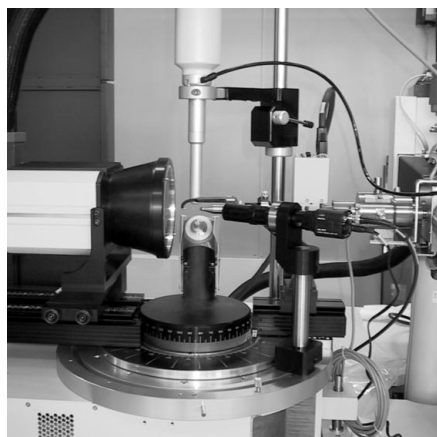


Proteum R for Life Sciences

1. Introduction

The Proteum R system is used to collect medium- to high-resolution data by combining the most sensitive laboratory detector with high-brilliance optics and a high-precision goniometer. The goniometer offers flexibility to swing the detector to collect data to atomic resolution, from shortest to longest unit cells. Proteum R system incorporates the highly sensitive SMART6000 CCD mounted on a high brilliance rotating anode generator (6 kW at 0.3×3 mm) with high brilliance MONTEL focusing multilayer optics. The Proteum R is faster by far than earlier technologies in the screening of protein crystals to evaluate single crystal quality, in the development and optimization of freezing conditions and to evaluate the useful limits of data resolution from diffraction.



2. CCD detector

The detector combines the large format Fairchild 4K CCD with a conservative 1.5:1 fiberoptic taper to provide a CCD detector optimized specifically for high sensitivity. The detector incorporates a 135 mm diameter fiberoptic taper bonded to the largest scientific grade CCD, offered exclusively for X-ray diffraction by Bruker Nonius. With its large imaging area and superb sensitivity, this detector provides a superior advantage in the collection of X-ray data using a copper target from microcrystals of biological macromolecules. The fast readout of the CCD offers a significant advantage over earlier technologies in screening crystals or collecting full data sets in the home laboratory.

3. Goniometer

The full three-axis goniometer offers flexibility to swing the detector to collect

complete data even at atomic resolution if the crystal diffracts well enough, from shortest to longest unit cells. The crystal stage is able to move under the incident beam collimator at any given angle for ease of complete data collection. This provides the capability to collect data in all parts of the reciprocal space (complete coverage of data without missing cone reflections) using any desired combination of ω and φ scans.

4. Proteum software

The *PROTEUM* software suits a whole new look for CCDs. It provides improved data while guiding the structural biologist through data collection, integration and scaling. The intuitive graphical interface launches data collection or integration with a mouse click, and presents data visually as a series of graphical screens and standard plots to measure data quality. Improved algorithms for extracting weak data and for scaling result in superior anomalous difference maps. The latest *SHELXTL* modules are included with the system and feature MAD, SIR, SAD and SIRAS data, *ab-initio* solution and location of heavy-atom sites.

5. Optics

MONTEL multilayer optics are now available to deliver a focused monochromatic intense beam with suppression of K_{β} and Bremsstrahlung. The optics are directly mounted at the tube tower and can be easily aligned even while the multilayer mirror itself is under vacuum.

6. X-ray generator

The FR591 rotating-anode generator is designed for optimum performance with fine-focus optics, configured for 6000 watt capability, high brilliance. The system includes two electromagnetic X-ray shutters and can be configured with a tabletop large enough to accommodate a system on each port. A rotary shutter for accurate timing of the detector exposures is provided with each detector system. An optional environmental enclosure is available.

7. Low-temperature attachment

The KRYO-FLEX low-temperature attachment permits crystallographic studies at low temperatures and features a highly stable temperature control with greatly reduced liquid nitrogen consumption. A long 3000 mm flexible insulated stainless steel

transfer line allows an easy mount of the KRYO-FLEX in the rotating anode enclosure or in synchrotron hutches.

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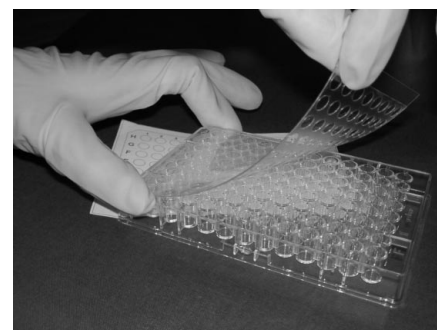
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HT-96 CrystalClene Sheets

For some time Molecular Dimensions have been supplying CrystalClene Slips. These plastic cover slips have become well established for hanging drop and are guaranteed clean and RNase free. This material is now available as an adhesive sheet that fits on a standard (SBS) 96 well plate. The sheet is resealable. It can be removed and replaced many times. There is no adhesive where the drop hangs. The sheet has superb optical clarity.

These sheets are intended for the high-throughput demands of structural genomics and pharmaceutical lead discovery projects. Whilst this sheet is primarily intended for screening, a crystal can be harvested by opening the whole plate or by cutting out a



single well cover with a scalpel. The sheet can be quickly spotted manually for hanging drop with an eight-channel pipette or can be incorporated into a robotic system.

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