

2023 Chemistry Department –Chemical Instrumentation List

Padnos Hall, Allendale campus

Separation Technology:

Gas Chromatography

Shimadzu QP2010 GC-MS

AOC-20S 150 position autosampler: electron ionization

Data station utilizing GCMSolution

Thermo Trace 1310 GC

AS 1310 105 position autosampler; electron capture detector

Data station utilizing Chromeleon

Thermo Focus GC

AI 3000 8 position autosampler; flame ionization detector

Data station utilizing Chromeleon

Thermo Focus GC

AS 3000 105 position autosampler; thermal conductivity detector

Data station utilizing Chromeleon

7 Gow Mac GCs (Series 350, 400, 580) with thermal conductivity detectors

High Pressure Liquid Chromatography

Thermo Dionex UltiMate 3000 uHPLC+ Focused

UltiMate 3000 auto-sampler, column oven, variable UV detector

Data station utilizing Chromeleon

Agilent 1100 Series HPLC with quaternary pump, degasser, autosampler, variable wavelength detector, refractive index detector and Chemstation Data System

2 Hitachi HPLC systems (L6000 and L7000 series)

Uv-vis variable wavelength detectors; refractive index detectors; autosamplers

Set-up for reversed and normal phases along with chiral and GPC columns

Thermo Dionex ICS-1100 Ion Chromatography System

Dionex AS-DV 50 position autosampler

Data station utilizing Chromeleon

Advion CMS LC-MS

Equipped with TLC plate express, APCI, ESI, and HPLC system

Data station with Mass Express software`

Capillary Electrophoresis

Beckman P/ACE MDQ Capillary Electrophoresis

UV-Vis photodiode array detection

Data station utilizing Beckman 32Karat

Spectroscopy:

Nuclear Magnetic Resonance Spectrometry

Jeol 400 MHz FTNMR JNM-ECZ400S ¹H-¹⁹F/X capability

UV-VIS Spectrometry

Shimadzu 1601 Double Beam Spectrometer (3 units)

Shimadzu Bio-Mini Single Beam Spectrometer (3 units)

Shimadzu 2450 Double Beam Spectrometer with UV Probe and software control

Shimadzu TCC 240A Temperature Controller

Applied Photophysics RX 200 Rapid Kinetics Spectrometer Stopped-Flow Kinetics System

Infrared Spectrometry

Thermo Scientific Nicolet iS5 FTIR Spectrometer (2 units)
All possess iD7 diamond ATR accessory
Jasco 4100 FTIR Spectrometer (3 units)
All possess diamond cell, single-bounce ATR accessory

Atomic Spectrometry

Varian SpectrAA 200 Atomic Absorption Spectrometer, acetylene flame
Agilent 5800 ICP-OES
Equipped with an SPS 4 autosampler
Data station with ICP Expert software

Fluorescence Spectrometry

Horiba Scientific FluoroMax-4 Spectrofluorometer
Data station utilizing FluorEssence
Includes N₂ Dewar, solids accessory, and temp. controlled cell holder
Perkin Elmer LS-50b Luminescence Spectrofluorometer

Chromatography-Mass Spectrometry

Thermo Electron Focus DSQ with GC
AI 3000 autosampler; EI source; quadrupole detector.
Data station utilizing Xcalibur
Advion LC-MS with ESI and API ionization and photo-diode array detector
UHPLC with quaternary pump, autosampler, single quadrupole detector.
TLC plate reader, Data station utilizing MassExpress software

Polarimetry

Perkin Elmer Model 241 Polarimeter
Atago AP-100 Automatic Polarimeter (2 units)

Laser spectroscopy

Diode-laser-based high resolution NIR absorption spectrometer
Sacher Lasertechnik TEC 500 diode laser
Nitrogen-laser-based emission lifetime apparatus
Laser Science VSL-337ND pulsed nitrogen laser
Modular Raman spectrometer
Power Technology LCM-T-111-20 20 mW CW YAG laser
Modular emission spectrometers based on laser pointers and small diode laser modules

Electrochemical:

CH Instruments 1200B Potentiostats (3 units)
Gamry Reference 600 Potentiostat/Galvanostat/ZRA
CH Instruments 7001E Bipotentiostat

Computational Resources:

Linux cluster with 7 nodes (each node possess 16 dual core CPU's)

Support Equipment:

Innovative Technologies Solvent Purification System (equipped with 4 solvents)
Innovative Technologies PureLab HE Glove Box with 2nd IT box attached
Barnstead E-Pure 4-stage water purification system

TA Instruments Q100 Differential Scanning Calorimeter
TA Instruments Q500 Thermogravimetric Analyzer
AAPPTec Apogee Peptide Synthesizer
Fisher Scientific Sonic Dismembrator 500 Ultrasonic probe
Biotage Turbovap II Concentrator Workstation (2 units)
Labconco FreeZone 1L lyophilizer
Thermolyne 62700 Muffle Furnace
Kugelrohr distillation apparatus
Benchmark Incubator-Shaker-Mini
Numerous electronic analytical balances
Numerous rotovaps

Cook-DeVos Center for Health Sciences (Grand Rapids, MI) Shared and research equipment

Separation Technology:

Agilent 1220 Infinity II HPLC system with variable UV and fluorescence detection
Cytive AKTA Start Protein Purification LC system
Sorvall RC5C Plus high-speed centrifuge
Sorvall Lynx high-speed centrifuge
Sorvall Discovery 90SE ultracentrifuge
Eppendorf gradient PCR thermocyclers (3)
Eppendorf refrigerated micro-centrifuges (2)
Mini-protean III SDS PAGE/Western blot apparatus (12)
Bio-Rad Biologic Low-Pressure Chromatography System for protein purification
Clinical centrifuges—swinging bucket (8)
Eppendorf microfuge (13)
Eppendorf speed-vac (2)

Spectroscopy:

Agilent Cary 60 UV-Vis spectrophotometer (3 units)
Agilent Cary 100 UV-Vis spectrophotometer with temperature controller
Agilent 8453 UV-Vis photodiode array spectrophotometer
Photon Technologies Inc QM-7/2003 SE fluorimeter (temperature controlled, enhanced sensitivity
with T-format monochromators and motorized polarizers)
BioTek Synergy H1 Hybrid Plate Reader
Leica M205A Stereo-microscope with camera
Leica M80 Stereo-microscope

Support Equipment:

Large and small capacity autoclaves (4)
-80°C freezers (3) -20°C freezers (4)
Variable temperature dry bath incubator (6)
Walk-in cold-room (4°C)

Walk-in warm-room (37°C)

Long-term liquid nitrogen storage Dewar with low volume alarm

Labconco lyophilizer

UVP ECS Imaging system (for agarose gels/Coomassie gels/Western blots)

New Brunswick benchtop air shaking incubators (3)

Variable temperature countertop incubator (4)

CrystalCap HT system for manual and automated cryocrystallography experiments

Universal Pucks for crystal pin storage and automated sample mounting at LS-CAT (15)