MiTeGen Innovation in Crystallography



- SPINE standard magnetic cryovials
 - Regular, barcoded and reusable goniometer bases
 - Tools for high-throughput room-temperature diffraction screening



IFTA AG Certified QMS according to DIN EN ISO 9001 Reg. No. IC 03214 034

Jena Bioscience is the exclusive distributor in Europe for all MiTeGen products.







Jena Bioscience GmbH was founded in 1998 by a team of scientists from the Max-Planck-Institute for Molecular Physiology in Dortmund. 25+ years of academic know how were condensed into the company in order to develop innovative reagents and technologies for the life science market.

Since the start up, the company has evolved into an established global reagent supplier with more than 6500 products on stock and > 3000 customers in 50+ countries. Jena Bioscience serves three major client groups:

Our company premises are located in the city of Jena / Germany with a subsidiary in Teltow, in the vicinity of the German capital Berlin.



Jena Bioscience's products include nucleosides, nucleotides and their nonnatural analogs, recombinant proteins & protein production systems, reagents for the crystallization of biological macromolecules and tailor-made solutions for molecular biology and biochemistry.

In our chemistry division, we have hundreds of natural and modified nucleotides available on stock. In addition, with our pre-made building blocks and in-house expertise we manufacture even the most exotic nucleotide analog from mg to kg scale.

In the field of recombinant protein production, Jena Bioscience has developed its proprietary LEXSY technology. LEXSY (*Leishmania* Expression System) is based on a S1-classified unicellular organism that combines easy handling with a full eukaryotic protein folding and modification machinery including mammalian-like glycosylation. LEXSY is primarily used for the expression of proteins that are expressed at low yields or are inactive in the established systems, and expression levels of up to 500 mg/L of culture were achieved.

For the crystallization of biological macromolecules – which is the bottle-neck in determining the 3D-structure of most proteins – we offer reagents and tools for crystal screening, crystal optimization and phasing that can reduce the time for obtaining a high resolution protein structure from several years to a few days.

Our specialized reagents are complemented with a large selection of products for any molecular biology & biochemistry laboratory such as kits for Standard PCR and Real-Time PCR, fluorescent probes, oligonucleotides, cloning enzymes, mutagenesis technologies, and many more...

We combine highest quality standards for all our products (certified according to DIN EN ISO 9001) with individualized customer support. We establish direct lines of communication from clients to our in-house scientists, resulting in productive interactions among people with similar research interests who speak the same language. Furthermore, we offer support programs and attractive discount schemes for young scientists establishing their own labs. If you wish to receive more information, just send an e-mail to **info@jenabioscience.com.**

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Crystal Retrieval & Mounting

MicroMounts™ and MicroLoops™ are used in much the same way as nylon loop mounts and are much easier to handle than glass fibers and other mounting methods traditionally used in small-molecule crystallography.

They consist of a thin microfabricated polyimide film attached to a solid non-magnetic 0.64 mm stainless steel rod, which is compatible with all existing goniometer bases (caps) and mounting hardware. Their patented design provides an excellent combination of X-ray transparency, mechanical rigidity, flexibility and precision dimensions: The world's highest performance tools for retrieving and mounting protein crystals, virus crystals and small molecule/ inorganic crystals.

All MicroMounts™, MicroLoops™, MicroMeshes™ and MicroGrippers™ are available in standard SPINE length (Cat.-No. L18SP) and other lengths (Cat.-No. L11, L19, L25) provided in a box of 20.

Film Design

The polyimide film has low atomic number (Z) constituents and low density and produces less background scatter than e.g. nylon. It is optically transparent with an orange-gold hue.

The curvature of the film provides excellent stiffness even with very thin (10 µm) films and a convenient, scoop-like action in retrieving and handling samples.



Front View

Side View

Dual-Thickness (DT) MicroMounts[™] have a thick, semi-rigid body and a thin, highly X-ray transparent crystal-receiving aperture. This dual thickness maximizes durability and rigidity, while maintaining the ultra-low X-ray background scatter that original MicroMounts[™] are known for.

Aperture sizes: 10, 20, 30, 50, 75, 100, 150 and 200 µm

Cat.-No.: M2-L18SP-xx



Dual-Thickness (DT) MicroLoops LD™ have a computer-optimized design with longer, thinner necks to minimize disturbance when inserted and withdrawn from small liquid drops. Thick polymer in the neck region makes these mounts rigid in e.g. a cold gas stream, and thin polymer in the loop region ensures the lowest possible background scatter in X-ray diffraction applications. The world's most advanced loop design.

Aperture sizes: 20, 35, 50, 75, 100, 150, 200 and 300 μm Cat.-No.: M5-L18SP-xxLD



Dual-Thickness (DT) MicroCrystal Mounts[™] are specifically designed for crystals smaller than 20 µm and for micro-focus sources. Using dual-thickness technology, crystals are supported on a 3 micron thick film in a 10 micron thick frame. An aerodynamic design combined with a reduced tip length minimizes sample motion. MicroCrystal Mounts™ provide an unsurpassed combination of X-ray transparency and rigidity.



Cat.-No.: M4-L18SP-A1

Dual-Thickness (DT) MicroLoops[™] provide a superior tool for retrieving and mounting small samples of all sorts including crystals, single cells and tissues. In protein and small molecule crystallography, they provide much lower background X-ray scatter than any other loop-style mount.

Aperture sizes: 50, 100, 150, 200, 300, 400, 500, 600, 800 and



efficient data collection. Cat.-No.: M8-L18SP-xx



MicroMeshes[™] are ideal for very small samples, allowing them to be sieved out of solution. They also provide continuous and delicate support for e.g. thin plates, rods and tissue samples.

Aperture sizes: Mesh filled apertures with diameters of 400 or 700 µm and mesh openings of 10, 25 and 50 µm

Cat.-No.: M3-L18SP-xx



400/25 400/50 400/10

1000 µm

MicroMeshes SH™ fit entirely within the X-ray beam diameter typical of standard synchrotron beam lines and of focused laboratory sources, thus no alignment is necessary.

Aperture sizes: 80 μm diameter mesh area with 15 μm openings



Cat.-No.: M3-L18SP-15

Indexed MicroMeshes™ make it easier to locate (and then to relocate) a given sample.

Aperture sizes: 300 or 400 μm mesh areas with 25 μm openings

Cat.-No.: M3-L18SP-xx-INx



MicroGrippers™ provide a new approach to retrieving and mounting samples. They can be used in two different ways. Slide the tip under your sample and the long thin flexible fingers provide the most delicate support possible. They are ideal for thin plates and other very fragile samples.



Alternatively, push the tip down onto a "chunky" sample and the fingers will delicately grip it without damaging it (yes, even for protein and virus crystals), holding it firmly in place. This positive gripping action is unique: all other mounting tools rely on liquid surface tension and adhesion forces to hold a sample in place. MicroGrippers[™] allow "dry" samples to be mounted without the use of adhesives.

Aperture sizes: 50, 100, 200 and 300 μm

Cat.-No.: M7-L18SP-xx

Angled Tip Option

Some crystal morphologies regularly end up in non-optimum orientations. To provide a new level of crystal

orientation control, angled-tip versions of all MicroMounts[™], MicroLoops[™] and MicroMeshes[™] are offered. The tip is angled relative to the rod and the rotation axis by 45 or 90 degrees +/- 5 degrees. This ensures that the long-cell direction is always far from the incident X-ray beam direction for optimal data collection.



Cat.-No.: CA-45, CA-90

Mount Selection Guide

		Mount design				
Style and Use	Typical Crystal Sizes (μm)	Aperture Sizes (µm)	Thickness			CatNo.
			Aperture (µm)	Details & Labels (µm)	Body (μm)	
Dual-Thickness MicroMounts™ General purpose mount with wicking aperture; for low background X-ray scatter from medium to small crystals.	10 – 300	10 – 200	~10	~10	~25	M2-Lxx-xx
Dual-Thickness MicroLoops LD [™] General purpose mount with long narrow neck for low drop disturbance during harvesting of medium to small crystals from small drops.	10 – 400	20 – 300	~ 10	~ 10	~ 25	M5-Lxx-xxLD
Dual-Thickness MicroLoops™ General purpose, robust, economical sample mounts for medium to large crystals.	30 – 1500	50 – 1.000	~ 25	~ 10	~ 25	M5-Lxx-xx
MicroLoops E [™] Special purpose elliptical apertures for rod and needle shaped crystals	-	-		~ 12,5		M8-Lxx-xx
Dual-Thickness MicroCrystal Mounts [™] Special purpose Ultrathin membrane for easier visualization and ultra-low background X-ray scatter, for use with very small crystals.	< 20	_	~ 3	~ 3	~ 10	M4-L18SP-A1
MicroMeshes™ Special purpose mesh filled apertures for plates, rods, and small microcrystals.	any	-		~ 10		M3-Lxx-xx
MicroGrippers™ Special purpose, gentle support for thin plate-like samples and gripping action for robust samples.	50 - 300	50 - 300		~ 10		M7-Lxx-xx

Sample Manipulation and Measurement



MicroTools[™] are used for manipulation and measurement of samples with sizes from a few micrometers to 1 mm. They are far less likely to damage fragile samples than metal microtools and are X-ray transparent.

Cat.-No.: T1-L25-A1, T2-L25-A1, T3-L25-A1

Goniometer Bases (Caps)

Standard Goniometer Bases



Cat.-No.: GB-B1

Cat.-No.: GB-B1A

All base styles are available as standard, barcoded and reusable goniometer bases.

Cat.-No.: GB-B5

Cat.-No.: GB-B3



Cat.-No.: GB-B3S

Reusable Goniometer Bases

No more gluing loops into bases, the patent-pending design grabs and securely holds MicroMounts™, MicroLoops[™] and all other standard crystal loops without epoxy, glue or grease.

Cat.-No.: GB-xx-R, HT-GB-xx-R



Barcoded Goniometer Bases

With laser engraved 2D and alphanumeric bar-code.

Cat.-No.: HT-GB-xx





Goniometer Base B4

IUCr standard "brass pin" for small molecule crystallography:

Modified for use with MicroMounts[™] and the MicroRT[™] system, thus suitable for both room temperature and cryocrystallography applications.

Cat.-No.: GB-B4

Cryo and Room Temperature Crystallography



The **Goniometer Head Adapter** can be used to convert most goniometer heads to accept magnetic bases. This allows samples to be quickly mounted and dismounted from the goniometer.

Magnetic CryoVials are SPINE standard and correspond to all earlier cryovial designs. They are compatible with all commercial goniometer bases (except B4), with all cryovial handling tools and all automounters

Cat.-No.: GHA-1

Micro RT[™] System is the answer for room temperature diffraction screening and data collection. Go from a crystal in a drop to a crystal in the X-ray beam at room temperature quickly and easily. Collect room and low temperature data from the same crystal to evaluate your crystal and cryopreservation protocol.

Cat.-No.: RT-T1



The **Micro RT™ Aligner** makes sliding the capillary tubing past your crystal and onto our goniometer bases a breeze. No need to use a microscope or magnifier and no worries about shaky hands causing you to bump your crystal.

Cat.-No.: RTA-1



LV CryoOiI™ is a low viscosity, low surface tension perfluoropolyether oil with extremely low vapor pressure, excellent chemical inertness and excellent thermal stability. It is ideal for cryprotection and for protection against dehydration and oxidation, especially of very small crystals.



Cat.-No.: LVCO-1

NVH Oil is a very high viscosity oil suitable for room and variabletemperature diffraction measurements. Crystal motion during data collection is minimized, even when thick layers are used to prevent dehydration.

Cat.-No.: NVHO-1



Cat.-No.: APZN-1



that require vials. Cat.-No.: CV-xx

Mount-Base-Vial-Assemblies consist of your choice of goniometer bases (caps), your choice of crystal mounts/loops, pre-inserted into the base and magnetic CryoVials. They are ready for crystal mounting and data collection.

Each package contains 20 mount-base-vial assemblies.

Cat.-No.: A-Mx-xx-xx, HTA-Mx-xx-xx



Crystal Dehydration and Salvage Kit

Dehydration remains a powerful tool for improving or at least modifying the diffraction properties of protein crystals. Dehydration removes excess solvent, tightens packing of protein molecules and reduces the size of solvent channels. As a result, it sometimes improves crystal order and diffraction resolution at room temperature and can make successful flash cooling easier, especially for crystals with large initial solvent contents.

Cat.-No.: CO-122





Crystallography Starter Kits

MicroRT[™] Room Temperature Starter Kit has everything you need to get started preparing samples for room temperature screening.

Cat.-No.: RTSK-1



MiTeGen

Protein Crystallography Starter Kit™ has everything you need to mount and collect X-ray data from your crystals at both room temperature and at cryo temperatures.

Cat.-No.: CSK-2

Small Molecule Crystallography Starter Kit™ has everything you need to mount and collect X-ray data from your small molecules at both room temperature and at cryo temperatures.

Cat.-No.: SMSK-1, SMSK-2



Accessories



Liquid Wicks are ideal for delicately removing excess liquid from a sample, and for cleaning the polymer tips of Mitegen's tools. There are four sizes of wicks available: Size 15, extra fine (XF), fine (F) and medium (M).

Size 15 and Extra Fine (XF) wicks are ideal for removing liquid from around your crystal. Medium (M) and Fine (F) wicks may be used for cleaning the polymer tips of MicroMounts[™], MicroMeshes[™] and other tools.

Cat.-No.: W-15, W-XF, W-F, W-M

Pin Cutters for cutting hard/spring temper pins and rods. They provide accurate, burrfree cutting of MicroMount[™], MicroLoop[™], MicroMesh[™] and MicroGripper[™] pins.

Cat.-No.: PC-101





Serrated End Tweezers firmly grip the stainless steel pins of MicroMounts[™], MicroLoops[™], MicroMeshes[™] and MicroGrippers[™] without slipping. Ideal for inserting pins into reusable goniometer bases.

Cat.-No.: TW-1

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