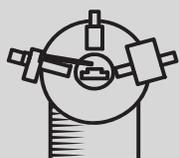


[SIF Newsletter]

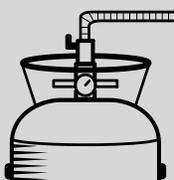


June 2021

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Yay, Summer...

I hope that you all had a great academic year considering the changes we have had to quickly adjust to over the past 15 months. As we transition to the summer term, remember to take some time to enjoy the nicer weather and reenergize your physical and mental health.

Since COVID numbers are decreasing and as more community members are vaccinated, NYU is allowing for higher occupancy in the buildings and labs. Refer to the [SIF website](#) for more details.

For those that have graduated this past month, **CONGRATULATIONS!** We at the Shared Instrumentation Facility wish you all the best of luck in your future endeavors. We hope that the skills and knowledge that you were able to acquire in the facility translate well into the next step of your careers.

Dr. Chin Lin,

Dr. Chunhua Hu,

Dr. Trinanjana Mandal,

and Dr. Joel Tang



X-Ray Instrument Upgrade

Dr. Tony Hu at the X-ray Diffraction Facility is happy to announce the successful upgrade of the Bruker AXS SMART APEXII single crystal diffractometer. The **X-ray source was replaced by a high performance Mo-K α -Microfocus source** equipped with a focusing Montel multilayer optic of the latest generation for single crystal diffraction applications. The X-ray photon flux density is up to 2.4×10^9 ph/(s mm²), which allows **much smaller crystals (down to a few micrometers) to be measured**. In addition, the detector was upgraded to a PHOTON II C14 Charge-integrating Pixel Array Detector (CPAD), originally developed for X-ray Free-Electron Lasers (XFELs). The CPAD takes home lab detector technology to a completely new level with the largest monolithic active area, the highest Detective Quantum Efficiency (DQE), the highest speed, and the highest dynamic range. These advances **dramatically improve both productivity and data quality**. The PHOTON II C14 detector incorporates a powerful Digital Signal Processing (DSP) unit for real time data processing and is operated in shutterless data acquisition mode. The PHOTON II C14 is a low maintenance, low power consumption detector that is air cooled. Together with the large detection area (140 cm²), the data could be collected in a much faster speed towards a higher resolution and higher redundancy. In summary, the upgrade provides a better opportunity for researchers getting their crystal structures with better quality and shorter turnaround time. **The upgrades were funded by the College of Arts and Science and MRSEC. A special thank-you goes to Prof. Michael Ward, who made the upgrade possible.**



Meet the Staff



Dr. Chunhua (Tony) Hu has been working at NYU since 2008. Originally trained as an inorganic chemist, he found his passion as a crystallographer. Dr. Hu has **more than 15 years of experience as a Crystallographer** working at NYU and previously at the University of Nebraska-Lincoln with **experience in both single crystal and powder X-ray diffraction**. He has a deep fondness of educating next-generation science lovers and supporting outreach activities. Come by Brown 357A for any of your crystallography needs.

Find out more about Dr. Hu at:





Instrument Spotlight: Helium Recovery

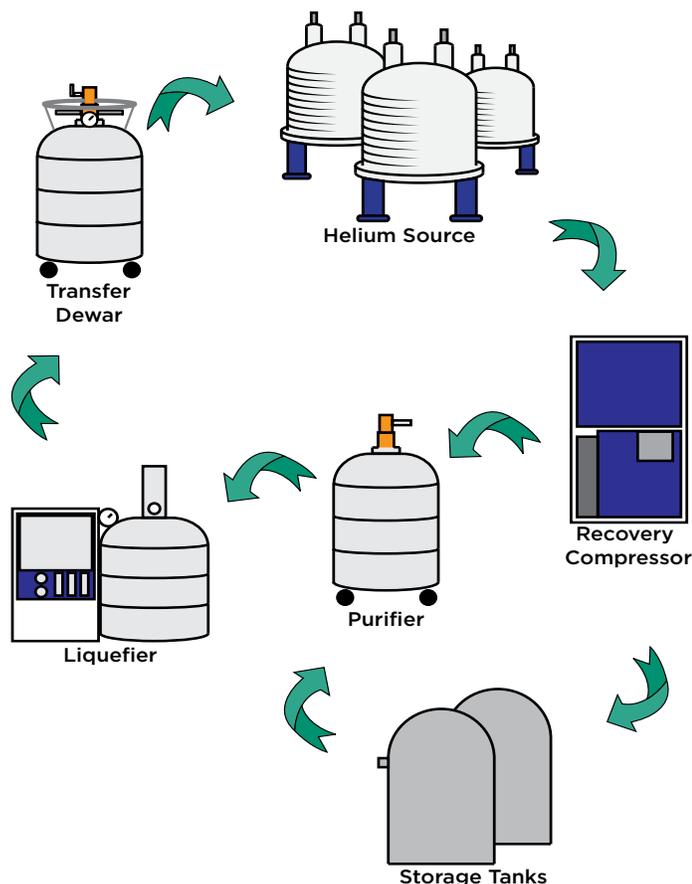
Over the past year there have been some major renovations in the Shared Instrumentation Facility on the 3rd floor of Brown Building. On May 13th, the helium recovery system installation was completed. The acquisition of the helium recovery system would not be possible without the **NIH supplemental funding (R01GM117118) granted to Prof. Nate Traaseth.**

Helium is used in our NMR magnets to keep them cool and maintain a strong magnetic field. Helium is entirely a nonrenewable byproduct from certain mining operations and as it boils off from the magnets, it quickly escapes and out

Click on image (interactive slideshow)

of the Earth's atmosphere. With a global helium shortage at a high, we wanted to be able to reduce our environmental impact.

How it Works



The helium recovery system and our NMR magnets are in a fully closed-loop to recover all boil-off gas at all times. As the helium boils off from the **NMR Magnets**, the gas gets collected by the **Recovery Compressor** which then can compress and direct the gas to either the **Storage Tanks** or to the **Liquefier**, depending on the recovery rate. Prior going to the Liquefier, the gas passes through a **Purifier** which uses a cold head to condense impurities such as oxygen and water from the helium gas. The **Liquefier** then refrigerates the helium gas to condense it and produce **clean, pure liquid helium**. Once the liquefier is full, we can transfer the recovered liquid helium back into the NMR Magnets. **This helium recovery system will recapture more than 95% of the helium lost by the 4 NMR magnets in Brown 353A, and recycle it back into our systems.**

New Instrument Login Protocols



In an effort to improve user data security, we have integrated Microsoft's Active Directory service for an additional layer of security on some of the instruments in the SIF. When using the instruments listed below you can log into Windows using the format **AD\NYUId** as your username and your FOM password. Your personal SIF server data folder will be mounted as the **W:** drive. You can **directly save your data to this drive and it will eliminate the need to transfer data from the instrument computer to the SIF server.** When you are finished on the instrument, **make sure to signout of Windows.** Refer to the SIF website under the [Software and Resources link](#) for more details.

Instruments using AD Login:

- Bruker Avance NEO 800MHz NMR Spectrometer
- Thermo Scientific Nicolet-6700 FTIR Spectrometer
- Molecular Devices Flex Station 3 Microplate Reader
- Malvern Zetasizer Nano Series
- TA Instrument Nano Isothermal Titration Calorimeter
- JASCO P-2000 Polarimeter

** The list will be updated on the SIF website as we roll out more instruments that implement this procedure.*



We are here to help. Feel free to contact us if you have any questions.

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