



adolphe merkle institute
excellence in pure and applied nanoscience



Stimuli-Responsive Polymer Research at the Adolphe Merkle Institute

Relevant for research institutes, polymer industry and material scientists



→ Polymer samples

Since 2008, the Adolphe Merkle Institute (AMI), a research institute at the University of Fribourg in Switzerland, has been conducting fundamental and application-oriented research in the area of soft nanomaterials. Since 2020, it's been doing this with Anton Paar's versatile MCR 702 MultiDrive.

The Adolphe Merkle Institute and Anton Paar

The Adolphe Merkle Institute (AMI) is one of the most interdisciplinary research units at the University of Fribourg, bringing together about 100 scientists from a range of disciplines in six research groups to focus on fundamental and application-oriented research in the area of soft nanomaterials.

One research group, led by Christoph Weder, professor of chemistry and materials as well as the former director of the AMI, is trying to create new polymers and polymer-based materials for new applications. As part of this, Andrea Doderò, leader of a separate research group at the institute, is using an Anton Paar MCR 702 MultiDrive to characterize novel polymer materials.

Multiple techniques on one instrument

Before it purchased an MCR 702 MultiDrive in 2020, AMI had been performing rheological measurements and dynamic mechanical analysis (DMA) on multiple, separate instruments. Now, both of these techniques can be handled on just one instrument: the MCR 702 MultiDrive.

"This doesn't just give us more complete information about the materials we're preparing in our lab," says Doderò. "We've also been able to increase the number of samples we're measuring per day and develop personalized tests with high accuracy."

“The MCR 702 MultiDrive is a great instrument because I can do exactly what I want with it. It provides incredibly accurate and reliable data”

**Andrea Dodero,
Group Leader in Soft
Matter Physics, AMI**



→ The sample is placed within a plate-plate geometry

New projects, new insights

The research group just started a project to develop new stimuli-responsive polymer systems. “We target materials that change certain properties under stimulation with light,” explains Weder. “The instrument’s camera port lets us illuminate samples while we are carrying out mechanical tests, so it’s a perfect platform to study light-induced changes.”

And these are just examples for additional options. It’s this versatility that makes all the difference. Along with being able to handle a variety of samples, as Dodero puts it, “It lets us measure a broad variety of materials and a lot of their properties with just a single instrument.”

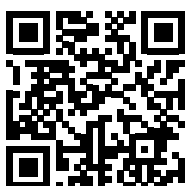


→ Solid Rectangular Fixture for DMA in tension and torsion

“We can now do rheology in-house.
The MCR 702 MultiDrive has become
our workhorse rheometer”

Christoph Weder,
Professor of Polymer Chemistry and Materials, AMI

FIND OUT MORE



[www.anton-paar.com/
apcss-mcr702](http://www.anton-paar.com/apcss-mcr702)

Instrument MCR 702 MultiDrive

Measurements performed DMA in bending, tension, compression, torsion, mechanical testing and rheological measurements

Samples Stimuli-responsive polymers and polymers in general

Accessories Additional linear drive, CTD 600 MDR convection temperature device, low-temperature option and DigiEye 250 camera system