

Closed Fluid Cell Accessory for the MFP-3D™ AFM

Introduction

The **Closed Fluid Cell** allows fluid imaging in a completely sealed and enclosed environment on **MFP-3D** AFMs.

Completely Sealed Design

The Closed Fluid Cell (CCELL) is designed to hold gases or liquids either statically or as part of a flow-through set-up in a completely enclosed and sealed cell. The CCELL is sealed by means of a flexible membrane which mounts to the MFP-3D cantilever holder. The membrane allows the tip to move freely relative to the sample, thereby allowing for distortion-free scans. The CCELL also employs replaceable O-rings that maintain seals up to 2.5 psi of water pressure to allow pressurized fluid exchange. The CCELL can also be operated in an open configuration where a soft seal membrane is used to minimize evaporation and contamination.

Ten Access Ports for Fluid or Gas Exchange

The fluid cell contains four 1/16" and six 0.036" diameter ports for fluid or gas exchange via syringe injection, gravity feed, or pump systems.

Operation on MFP-3D AFMs

The fluid cell magnetically attaches to the MFP-3D scanner and supports both bottom view and top view optics. Each system is tested for six feet (2 m) of water pressure (2.5 psi), which exceeds manual syringe pressure as well as most gravity feed system setups.

Accommodates a Variety of Sample Mounts

Each cell consists of a PEEK™ base that holds a 35 mm diameter by 1 mm thick glass disc for sample mounting. This glass disc can be replaced with special mounts that can hold



Closed Fluid Cell mounted to the cantilever holder on the MFP-3D head as it is being lowered into scanning position.

12 mm or 25 mm circular cover slips for high NA inverted optical microscopy.

Easy Cleaning Prevents Contamination

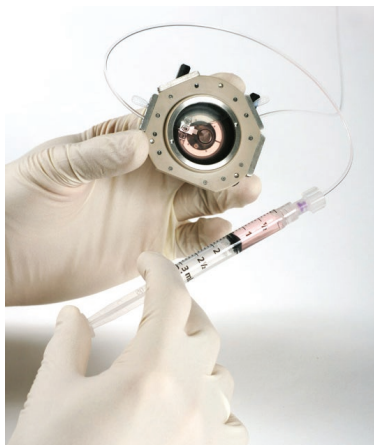
All of the CCELL components can be easily removed and cleaned. The only materials that contact the fluid are PEEK, glass, silicone, FKM (Viton® equivalent O-ring material) and the cantilever holder. The entire CCELL (excluding the cantilever holder) can be sterilized in an autoclave.

A Suite of Fluid Cell Accessories

The Closed Fluid Cell is one in a suite of environmental accessories that can be used with the MFP-3D to meet your experimental needs. Please see the separate data sheets on these options for more information.

Fluid Cell Lite

Fluid Cell Lite is an economical choice for fluid imaging with a portless fluid dish and an evaporation shield that prevents accidental leakage.



BioHeater™

This accessory integrates the Closed Fluid Cell with added heating capability, allowing heating of samples in liquids to 80° C in a sealed and enclosed environment. Requires Environmental Controller (sold separately).

Petri Dish Holder and Heater

The Petri Dish Holder allows cell samples to be cultured and imaged in Petri dishes. The Petri Dish Heater adds additional sample heating functionality from ambient to 45° C. Requires Environmental Controller (sold separately).

Specifications

Closed Fluid Cell

The Closed Fluid Cell is packaged in a convenient storage kit and includes the following items for installation and imaging:

	Model CCELL
● Closed Fluid Cell clamp assembly	1
● Closed Fluid Cell dish	1
● Portless fluid dish*	1
● Each of Viton and silicone membrane/bellows	2
● 1/16" PFA tubing	5'
● 35 mm x 1 mm glass sample discs	5
● Luer fittings and plug	2
● Each of 12 mm, 25 mm, and 35 mm cover slips*	10
● 12 mm cover slip holder*	1
● 25 mm cover slip holder*	1
● Teflon® port plugs	10
● 5 ml syringes	2
● Membrane threaded clamp	1
● A variety of replacement O-rings	
● Assembly tools, tweezers, and cleaning brush	

*Not pictured

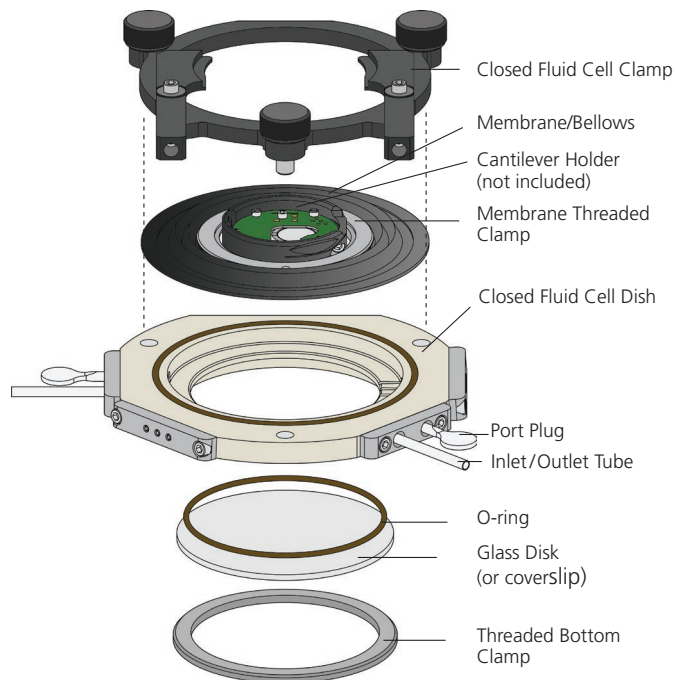
Completely sealed cell

Gas flow through

Top and bottom optical access

Maximum pressure 2.5 psi

High Voltage Compatible



Schematic of Closed Fluid Cell assembly.

Sample size

- 25 mm maximum; 2 mm thickness
- 10 mm sample travel within cell when open
- 1-3 mm sample travel within cell when closed and scanning, dependent upon tightness of clamp.

Fluid volume

- 5 ml before engage
- 1.5 ml-2.55 ml after engage, clamped and sealed

Access ports (not pictured)

- 1/16" diameter ports 4
- 0.036" diameter ports 6

Cleaning

- Easy and complete disassembly
- Autoclavable

Materials

- Base: PEEK
- Membrane: Silicone, FKM

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6310 Hollister Avenue
Santa Barbara, CA 93117
Voice +1 (805) 696-6466
Toll free +1 (888) 472-2795
Fax +1 (805) 696-6444

www.AsylumResearch.com
info@AsylumResearch.com
sales@AsylumResearch.com



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