



SCOUT – Automated Cryo-Cooled Protein Crystal Handling

Reliable High-throughput System for Highest Productivity

The determination of protein structures from expression to the final structural model is a highly complex, expensive and time consuming process. It is increasingly recognized that automation of each step of this process is the key to improving success and reducing costs.

The new SCOUT sample changing system automates the crucial process of screening cryo-frozen protein samples to determine their diffraction quality.

SCOUT reduces the time to screen samples and also reduces the chances of sample damage during

mounting and retrieval. SCOUT helps prepare for synchrotron trips and ensures more successful use of beam time.

SCOUT features the latest robotic and cryogenic technologies in a unique, compact configuration. SCOUT's impressive hardware integration goes hand in hand with cutting-edge software for instrument control and bioinformatics.

This combination of state-of-the-art hardware and software makes SCOUT the ideal choice for crystal screening and data collection.

Innovation with Integrity



SCOUT – Fast, reliable and safe: for you *and* your samples





SCOUT is designed to handle up to three UNIPUCKs for a total of up to 48 samples. The pucks are compatible with automated sample mounting systems of most synchrotrons. Each puck can hold 16 samples on ALS or SPINE pins.



SCOUT's unique twin dewar ensures no icing, low nitrogen consumption and zero turbulence during liquid nitrogen refill.





X-ray centering with AGH

X-ray alignment of the sample is now standard at top beamlines. Alignment with X-rays has been shown to be especially beneficial for very small samples. For the first time, SCOUT offers this advanced capability in the home laboratory. Scanning with X-rays using a three axis automated goniometer

head (AGH) guarantees perfect alignment – every time.



Zero sample icing and low liquid nitrogen consumption

SCOUT's unique twin dewar ensures no icing, low nitrogen consumption and zero turbulence during liquid nitrogen refill.

Data Collection and Processing

Powerful routines calculate an individual sample score. Expert-certified tools make data mining and retrieval easy and fast. SCOUT can also be used to collect complete data. SCOUT determines an optimized strategy taking individual sample parameters into account.

Collaborative Robot – Safety First

SCOUT is the first in-house system incorporating the latest 'collaborative robot' technology, specifically designed to work safely in close proximity with a human operator. The seamless integration of SCOUT into the D8 VENTURE ensures the highest level of safety. SCOUT is the only sample mounting robot for the home laboratory that fully complies with the latest safety regulations including the Machinery Safety Directive.

Bioinformatics makes the difference

The SCOUT software puts your sample at the center of attention. This unique sample-centric model controls both the acquisition of sample information and robot operation. SCOUT has been designed for efficient, ergonomic and intuitive user interaction with highly flexible and customizable bioinformatics.



Overview of Features and Benefits		
Low nitrogen consumption	1.2 l/h	Long continuous unattended automatic operation for more than a week
Large sample dewar	Safely stores up to 48 samples in 3 UNIPUCKS	
Twin Dewar with a separate Dewar for nitrogen inlet and level sensors	Zero turbulence in sample dewar	_ Safe sample handling
Fast sample loading and unloading	14 s	
Automated Goniometer Head (AGH)	Motorized XYZ goniometer head for precise sample alignment	Convenient automated sample centering
Standardized puck	UNIPUCK, 48 SPINE or ALS pins	Compatibility with first class synchrotrons worldwide
Fast optical and X-ray crystal centering	45 s per iteration, typically performs 2 iterations	Best sample alignment even for the tiniest, nearly invisible samples
Intelligent sensors and system diagnostics	Sensors to detect: sample loaded on system, Dewar lid position, liquid nitrogen level	Best system reliability
Compact, high precision robot	Six-axis with position accuracy: ±0.02 mm	
Robust error handling for software and hardware	Implemented in SCOUT	
Bio-informatics with sample based review, interactive workflow environment	License for SCOUT software package included	Optimized efficiency and best system usage
Meets latest safety regulations	Machinery Safety Directive 2006/42/EC, Pressure Equipment Directive 97/23/EC, Collaborative Robot Safety ISO/TS 15066:2016.	Safe and risk-free operation

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