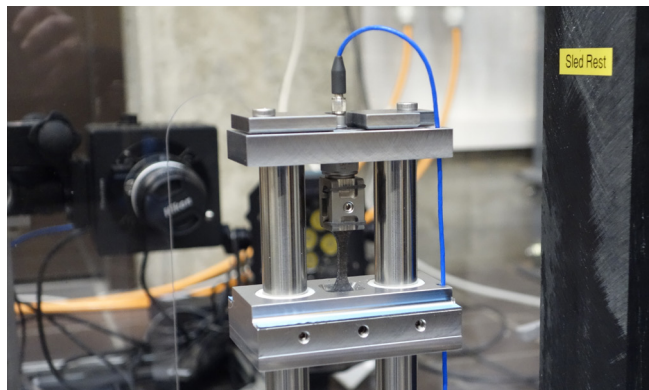


## Drop Tower

- Test facility for detailed investigation of material behavior under highly dynamic stress
- Climatic chamber for tests from  $-50\text{ }^{\circ}\text{C}$  to  $+100\text{ }^{\circ}\text{C}$  (available from mid 2020)



### Specific drop tower characteristics:

- Load cells up to 2.2 kN (tension) and 22 kN (pressure)
- Reduction of unwanted vibrations when testing polymers
- Photron high-speed camera including LED lighting

### Feasible tests and evaluation:

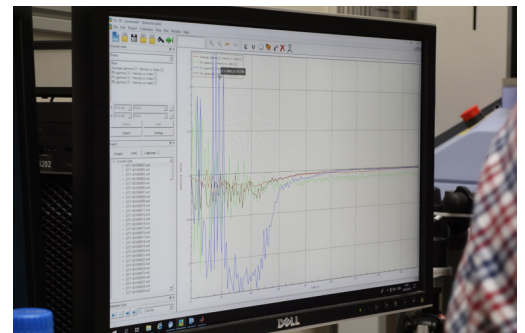
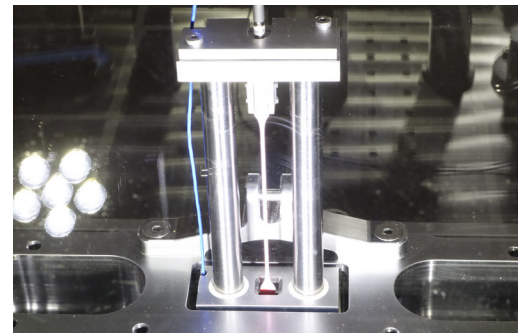
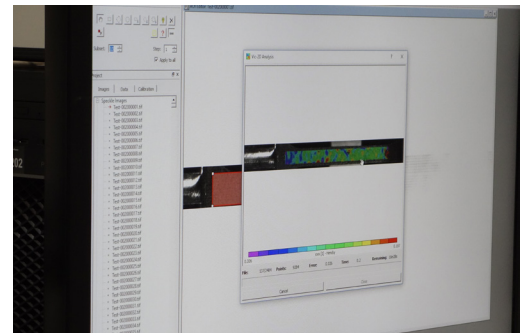
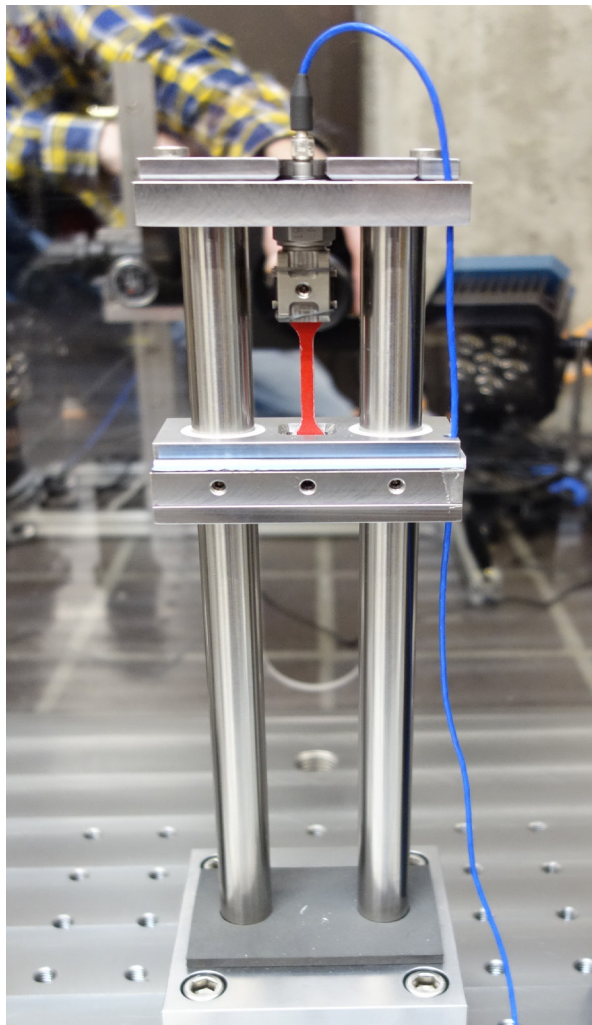
- Uniaxial tensile and compression tests of polymers and metals
- Additional weights enable pressure tests with low drop heights and still high strains
- Evaluation using DIC (digital image correlation) at up to 80,000 frames/s
- Tensile strain rates up to 500/s (depending on the drop height and measuring length of the sample) and compressive strain rates up to 2,000/s possible (depending on sample thickness)
- Highly resolved time series of measured forces, stresses and strains
- Creation of stress-strain diagrams with strains according to Biot, Cauchy, Euler-Almansi, Hencky and Lagrange

### Possible sample geometries:

- ISO 527-2 1BB, ISO 37 Type 3, ASTM D638 Type V or similar
- Additional sample geometries are possible after consultation (sample may not be larger than 10 mm x 2.5 mm at the clamping)

Further static / dynamic tests on components are possible at the Institute of Mechanical Systems (IMES). Amongst others the following test facilities are available:

- 2 single-axis, servo-hydraulic testing machines with up to 100 Hz and 15 kN
- 1 two-axis, servo-hydraulic testing machine with up to 100 Hz and 15 kN (axial and rotation)
- 1 two-axis, servo-electric testing machine with up to 2.5 kN (axial and bending)



**If you have further questions regarding options, costs, etc., please contact:**

ZHAW School of Engineering  
Institute of Mechanical Systems IMES  
Prof. Dr. Robert Eberlein  
Technikumstrasse 9  
CH 8400 Winterthur  
Phone +41 58 934 47 28  
Email [robert.eberlein@zhaw.ch](mailto:robert.eberlein@zhaw.ch)