Biolin Scientific
[Progress Together]

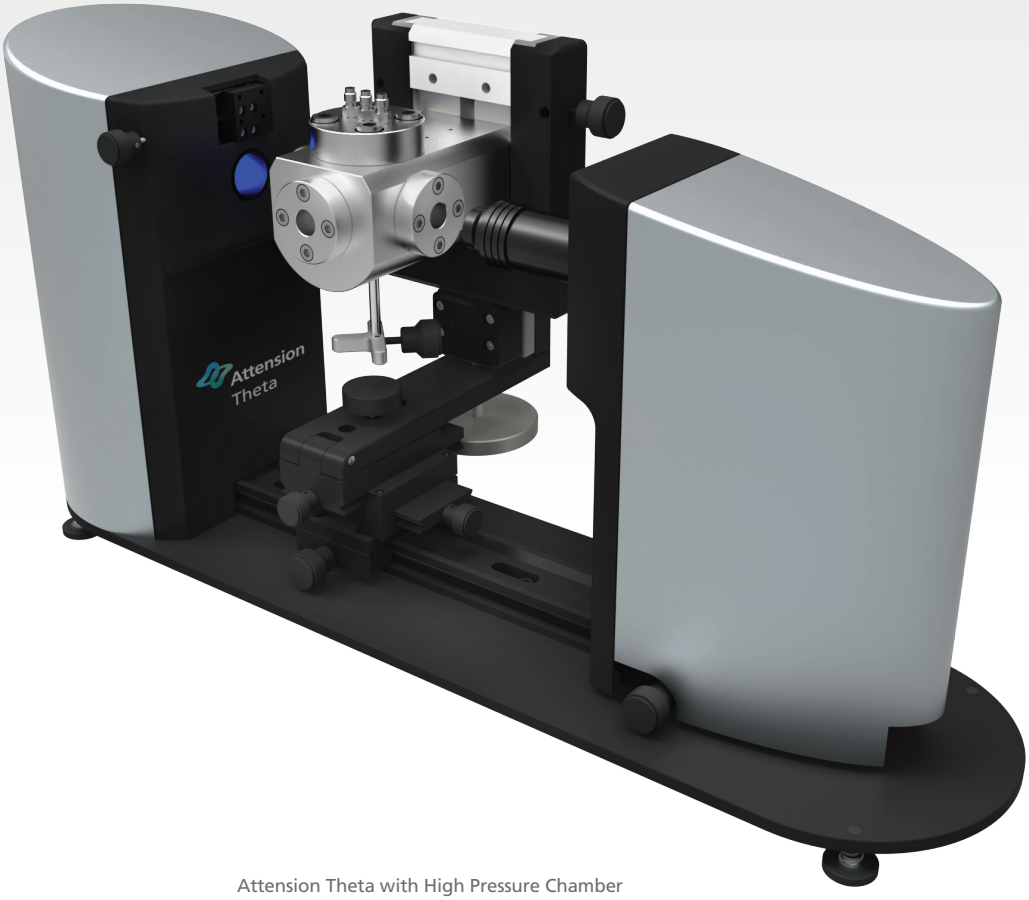
New!

Attension | [Product Overview]

Attension High Pressure Chamber

Wettability and other interfacial phenomena are important in many high pressure applications. The Attension High Pressure Chamber enables optimal interfacial tension and contact angle measurements at high pressures and temperatures.

- Interfacial tension and contact angle to quantify wetting conditions
- Accurate measurements at reservoir conditions
- Unique design enabling constant concentrations at various pressures
- Robust, durable and highly precise system



Attension Theta with High Pressure Chamber

Applications

Many industrial processes such as oil recovery, transport and refining are performed under extreme conditions. Specifically, oil recovery occurs at high pressures and other processes like extraction or dry cleaning often benefit from elevated pressures and/or temperatures. Surface wettability is important in these types of processes and thus it is important to be able to study interfacial phenomena at high pressures and temperatures. With the flexible design of the Attension High Pressure Chamber, a broad range of applications can be studied.

Enhanced oil recovery

There is an increasing need to utilize current oil reservoirs more efficiently since at least 50% of the original oil remains in the reservoir after primary and secondary recovery. In reservoir engineering, rock wettability and interfacial tension have been recognized as the most important factors that determine the level of recovery. With the Attension High Pressure Chamber, surface wetting can be studied through contact angle and interfacial tension measurements at temperatures and pressures that mimic reservoir conditions to optimize enhanced oil recovery parameters.

CO_2 and other supercritical fluids

Supercritical fluids (SCF) and specifically CO_2 have drawn a lot of attention due to their special combination of gas- and liquid-like properties. The processes involving SCFs are generally sustainable, environmentally friendly, and cost efficient. SCFs are already utilized in pharmaceutical, food and textile industries but new applications are emerging as the SCF technology is developing. CO_2 injections are for example commonly used to displace and dissolve some of the remaining oil in enhanced oil recovery. Since the supercritical state of the fluid requires high pressure and temperature, it is important to be able to study material interactions in these operating conditions. Interfacial tension and contact angle measurements with the Attension High Pressure Chamber can be utilized to understand the properties of the supercritical fluids in these systems.

Technology

The Attension High Pressure Chamber is divided into two compartments with a piston, see fig 1. With this unique design, the pressure in the measurement compartment can be increased simply by moving the piston without pumping more liquid into the chamber. This is particularly useful in applications where surfactants are used and need to stay at a constant concentration throughout the measurements. Attension High Pressure Chamber is CE marked and made from high quality stainless steel.

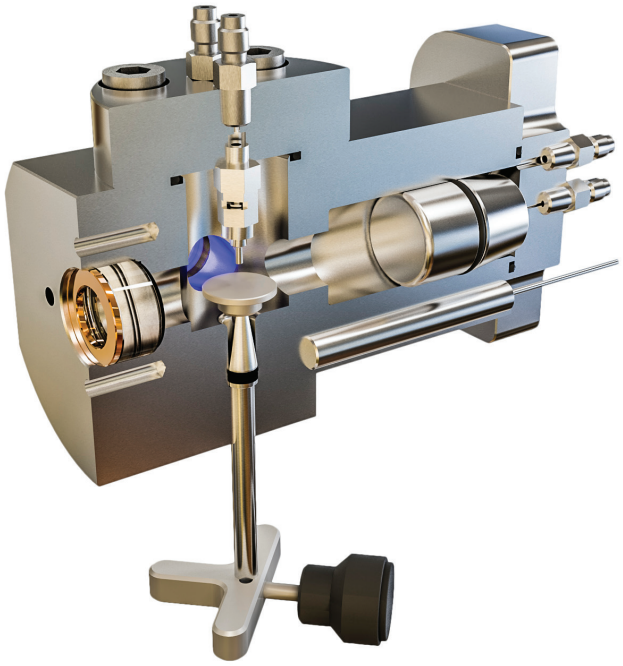


Figure 1: Cross section of Attension High Pressure Chamber showing the unique piston solution that enables constant surfactant concentration at different pressures.

Specifications	
Measurement types	Interfacial tension, surface tension, contact angle
Possible phases	Gas-liquid, liquid-liquid, liquid-solid
Maximum pressure	400 bar
Temperature range	1 - 200°C
Chamber volume	77 ml (without piston), 45 ml (with piston)
Pressure control	2 options: Pressure increase by piston or by adding more liquid/gas with pump
Dimensions	74 x 25 x 61 cm (L x W x H, Theta + Chamber)
Weight	16 kg (Theta + Chamber)
Power supply	100 - 240 VAC
Frequency	50 - 60 Hz
Computer requirements	2 GHz processor, 1 GB RAM, 40 GB hard disk drive, 1024 x 768 resolution, 1 USB port, 1 Gigabit Ethernet port, 1 x Serial port or USB port if circulator used for cooling

Biolin Scientific
[Progress Together]

E-mail:info@biolinscientific.com
biolinscientific.com

UK Distributor:
Dyne Testing Ltd

Email: sales@dynetesting.com
Web: www.dynetesting.com