

CRYSTAL PLACEMENT SYSTEM

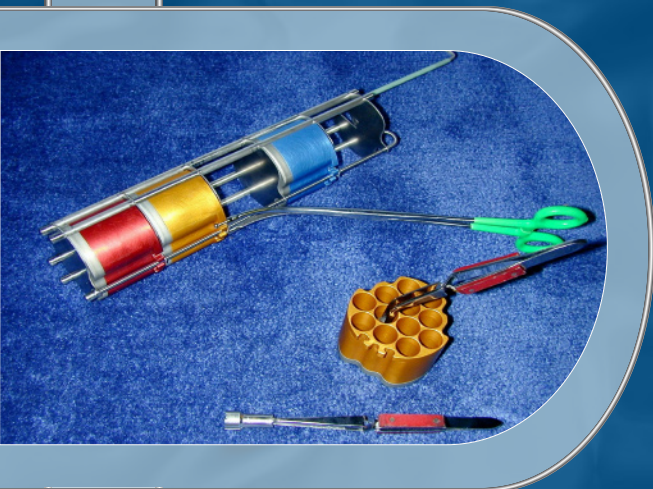
Oceaneering's Crystal Placement System (1) (CPS), developed under a partnership with Rigaku/Molecular Structures Corporation, is a robotic transfer system that enables the efficient handling of valuable frozen protein crystals. Crystals are preserved in a liquid nitrogen dewar (2) with an automated re-fill system. The robot, with its cryogenically compatible gripper (2), retrieves frozen crystals from the storage dewar, and transfers the crystals to the x-ray diffractometer. The OSS μ -Glide, a motorized 3-Axis Stage (3), then provides one micron-resolution alignment with the x-ray source. By working closely with crystallographers in the field during development, we ensured that the CPS hardware is compatible with techniques and tools familiar to crystallographers. The system includes customized transfer and storage magazines, magazine racks, and hand tools (4) that reduce the need for manual manipulation of individual crystals, but also makes manual operations convenient and comfortable.



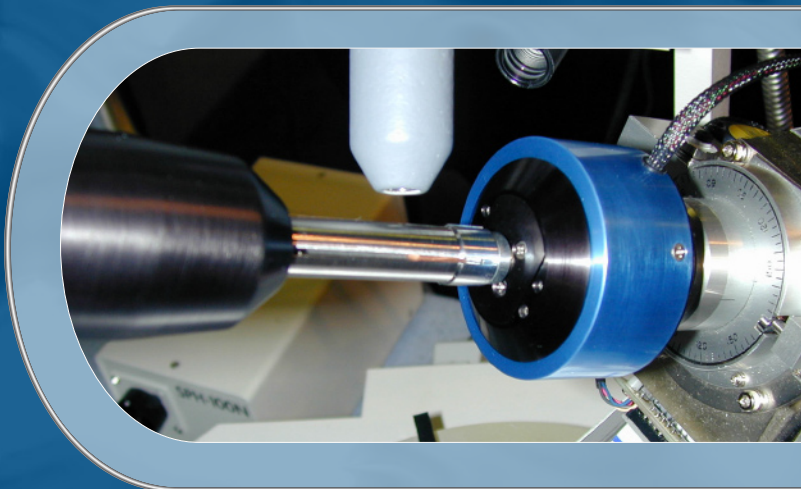
1 - Crystal Placement System (CPS)



2 - Removing frozen crystals from storage

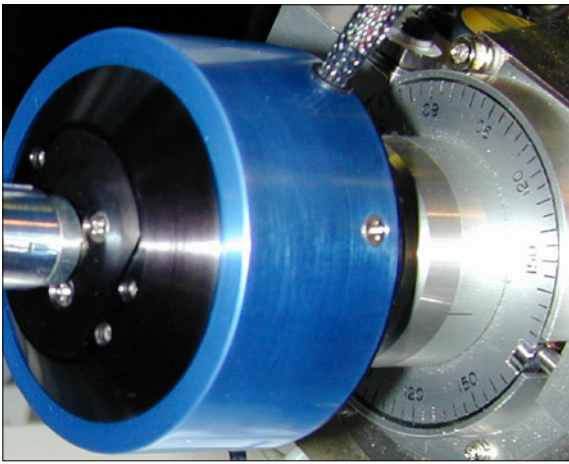


4 - Customized transfer and storage magazines, magazine racks, and hand-tools



3 - Micron-resolution alignment with x-ray source

CRYSTAL PLACEMENT SYSTEM (CPS) SPECIFICATIONS



Benefits

- Allows continuous operation of x-ray diffractometers for high-throughput screening and data collection.
- Improves safety by reducing the human activity near the x-ray generator or beamline.
- Magazines protect crystals during transit and allow convenient handling of large batches of crystals.
- Robotic transfer to the goniometer are faster and gentler on the fragile crystals.
- Uses common, commercially available cryo-pins for handling mounted frozen crystals.

Features

- Reliable 5-degree-of-freedom articulated robotic arm, integrated system controllers; automated heater prevents ice buildup on the gripper.
- Custom cryo-storage dewar with automated lid, heated frost-free interface, and auto liquid-level maintenance; holds up to 5 magazines.
- Magazines hold 12 mounted crystals and fit standard dry-shipping dewars.
- Motorized 3-Axis stage with one micron-resolution replaces manual goniometer head.



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