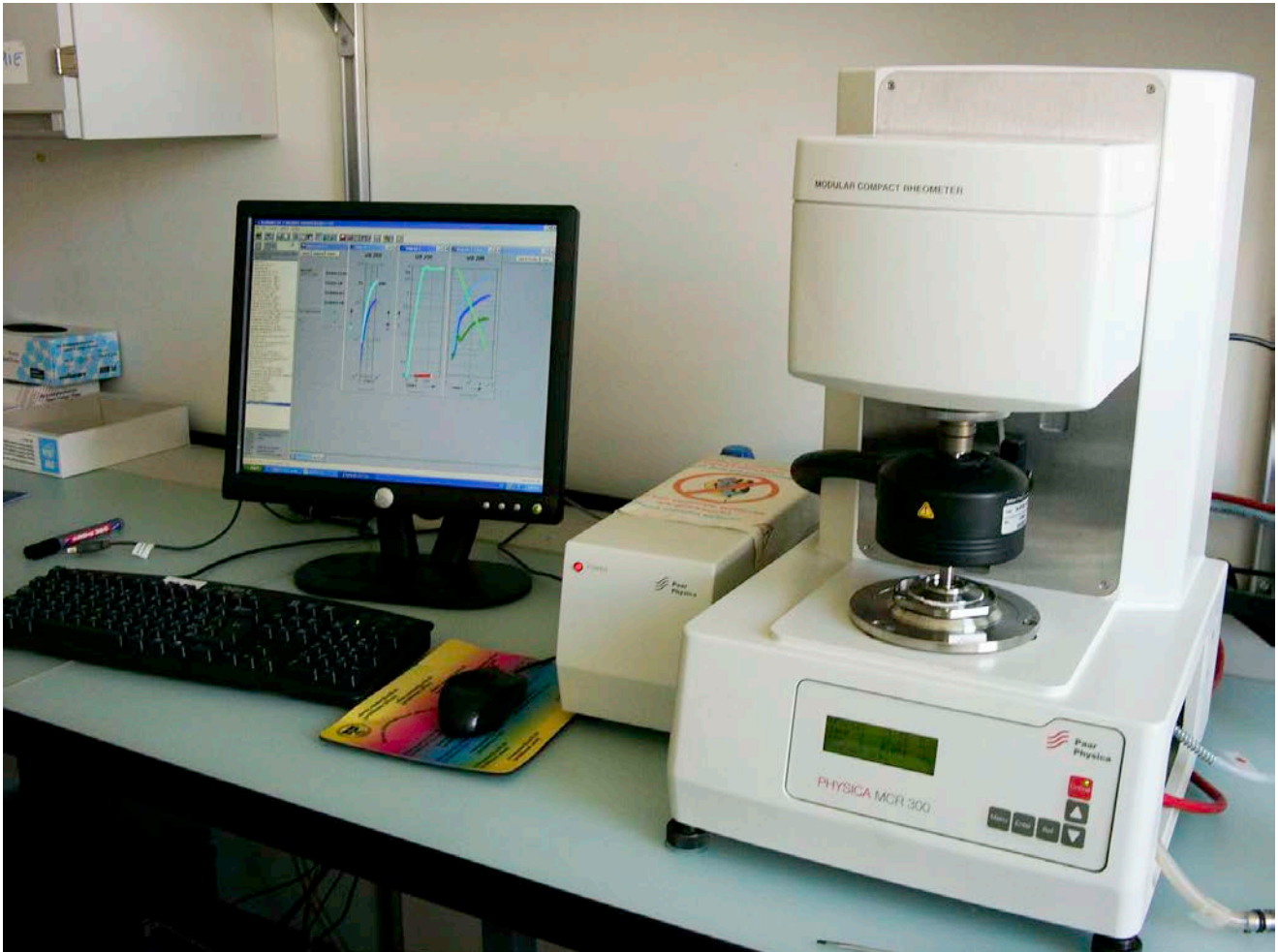


## Rheometer Paar Physica MCR300



The Paar Physica MCR300 is a commercial stress rheometer, which allows to run stress and strain controlled experiments. For more details see <http://www.anton-paar.com>.

We are using this rheometer to probe

- time resolved processes like the sol-gel transition or aging processes
- viscoelastic properties of complex fluids (micellar solutions, colloidal gels, milk ...)

We are collaborating with Jean-Nicolas Aebischer and Thomas Roth from the Ecole d'ingénieurs et d'architectes de Fribourg\* next door, where they have a MCR300 as well and we are sharing the following geometries and temperature units

### MEASURING GEOMETRIES

#### Plate-Plate

<b>PP 25*:</b> Diameter: 24.95 mm Max shear rate: 1'300 1/s Max shear stress: 49'000 Pa	<b>PP 50:</b> Diameter: 49.95 mm Max shear rate: 2'600 1/s Max shear stress: 6'100 Pa
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Gap (standard): 1 mm Sample Volume (1mm gap): 0.49 ml	Gap (standard): 1 mm Sample volume (1mm gap): 2 ml
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### Cone –Plate

<b>CP 25-2*:</b> Radius: 12.5 mm Angle of measuring cone: 2° Max shear rate: 3'200 1/s Max shear stress: 36'700 Pa Sample volume: 0.16 ml	<b>CP 50-1:</b> Radius: 25 mm Angle of measuring cone: 1° Max shear rate: 6'000 1/s Max shear stress: 4'600 Pa Sample volume: 0.6 ml
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### Cylinders

<b>Double Gap Cylinder: DG 26.7</b> Outer Radius1: 13.796 mm Outer Radius2: 12.33 mm Max shear rate: 3'000 1/s Max shear stress: 1'600 Pa Gap1: 0.47 mm Gap2: 0.42 mm Sample volume: 3.62 ml	<b>Single Gap Cylinder: CC 27</b> Outer Radius: 14.46 mm Max shear rate: 1'300 1/s Max shear stress: 2'800 Pa Gap: 1.13 mm Sample volume: 19.35 ml	<b>Mooney-Eward Cony Cylinder: ME 21</b> Outer Radius: 10.50 mm Angle of measuring cone: 3.18 ° Max shear rate: 1'800 1/s Max shear stress: 3'700 Pa Gap: 0.6 mm Sample volume: 4.44 ml
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### TEMPERATURE CONTROL UNITS:

<b>TEK 150 P:</b> Temperature range - 30 to 150 °C Heating rate: 13 K/min Cooling rate: 13 K/min Against cooling: Water circulation Measuring system: PP, CP	<b>TEZ 150 P:</b> Temperature range 20 to 150 °C Heating rate: 5 K/min Cooling rate: 1.6 K/min Against cooling: Water circulation Measuring system: DG, CC,	<b>TEK 350 with TC 20*:</b> Temperature range 30 to 350 °C Heating rate: 36 K/min Cooling rate: 6 K/min Against cooling: Air circulation Measuring system: PP, CP
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**SOME TECHNICAL DATA:**

Type: Stress and Strain control  
Torque range: 0.5 – 2  $10^5$  micro-Nm  
Normal force range: 0.01 to 50 N  
Speed range:  $10^{-4}$  to 1200 1/min  
Frequency range:  $10^{-4}$  to 100 Hz  
Angular resolution: < 1 micro-rad  
Temperature Range: -30 to 350 °C

**TEST TYPE:**

Shear rate test (CSR)

Shear stress test (CSS)

Stress relaxation test

Creep test

Oscillatory test (strain or stress preset)

- Amplitude sweep
- Frequency sweep
- Temperature sweep
- Time sweep

Multi-wave

Superimposed oscillation and rotation

Normal force test