

IIT – Analytical Equipment

UTP clients will be able to access laboratory equipment operated by IIT under a user-fee arrangement. IIT has two fully-equipped machine shops for fabrication of tools and prototypes. Fees vary according to the equipment used and the scope of project. A standard use agreement will simplify access and billing. To access analytical equipment, contact UTP Director at 312.567.3900. IIT equipment by department includes:

Department of Biology

Location: Life Sciences, 3105 South Dearborn Street, Chicago, IL

Contact: Benjamin Stark, 312-567-3488, e-mail: starkb@iit.edu

- CD Spectrometer
- Thermocyclers (PCR)
- Fast Liquid Chromatography Setup
- Fluorimeter
- Vertical & Horizontal Gel Electrophoresis equipment
- (Mammalian) Cell culture facilities
- High Speed Centrifuges
- Beckman Ultra Centrifuge
- Fluorescence microscope
- Microtome
- UV – Vis Spectrometer
- Incubators: shaking & non-shaking for bacterial cultures

Department of Chemistry

Location: Life Sciences, 3105 South Dearborn Street, Chicago, IL

Contact: Rong Wang, 312-567-3121, email: wangr@iit.edu

- UV – Vis Spectrometer
- Raman Microscope
- Dynamic Light Scattering (Malvern Nanosizer)
- Atomic Force Microscope
- Gas Chromatograph – Mass Spectroscopy
- High pressure liquid chromatography
- Fluorimeter
- FT-NMR, 400mz
- IR Spectrometer
- Polarimeter
- Atomic Absorption
- DSC/DTA/TGA (Simultaneous DSC/TGA analysis upto 1500C in inert, oxidizing or reducing atmosphere)

Department of Physics

Location: Life Sciences, 3105 South Dearborn Street, Chicago, IL

Contact: Christopher White, 312-567-3734, email: whitec@iit.edu

- X – Ray Diffractometers

- Scanning Electron Microscope
- Scanning Electron Microscope with EDS attachment
- Bruker D2 Phaser X – Ray powder diffractometer with sample spinner and zero background sample holder. (~\$150/sample)

Department of Biomedical Engineering (BME)/Pritzker Institute

Location: ERB Central, 55 West 34th Street, Chicago, IL

Contact: Vincent Turitto, 312-567-6927, email: turitto@iit.edu

- Beckman Coulter Multisizer 3 (Coulter Counter)
- Gamma counter and radiation equipment (requires certification)
- Fluorescent and UV- vis spectrophotometer & plate readers
- Fast acquisition microscope (60 fps, FITC, TRITC, DAPI)
- PCR Cycler
- Plate Reader& Spectrophotometer (UV-vis/Fluorescent)

Department of Mechanical, Materials and Aerospace Engineering

Location: Engineering 1, 10 West 32nd Street, Chicago, IL

Contact: Philip Nash, 312-567-3056, e-mail: nash@iit.edu

- X-ray Diffractometer - \$100 per hour
- DSC/DTA/TGA (Simultaneous DSC/TGA analysis up to 1500C, in inert, oxidizing or reducing atmosphere.) - \$50 per hour plus consumable supplies
- Dilatometer (up to 1500C) - \$100 per run up to 8 hours; negotiated fees for longer run times

Contact: Dajun Chen, 312-567-8823, e-mail: chend@iit.edu

- Scanning Electron Microscope with EDS attachment - \$170 per hour including operator (Special discounted fee applies for a minimum of 10 prepaid hours per month at the rate of \$85 per hour. Unused hours are not rolled over.)

Contact: Sheldon Mostovoy, 312-567-3055, e-mail: mostovoy@iit.edu

- Mechanical Testing Equipment (many different types) – user fees depend upon user requirements

Location: Perlstein Hall, 10 West 33rd Street, Chicago, IL

Contact: Dajun Chen, 312-567-8823, e-mail: chend@iit.edu

- Transmission Electron Microscope - \$170 per hour including operator (Special discounted fee applies for a minimum of 20 prepaid hours per month at the rate of \$85 per hour. Unused hours are not rolled over.)

Department of Chemical Engineering

Location: Perlstein Hall, 10 West 33rd Street, Chicago, IL

Contact: Darsh Wasan, 312-567-3001, e-mail: wasan@iit.edu

For equipment below user fees are dependent upon client requirements/protocol.

- Epival Interfako Interference Microscope
- CCD Digital Camera (Lynxx 2000,3.04)
- Back Light Scattering Apparatus (i.e., Kossel diffraction) with 500nm lenses (Model 1559, Spectra Physics)
- Streaming Potential Apparatus to measure charge on solid surfaces
- Spinning Drop Interfacial Tensiometer
- Wilhelmy Plate Tensiometer

Location: ERB Central, 55 West 34th Street, Chicago, IL

Contact: Victor Perez-Luna, 312-567-3963 e-mail: perezluna@iit.edu

- UV-Vis Spectrophotometer
- Steady State Spectrofluorometer
- Argon Ion Laser
- Electron-Beam UHV Metal Evaporation System
- FTIR Microscope/Spectrophotometer

[Note: Capabilities include transmission, reflection, grazing angle, and attenuated total reflectance probe. This instrument also handles 2-D mapping (manual only at this point).]

Idea Shop

Location: Technology Business Center, 3440 South Dearborn Street, Chicago, IL

Contact: Joe Luciani, 312-567-3095, Email: JLuciani@iit.edu

- File Preparation (~\$30/hr)
- Labor (~\$50/hr)
- Consulting (~\$100/hr)
- Supervision (~\$20/hr)
- Private Training (~\$60/hr)
- Printing: Roland VersaCamm SP300-24"/30" Media - (~\$6/linear foot)
- Printing: HP Designjet 5500ps - (~\$15/linear foot)
- 3D Printing: Stratasys Dimension UPrint-Plus FDM(low res/high res) - (~\$25/\$30/cubic inch)
- 3D Printing: Z - Corp Spectrum Z450 - full color (~\$15/cubic inch)
- 3D Printing: Z- Corp Part Infiltration (strengthens parts) - (~\$7/cubic inch)
- Fabrication: Epilog 50w CO2 Laser cutter/engraver (~\$25/hr)
- Fabrication: Roland MDX540SA CNC Mill (coming soon) - (~\$30/hr)
- Fabrication: ShopSabre 4896 CNC Router (coming soon) - (~\$35/hr)
- 3D Scanning: Roland LPX - 600DS scanner (~\$15/hr)
- Shop time: (Hand and power tool access) - (~\$10/hr)

Categories: Contract, Consulting, Tutoring, Supervised and Unsupervised Use. Final costs are determined based on these categories, and what they entail.

IITRI – Contract Research Facilities & Analytical Equipment

Location: 10 West 35th Street, Chicago, IL

Contact: Miguel Muzzio, 312-567-4909, e-mail: mmuzzio@iitri.org

The Life Sciences Group (LSG) at IITRI operates a high-quality, industrial scale, AAALAC-accredited facility in the UTP. IITRI has agreed to work with UTP clients for their pre-clinical, contract research needs. For general information about IITRI, go to www.iitri.org. A standard use agreement will simplify access and billing. IITRI equipment is shown below:

LC – MS System:

- Applied Biosystems/Sciex API 3000 MSMS
- Agilent 1100 Thermostat ALS
- Agilent 1100 Degasser
- Agilent 1100 Binary Pump
- Agilent 1100 ALS Injector
- Agilent 1100 Thermostat Column Compartment
- Agilent 1100 Variable Wavelength Detector
- Applied Biosystems Analyst Software for Data Analysis

LC-QTOF System:

- Agilent Q-TOFF LC/MSD 6520A
- Agilent ESI Dual Sprayer
- Agilent APCI Source LC/MS
- Agilent APCI Source LC/MSD
- Agilent 1200 Capillary Pump
- Agilent 1200 Degasser
- Agilent 1200 Micro well-plate sampler
- Agilent 1200 Thermostat ALS
- Agilent 1200 Thermostat Column Compartment
- Agilent Mass Hunter Software for Instrument Control and Data Analysis

HPLC System 1:

- Waters 2690/2695 Separations Module
- Waters 2487/2488 UV Detector
- Varex Evaporative light-scattering detector
- Waters Empower Premier LAC/E Workgroup Plan Software for Instrument Control and Data Analysis

HPLC System 2:

- Waters 2690/2695 Separations Module
- Waters 2487/2488 UV Detector
- Perkin Elmer Radiomatic 150TR Flow Scintillation Analyzer
- Waters Empower Premier LAC/E Workgroup Plan Software for Instrument Control and Data Analysis

HPLC System 3:

- Waters 2690/2695 Separations Module
- Waters 2487/2488 UV Detector
- Waters 2996 Photo Diode Array Detector

- Waters Empower Premier LAC/E Workgroup Plan Software for Instrument Control and Data Analysis

HPLC System 4:

- Agilent 1100 Quaternary Pump
- Agilent 1100 ALS Injector
- Agilent 1100 Variable Wavelength Detector
- Agilent 1100 Vacuum Degasser
- Agilent ChemStation Software for Instrument Control and Data Analysis

HPLC System 5:

- Agilent 1100 Quaternary Pump
- Agilent 1100 ALS Injector
- Agilent 1100 Degasser
- Agilent 1100 Variable Wavelength Detector
- Agilent 1100 Fluorescence Detector
- Agilent 35900E Interface Box
- Agilent ChemStation Software for Instrument Control and Data Analysis

ICPMS System:

- PerkinElmer/Sciex - Elan DRC II - ICP/MS
- PerkinElmer - Auto Liquid Sampler - AS93PLUS
- Polyscience - Liquid Recirculator
- PerkinElmer Elan and Chromera Software for Instrument Control and Data Analysis

GCMS System 1:

- Agilent 6890 Plus GC system
- Agilent 5973N MSD Performance - Turbo EI and CI Mainframe
- Agilent 7683 Autoinjector module
- Agilent 7683 Autosampler tray module
- Agilent Ion Gauge Controller - 59864B
- Agilent ChemStation Software for Instrument Control and Data Analysis

GCMS System 2:

- Agilent 6890N Network GC System
- Agilent 5973N MSD Standard - Turbo EI Mainframe
- Agilent 7683 Autoinjector module
- Agilent 7683 Autosampler tray module
- Agilent Ion Gauge Controller - 59864B
- Agilent ChemStation Software for Instrument Control and Data Analysis

GC Systems 1:

- Agilent 6890 Plus GC system
- Agilent 7683 Autosampler tray module
- Agilent 7683B Autoinjector Module
- Agilent Dual Nitrogen Phosphorus Detector (NPD)
- Agilent ChemStation Software for Instrument Control and Data Analysis

GC Systems 2:

- Agilent 6890 Plus GC System
- Agilent 7683 Autoinjector Module

- Agilent 7683 Autosampler tray Module
- Agilent 7683B Autoinjector Module
- Agilent Nitrogen Phosphorus Detector (NPD) & Thermal Conductivity Detector (TCD)
- Agilent ChemStation Software for Instrument Control and Data Analysis

GC Systems 3:

- Agilent 6890 Plus GC system
- Agilent 7683 Autoinjector module
- Agilent 7683 Autosampler tray module
- Thermo Orion Thermal Energy Analyzer 543
- Thermo Orion Thermal Energy Analyzer 610
- Agilent ChemStation Software for Instrument Control and Data Analysis

GC Systems 4:

- Hewlett-Packard 6890 GC System
- Hewlett-Packard 7673 ALS
- Hewlett-Packard 18596C Autosampler Tray
- Hewlett-Packard Controller Box
- HP/Agilent Nitrogen Phosphorous Detector (NPD) & Flame Ionization Detector (FID)
- Agilent ChemStation Software for Instrument Control and Data Analysis

Other Systems:

- PerkinElmer - Liquid Scintillation Counter - Tri-Carb 2200
- R.J. Harvey Instruments - Biological Oxidizer - OX500
- BRUKER - Fourier Transfer Infrared Analyzer - ALPHA FTIR
- Astoria Pacific - Constant Flow Analyzer - Astoria 2
- Fisher Scientific - Refractometer

Sample Collection:

- Six glass Mark II Metabowls for ADME collection of urine, feces, and expired air from rodents
- Twelve Nalgene and PMP Metabolic Cages for collection of urine and feces from rodents

Sample Preparation:

- Apex Sample Prep 6850 Freezer Milling Unit
- Labconco Rapid Vap Evaporator
- Thermo Savant Refrigerated Vapor Trap Evaporator
- Polytrons, blenders, sonicators and homogenizers
- Vortexers, mixers and shakers
- Analytical and pan top loading balances
- Lyophilizer
- Sample drying manifolds
- Micro-, clinical, preparative and ultra-centrifuges
- Refrigerators, freezers, and walk-in freezers for sample storage

Data Analysis:

- Various computer systems using various applications such as:
 - PK Analyst for pharmacokinetics data analysis
 - Excel and SigmaPlot for other statistical data analysis

Wireless Interference Lab:

Location: 10 West 35th Street, Chicago, IL

Contact: Philip Felber, 312-699-0222, Email: felber@iit.edu

- Various Component Blocks
- Motorola Canopy: #4
- 2 AP/2 Sub – comes with power over Ethernet
- Wireless cards, AP and routers: #13
- Various APs and Subscriber units
- Antennas: #19
- Various mixers: #12 (Mostly 5 – 2000 MHz)
- Amplifiers - #20
- Various frequencies and power levels
- Spectrum Analyzers: #7 (Various frequency ranges to 40 GHz)
- Function Generators (signal/pulse): #13 (Various with frequencies from 0 to 1 GHz)
- Oscilloscopes: #19 (Various with frequency ranges to 400 MHz Frequency Counter)
- Frequency Counter: #8 (Various – 10kHz to 1.3 GHz)
- Optical Equipment: #2 (JDS Fitel Series 7000 – variable optical attenuator)
- Test Units: #9 (Various common ISM Band devices)
- Misc Equipment: #40 (Voltsmeters, Power supplies, filters, simulators)
- Chambers:#2 (10X10X8) and roughly 3X4X4 feet Faraday cages)
- Logic Analyzers: #4 : HP 16500 Logic Analysis Systems(>400MHz)

UTP CLIENT COMPANY – ANALYTICAL EQUIPMENT

UTP clients will be able to access laboratory equipment operated by UTP companies under a user fee agreement. To access analytical equipment, contact the UTP Director at 312.567.3900. Equipment is listed by company and includes:

Martin-Protean

Location: Technology Business Center, 3440 South Dearborn Street, Chicago, IL

- Waters nanoAcquity ultra pressure liquid chromatography system
- Thermo Deca XP+ ion trap mass spectrometer

Nano LCMSMS Capability

Using a Waters nanoAcquity ultra pressure liquid chromatography system, in-line nanospray ionization, and a Thermo Deca XP+ ion trap mass spectrometer, Martin-Protean's nano LCMSMS setup generates peptide fragmentation spectra suitable for assignment from samples containing 100 fmols of material.

Protein Identification from Proteolytic Digests

Using the latest version of the Discoverer 1.0 peptide and protein assignment software (the most current replacement for Sequest) and years of experience assigning peptide spectra, Martin-Protean provides careful and thorough protein assignment from the peptide spectra generated from samples.