

# Department of Chemistry

## Research Support Facilities

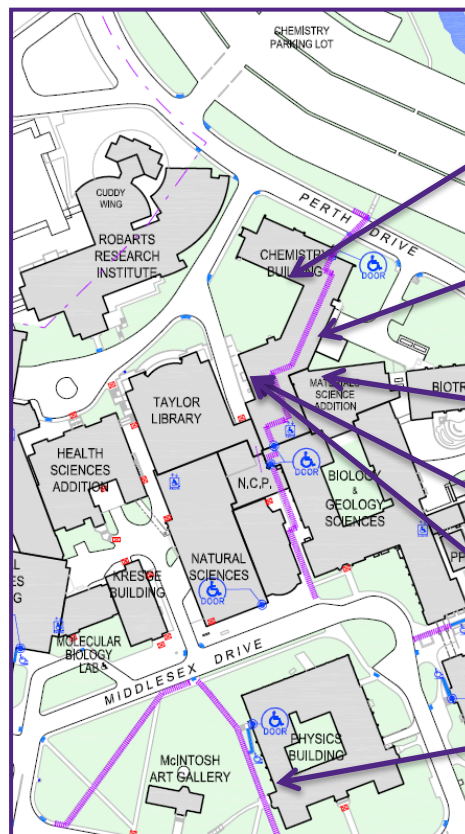
December 2023



Western  
UNIVERSITY · CANADA

# Overview of Chemistry Facilities

- 8 support facilities
- Run by staff members
- Hours vary by facility
- Spread over 3 buildings



Electronics Shop

Science Stores

- $N_2(l)$  Dispensing
- Solvent Dispensing

JB Stothers NMR Facility

Mass Spectrometry

X-ray Diffraction

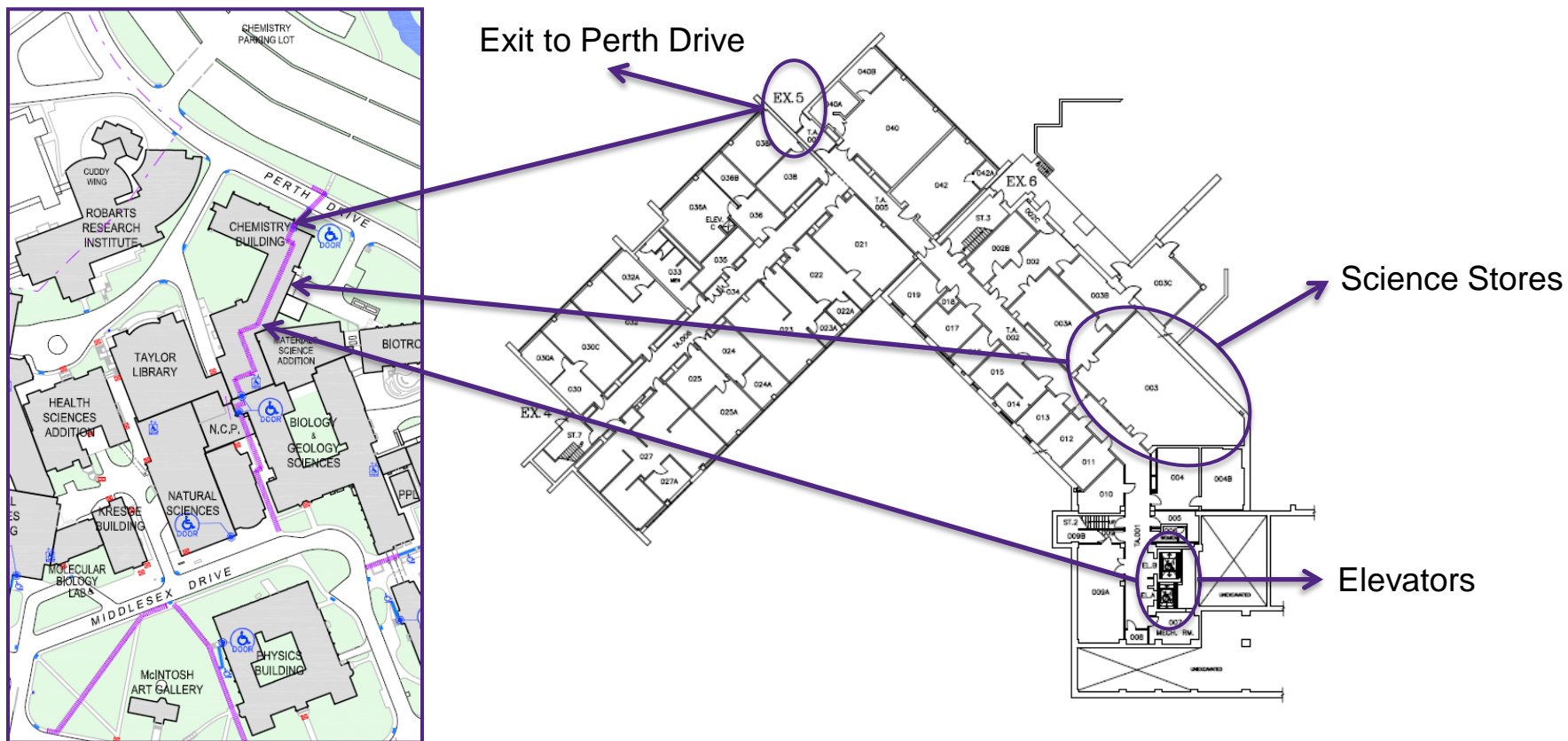
Glass Blowing Shop

# Science Stores

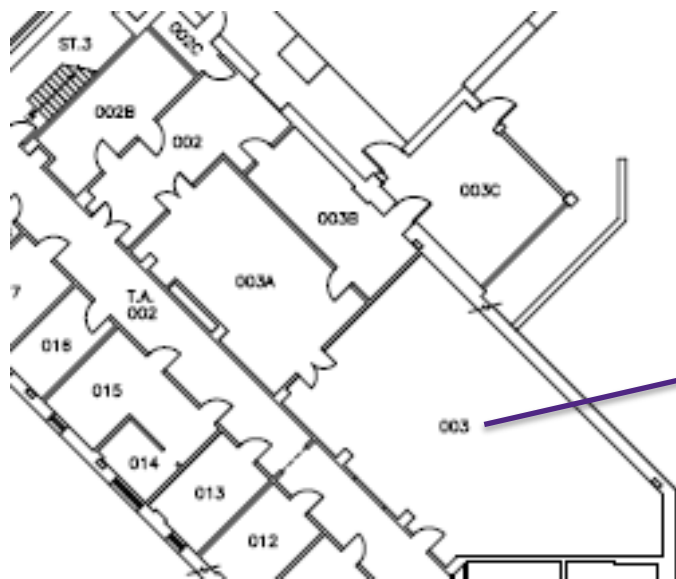


# Science Stores: Where?

- ChB 003
  - basement of Chemistry Building



# Science Stores: What?



## Main area – Service Window

- Purchase from stock inventory:
  - basic chemicals & gases
  - solvents
  - lab supplies
  - office supplies
  - dry ice
- Questions concerning orders, suppliers, etc.
- Place orders for non-stock items
- Pick up completed orders
- Shipping samples, equipment, etc. by courier

# Science Stores: What?

**002B**

- Liquid N<sub>2</sub> dispensing

**002**

- Loading dock
- Cryogenics
- Dry ice

**003C**

- Solvent dispensing



**003A**

- Gas cylinders
- Gas carts

# Science Stores: When & Who?

- Monday – Friday: 9:30 am to noon, 2:00 to 4:00 pm
- E-mail: [chemstor@uwo.ca](mailto:chemstor@uwo.ca)

Monica



Yuhua



## *Administrative Consultants*

- Purchase stock items
  - need Western ID & signing authority
- Place orders
- Enquiries
- ChB 003

Robin



## *Administrative Consultant*

- Receiving
- Gases
- ChB 003A

Sherrie



## *Manager*

- Accounts
- ChB 004

# Solvent Dispensing Facility: What?

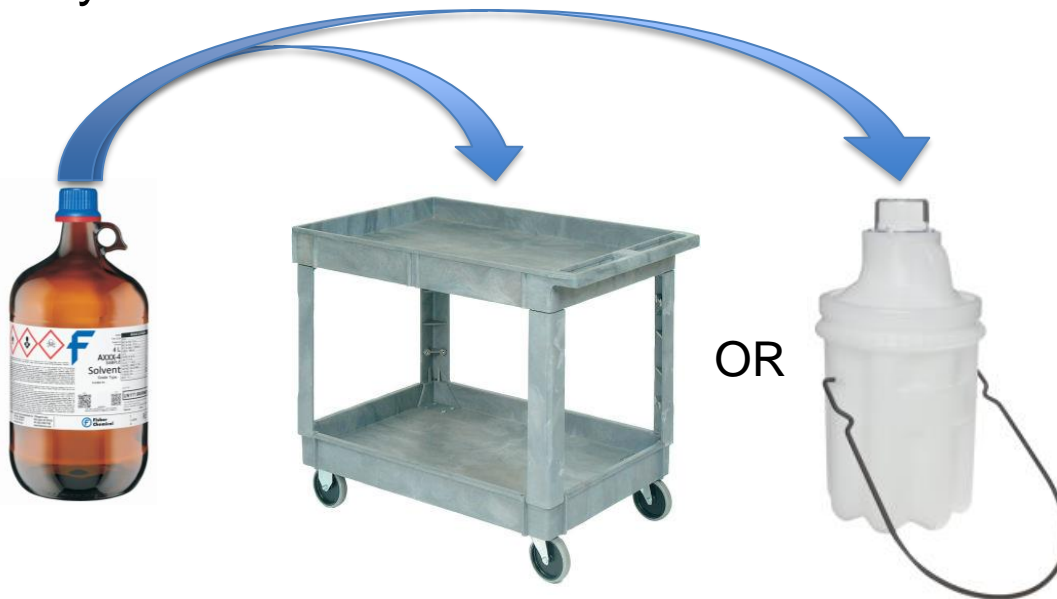
- 4L solvent bottles are filled from bulk tanks
- Available solvents
  - Acetone
  - Hexanes
  - Isopropanol
  - DCM
  - Ethyl Acetate
  - Methanol





# Solvent Dispensing: When & How?

- Fills are completed every Wednesday morning
  - empty solvent bottle must be labelled appropriately
  - empty solvent bottle must be marked with lab name
- Pick up filled bottles whenever
  - must carry filled bottle with solvent carrier or in a cart



# Liquid Nitrogen Dispensing: What?

- Facility where users fill their own liquid nitrogen dewars



The Facility

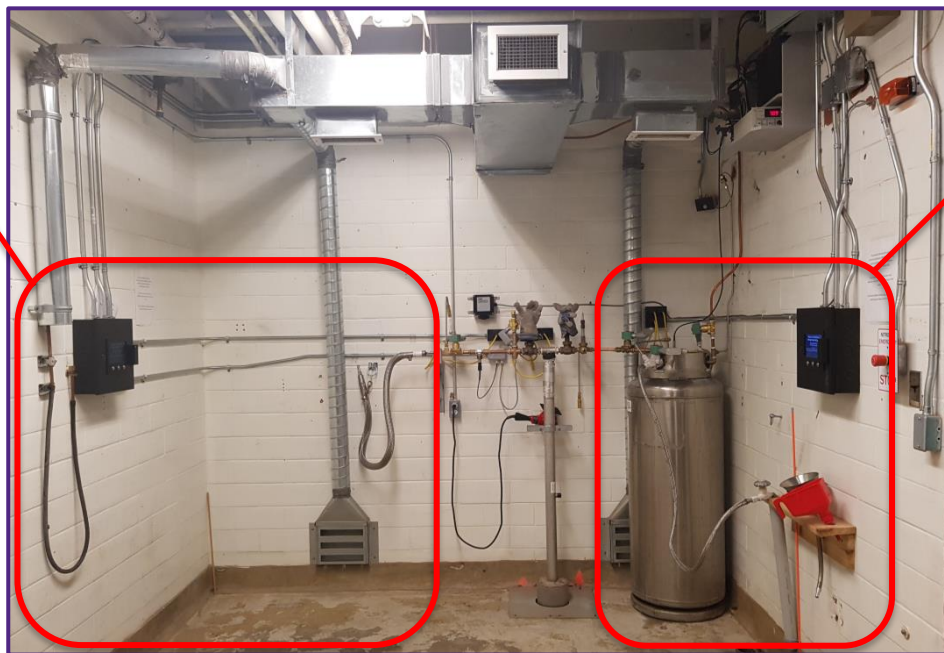


Bulk  $N_2(\ell)$  tank

# Liquid Nitrogen Dispensing: What?

- Automated filling system for any size dewar

*Closed  
dewars*  
> 100 L



*Open dewars*  
 $\leq 100$  L



The Facility

Control Panel

# Liquid N<sub>2</sub> Dispensing: When & How?

- Must have the following:
  - Western card
  - valid WHMIS
  - valid declaration of signing authority (DoSA)
- Must attend a training session
  - first Wednesday of each month
  - 2:00 pm
  - no sign up necessary
- 24-hour access
  - Western card access only before 8:00 am and after 4:00 pm

Warren

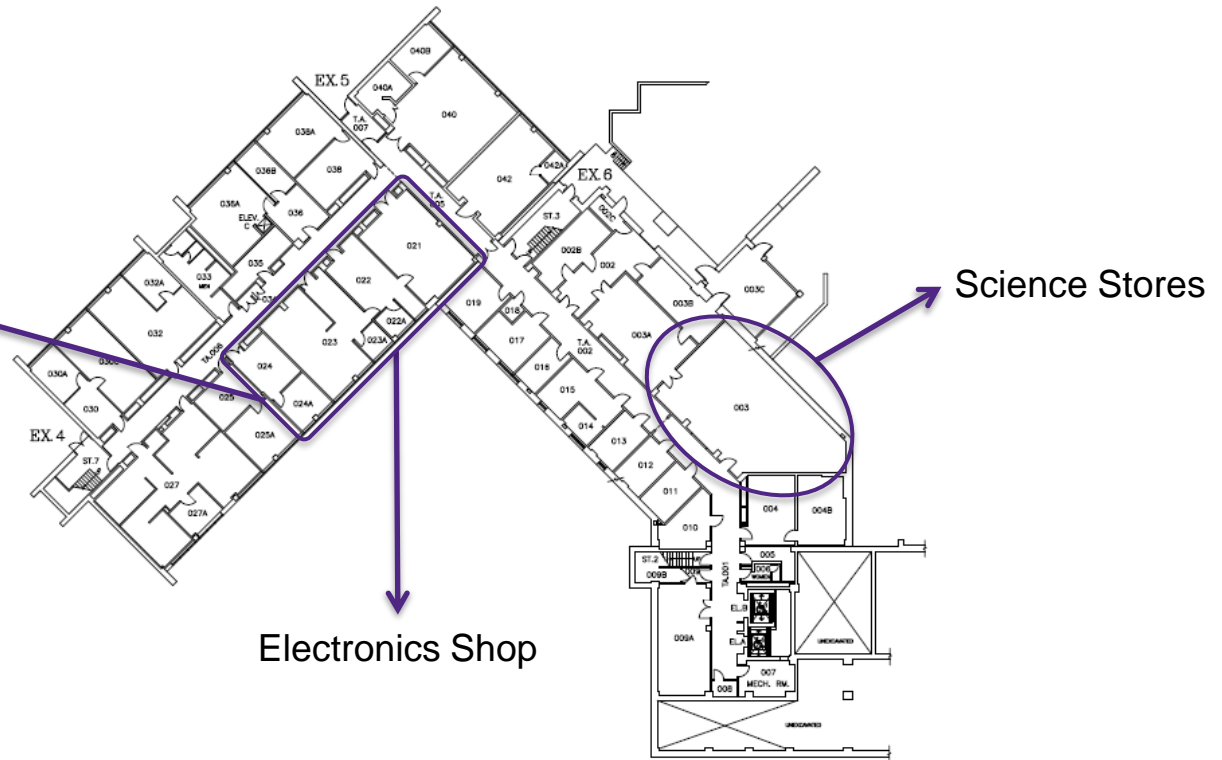
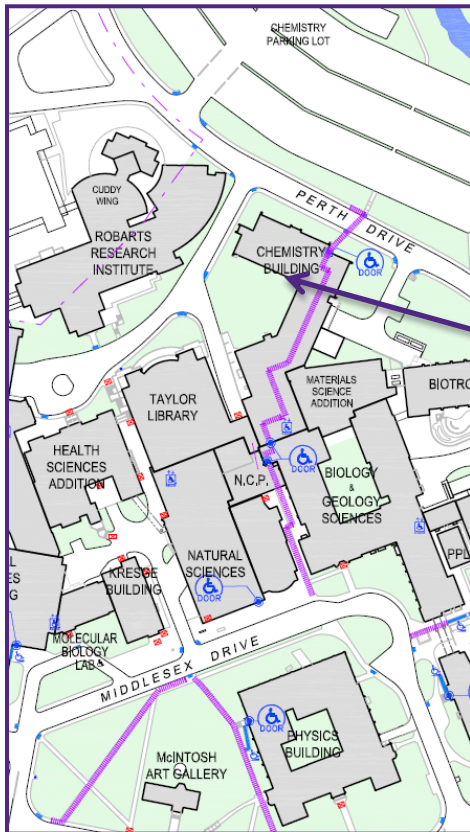


# Electronics Shop



# Electronics Shop: Where?

- ChB 023
  - basement of Chemistry Building



# Electronics Shop: Who & What?

- Electronics and machining
  - repair of scientific equipment
  - design and manufacturing of specialized scientific equipment
  - consultation

Melanie



*Technician*

- Electronics
- Machining

Barakat



*Technician*

- Electronics
- Undergrad lab instrumentation

# Electronics Shop: When & How?

- Monday – Friday: 10:30 am to noon, 1:00 pm to 4:30 pm
- Electronics and machining
  - discuss your repair/project with Melanie or Barakat
  - fill out electronic work order

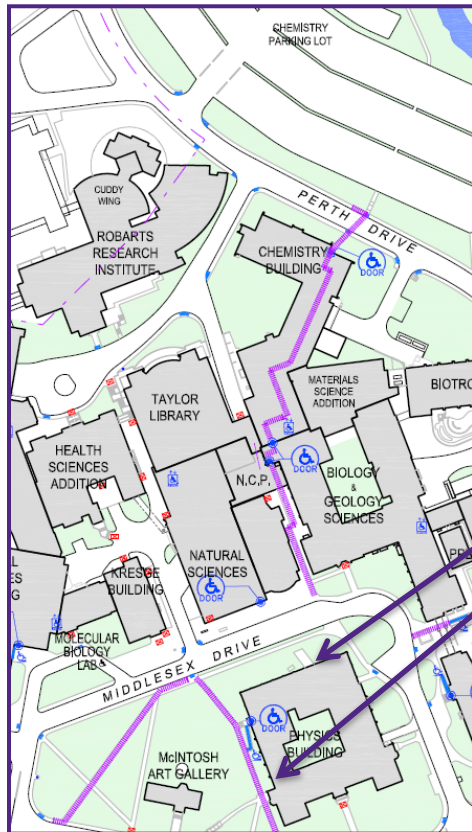


# Glass Blowing Shop

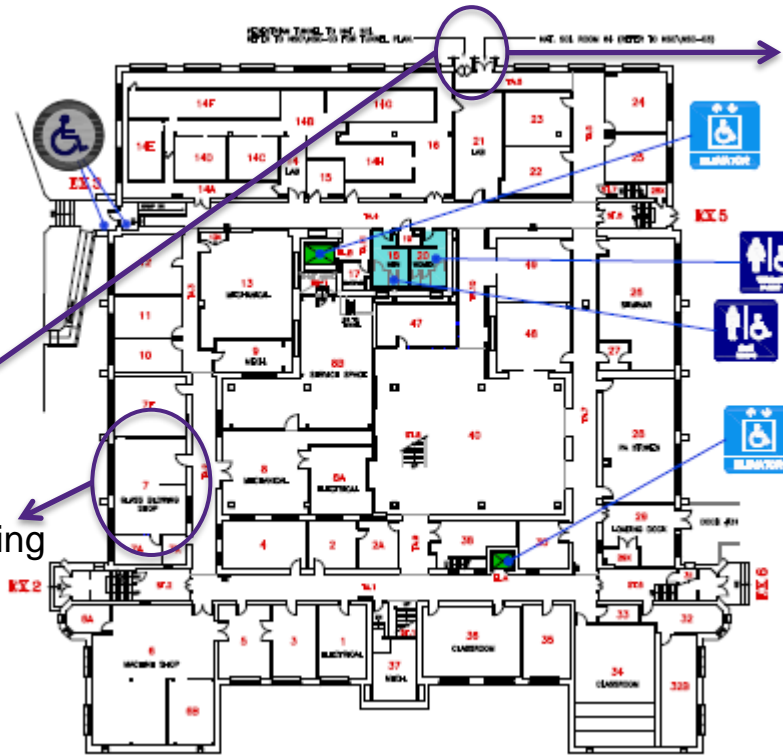


# Glass Blowing Shop: Where?

- PAB 7
  - ground floor of Physics and Astronomy Building



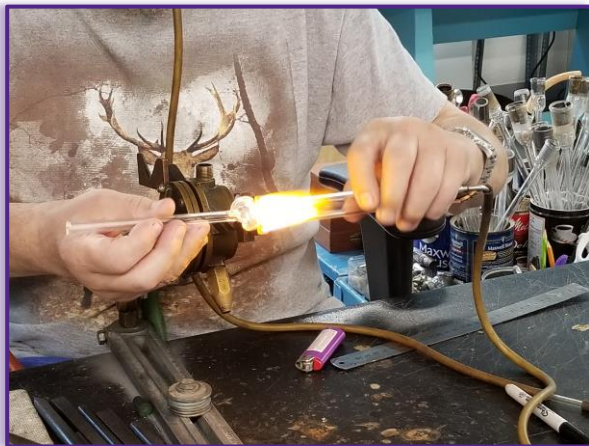
Glass Blowing Shop



Nat. Sci. tunnel

# Glass Blowing Shop: What?

- Glassware repair
- Customized glassware



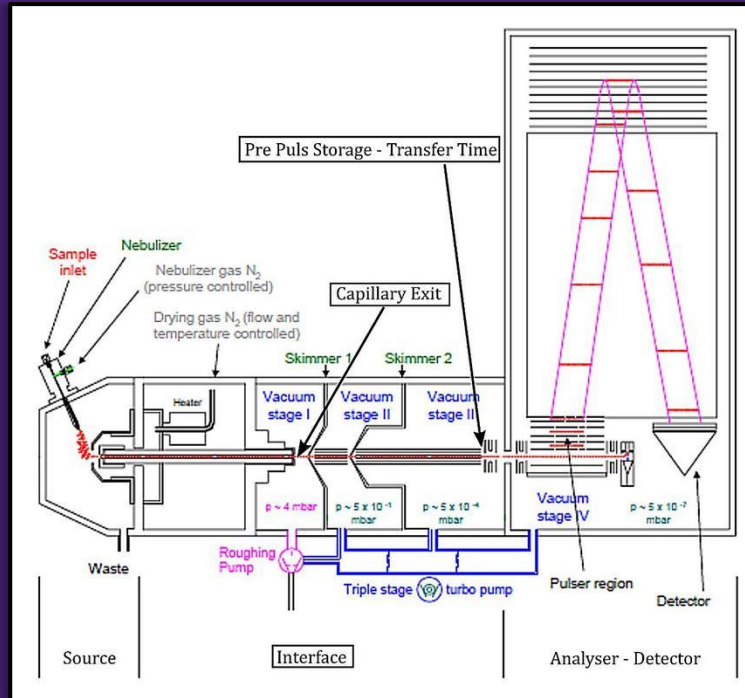
# Glass Blowing Shop: How, Who, When?

Todd



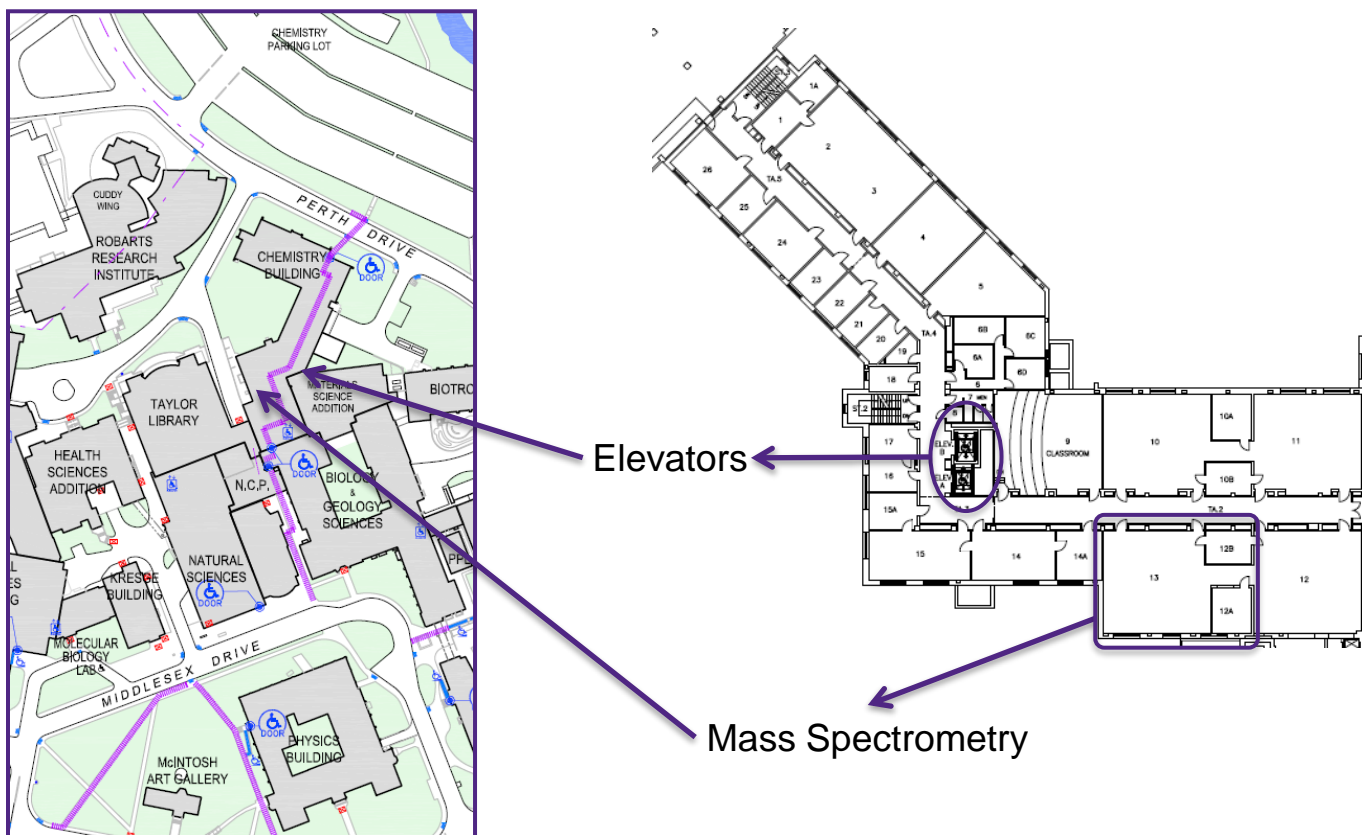
- Monday, Tuesday, Thursday, Friday:  
8:00 am to 12:00 pm, 1:00 pm to 4:00 pm
- Bring broken glassware to shop
- Discuss custom glassware project with Todd

# Mass Spectrometry



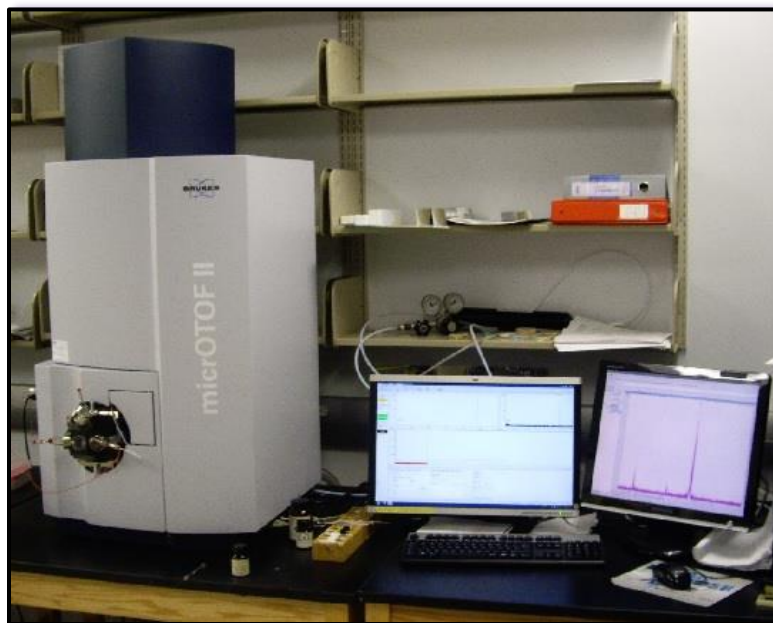
# Mass Spectrometry: Where?

- ChB 13
  - ground floor of Chemistry Building



# Mass Spectrometry: What?

- High-resolution mass spectrometry
  - inorganic, organic, organometallic, small proteins
  - masses up to  $m/z = 20\ 000$



microOTOF

# Mass Spectrometry: Who, When, How?

Chathu

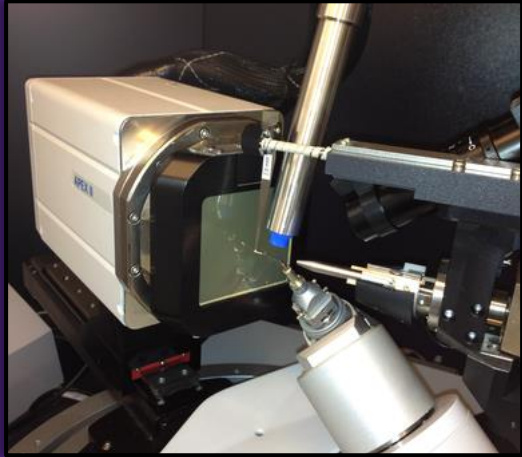


- Data acquisition
- Consultation
- Equipment maintenance/repair
- Monday – Friday: 9:00 am to 4:00 pm

- All samples are analyzed by Chathu
  - Go to Mass Spectrometry facility and chat with Chathu
  - Fill out sample submission form:  
([https://www.uwo.ca/chem//resources/facilities/docs/mass\\_spec\\_form.pdf](https://www.uwo.ca/chem//resources/facilities/docs/mass_spec_form.pdf))
  - Leave sample(s) on table

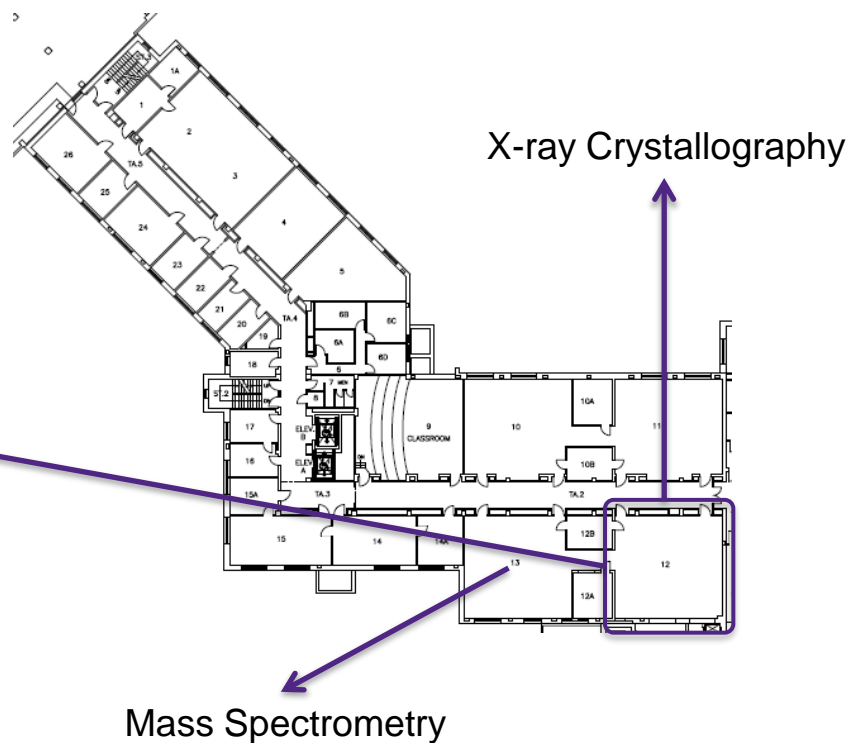
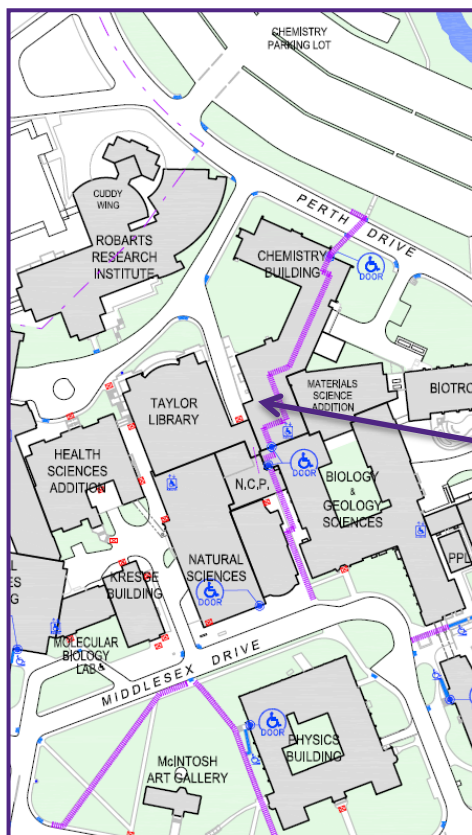


# X-ray Diffraction



# X-ray Diffraction: Where?

- ChB 12
  - ground floor of Chemistry Building



# X-ray Diffraction: What?

## *Single-crystal X-ray diffraction*

- one single-crystal diffractometer
- unit cell determination, data collection
- complete structure determination
- CSD database for data comparison
- computers for structure refinement



# X-ray Diffraction: What?

## *Powder X-ray diffraction*

- one powder X-ray diffractometer
- unit cell determination
- structural database for data comparison



# X-ray Diffraction: Who?

Paul



*Manager*

- User training
- Single crystal data collection/refinement
- Equipment maintenance/repair
- Monday – Friday: 9:00 am to 4:30 pm

Aneta



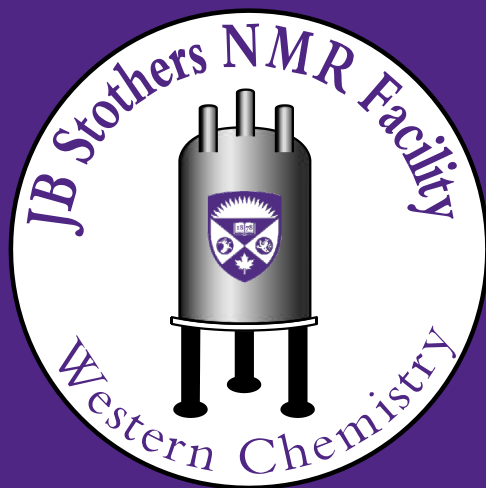
*Technician*

- Powder data collection
- Powder data analysis
- MWF, 8:30 am to 12:00 pm

# X-ray Diffraction: How?

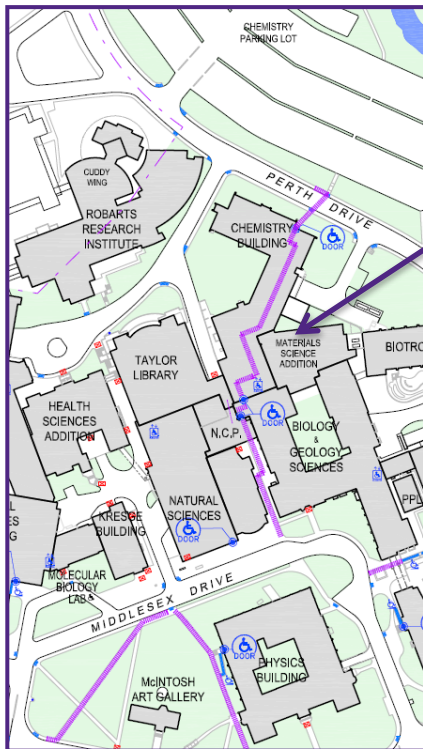
- Single-crystal X-ray crystallography
  - submit samples to electronic sample queue
  - trained users can collect and refine their own data (Ph.D. only)
  - untrained users submit crystals to Paul
- Powder X-ray diffraction
  - submit samples to electronic sample queue
  - access to instrument is managed by Aneta
  - trained users can collect and analyze their own data
  - untrained users submit samples to Aneta

# JB Stothers NMR Facility



# JB Stothers NMR Facility: Where?

- MSA 0216
  - ground floor of Materials Science Addition
  - down the hall from X-ray and Mass spec



NMR Facility





# JB Stothers NMR Facility: What?

- Liquids NMR spectroscopy
  - mostly user run

B400



I600



B600



- Solids NMR spectroscopy
  - I+400
  - spectra acquired by NMR Facility staff

# JB Stothers NMR Facility: Who?

Mat



*Manager*

- Consultation
- Experiment setup/optimization
- User training
- Monday – Friday: 8:45 am to 4:45 pm

Aneta



*Technician*

- Calibrations
- Cryogen fills
- User training
- Tuesday: 8:30 am to 3:30 pm

# JB Stothers NMR Facility: How?

- Service work
  - discuss sample(s) with staff
  - fill out Service Request Form
- Acquiring your own data
  - attend user training session (early Sept.)
  - NMR tubes and deuterated solvents from Science Stores

# Questions?