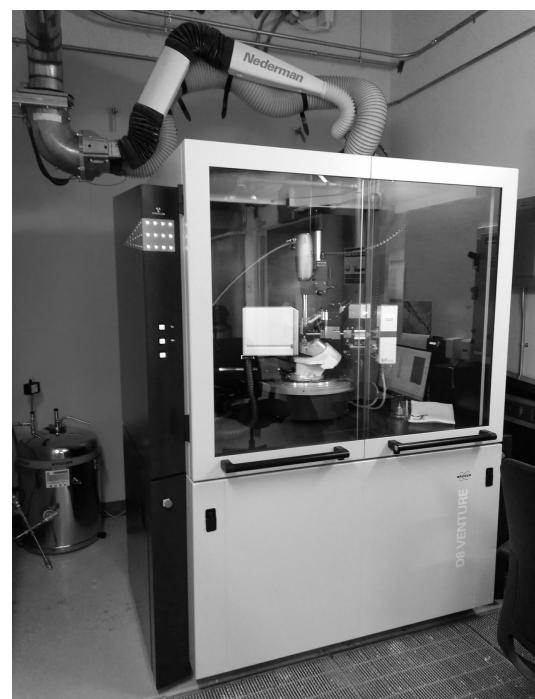
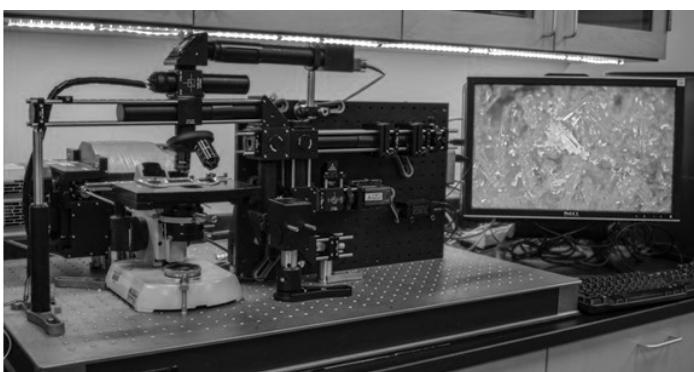


# Instrumentation & Publications



## Featured Instrumentation with Research/Teaching Capabilities

- Dual source Cu/Mo single crystal  $\kappa$  X-ray diffractometer (Bruker D8 Venture)
- 400 MHz NMR spectrometer equipped with 12 sample autosampler and OneProbe (Varian 400 MR)
- Ion chromatography system (Thermo/Dionex ICS-1100)
- ATR FT-IR spectrometers (Bruker Tensor 27, Vector 22)
- FT-IR spectrometers (Nicolet Avatar 360 & 370)
- Smart single channel flash chromatography system (Yamazen "Smart Flash" EPCLC AKROS)
- Gas chromatograph/mass spectrometers (HP G1800A)
- Gas chromatograph/mass spectrometer with autosampler (Agilent 6850-5973N)
- High performance liquid chromatographs equipped with diode array detectors (Agilent 1260 Infinity II)
  - Evaporative light scattering detector (HPLC-DAD-ELSD)
  - Fluorescence detector (HPLC-DAD-FLD)
- Polarimeter (Rudolph Autopol I)
- Stopped flow spectrophotometer (Applied Photophysics)
- Thermogravimetric analyzer (TA Instruments Q50)
- Differential scanning calorimeter (TA Instruments NanoDSC)
- Circular dichroism spectrometer (Olis DSM 20)
- Atomic absorption spectrometer (PerkinElmer AAnalyst 400)
- Gas chromatograph with flame ionization detector (Agilent 6890)
- Raman spectrometer
- Dynamic light scattering spectrometer (Proterion DynaPro)
- Isothermal titration calorimeter (TA Instruments Nano ITC)
- Pressure reactor vessels (Asynt, 125 mL)
- Fluorescence spectrometers (Agilent Cary Eclipse)
- Inert atmosphere glovebox workstations (MBraun Unilab single and double port)
- Other standard research instrumentation, including:
  - Microscopes (light, fluorescence, stereo)
  - UV-Vis spectrophotometers
  - Centrifuges (floor, benchtop, and microcentrifuge capacities)
  - Schlenk lines, hood space
  - Freezers, refrigerators, ovens, incubators
  - Electrochemical setups, potentiostats



## Recent Publications (2018 – current)

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1. Anz, S.J., et al. (2019) Damage-free atomic-scale etching and surface enhancements by electron-enhanced reactions: results and simulations, in *Computational Materials, Chemistry, and Biochemistry: from Bold Initiatives to the Last Mile*, Springer Publishing.
2. Stieber, S.C.E., et al. (2019) Nitrosyl linkage isomers: NO coupling to N<sub>2</sub>O at a mononuclear site, *J. Am. Chem. Soc.* 141, 1415-1419.
3. Stieber, S.C.E. et al. (2019) Student-led computational inorganic chemistry research in a classroom setting, *J. Comput. Sci. Educ.* 10, 12-15.
4. Mogul, R. (2019) Protecting planets beyond Earth, *Physics Today* 17, 66-67.
5. Schatschneider, B., et al. (2019) Anomalous pressure dependence of the electronic properties of molecular crystals explained by changes in intermolecular electronic coupling, *Synth. Metals* 253, 9-19.
6. Schatschneider, B., et al. (2019) Phenylated acene derivatives as candidates for intermolecular singlet fission, *J. Phys. Chem. C* 123, 5890-5899.
7. McCulloch, K.M., et al. (2019) An alternative N-terminal fold of the intestine-specific annexin A13a induces dimerization and regulates membrane binding, *J. Biol. Chem.* 294, 3454-3463.
8. John, A. et al. (2019) Deoxyhydration using a commercial catalyst and readily available reductant, *Inorg. Chem. Commun.* 99, 145-148.
9. Mogul, R., et al. (2018) Venus' spectral signatures and the potential for life in the clouds, *Astrobiol.* 18, 1181-1198.
10. Barding, G.A. Jr., et al. (2018) Dynamic metabolic response to adriamycin-induced senescence in breast cancer cells, *Metabolites* 8, 95/1-95/13.
11. Liu, Y., et al. (2018) Nitrogen-doped graphene quantum dots synthesized by C60/Nitrogen plasma with excitation-independent blue photoluminescence emission for sensing of ferric ions, *J. Phys. Chem. C* 122, 29613-29619.
12. Schatschneider, B. et al. (2018) High-throughput pressure-dependent density functional theory investigation of herringbone polycyclic aromatic hydrocarbons: Part 2. Pressure-dependent electronic properties, *J. Phys. Chem. C* 122, 23828-23844.
13. Schatschneider, B. et al. (2018) High-throughput pressure-dependent density functional theory investigation of herringbone polycyclic aromatic hydrocarbons: Part 1. Pressure-dependent structure trends, *J. Phys. Chem. C* 122, 23815-23827.
14. Stieber, S.C.E., et al. (2018) Crystal structure of 1-(2,4,6-trimethylphenyl)-1H-imidazole, *CSD Comm.*
15. Stieber, S.C.E., et al. (2018) Crystal structure of ( $\eta^4$ -cyclooctadiene) (3,3'-dimesityl-1,1'-methylenedimidazoline-2,2'-diylidene) nickel(0) tetrahydrofuran monosolvate, *Acta. Crystallogr. E*74, 1396-1399.
16. Liu, Y., et al. (2018) Ultra-highly fluorescent N-doped carbon dots-CdTe QDs nanohybrids with excitation-independent emission in the blue-violet region, *RSC Advances* 8, 35700-35705.
17. McCulloch, K.M., et al. (2018) The structure of the bifunctional everninomicin biosynthetic enzyme EvdMO1 suggests independent activity of the fused methyltransferase-oxidase domains, *Biochemistry* 57, 6827-6837.
18. Anz, S., Sun, P., et al. (2018) Evaluation of the stoichiometry between PtCl<sub>6</sub><sup>2-</sup> and TOA+ ions during the liquid/liquid extraction, *Electroanalysis* 30, 2440-2444.
19. Page, M.F.Z., Barding, G.A. Jr., et al. (2018) The effect of teaching the entire academic year of high school chemistry utilizing abstract reasoning, *Chem. Educ. Res. Pract.* 19, 500-507.
20. Liu, Y., et al. (2018) Smartphone-assisted colorimetric analysis of manganese in steel samples, *Curr. Anal. Chem.* doi: 10.2174/1573411013666171117170042.
21. John, A., et al. (2018) Dual-catalytic decarbonylation of fatty acid methyl esters to form olefins, *Chem. Commun.* 54, 7669-7672.
22. Barding, G.A. Jr., et al. (2018) A metabolomics study of BPTES altered metabolism in human breast cancer cell lines, *Front. Mol. Biosci.* 5: 49 1-13.
23. Mogul, R., Barding, G.A. Jr., et al. (2018) Metabolism and biodegradation of spacecraft cleaning reagents by strains of spacecraft-associated *Acinetobacter*, *Astrobiol.* <https://doi.org/10.1089/ast.2017.1814>.
24. Liu, Y., et al. (2018) N-doped graphene-based copper nanocomposite with ultralow electrical resistivity and high thermal conductivity, *Scientific Rep.* 8, 9248.
25. Starkey, L.S. *Introduction to Strategies for Organic Synthesis*, 2<sup>nd</sup> ed.; Wiley: New York, 2018.
26. Schatschneider, B., et al. (2018) On the possibility of singlet fission in crystalline quaterrylene, *J. Chem. Phys.* 148, 184101.
27. Corcoran, T.C. (2018) Compressive detection of highly overlapped spectra using Walsh-Hadamard-based filter functions, *Appl. Spect.* 72, 392-403.
28. Barding, G.A. Jr., et al. (2018) Rice *SUB1A* constrains remodeling of the transcriptome and metabolome during submergence to facilitate post-submergence recovery, *Plant Cell Env.* 41, 721-736.