

## RATES

SPECTROMETER MODEL FIELD STRENGTH	USF ACADEMIC UNASSISTED	NON USF ACADEMICS	INDUSTRIAL
<b>CONTRACT</b>	NA	INQUIRE	INQUIRE
<b>UNITY<sup>INOVA</sup> 300</b>	NA	NA	NA
<b>UNITY<sup>INOVA</sup> 400</b>	\$3.00 /HR	\$17.5/HR	\$35.00
<b>MERCURY 400</b>	\$3.00 /HR	\$17.50	\$35.00
<b>UNITY<sup>INOVA</sup> 500</b>	\$3.75 /HR	\$20.00	\$40.00
<b>UNITY<sup>INOVA</sup> 600</b>	\$4.50 /HR	\$23.75	\$47.00
<b>DD 500</b>	\$3.75 /HR	\$25.00	\$50.0
<b>DD 600</b>	\$4.50 /HR	\$27.50	\$55.00
<b>DD 800</b>	\$6.00/HR	\$30.00	\$60.00

## SPECIAL CHARGES

SAMPLE PREPARATION	\$35.00 /HR
EXTRA DATA PROCESSING	\$35.00 /HR
CONSUMABLES (TUBES, SOLVENTS ETC.)	COST + 10%
TRAINING: CHEMISTRY	\$0.00 USING CHEMISTRY TA
TRAINING: OTHER DEPARTMENTS	\$35.00/HOUR/TRAINEE PLUS SPECTROMETER
CAP NMR SETUP	INITIAL SETUP \$100.00 24 HOURS PRIOR TO RUN
SAMPLES DELIVERY AND PICKUP	FREE ON-CAMPUS
<b>UNITY<sup>INOVA</sup> 300 SOLIDS</b>	NA INQUIRE INQUIRE

## FACILITY STAFF

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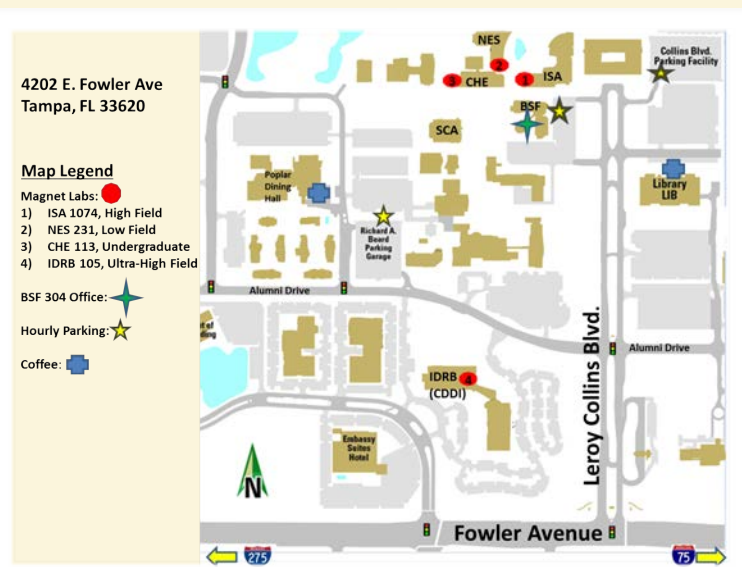
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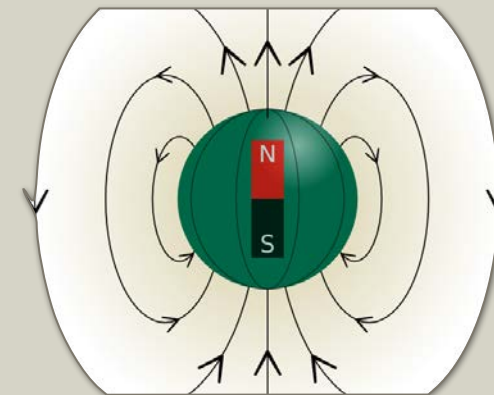
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## UNIVERSITY OF SOUTH FLORIDA INTERDISCIPLINARY NMR FACILITY

# USFINMRF



VERSION 3.4  
SPRING 2019

## ❁ OVERVIEW ❁

Discovery starts with measurements. At USFINMRF, we specialize in measuring the magnetic properties of atomic nuclei which make up the molecules that can become the drugs of the future. Measurements based on the magnetic properties of nuclei can be carried out in liquids, solids, gases and living cells. Knowledge about the atomic structure of a given molecule, whether it be a small molecule or macromolecule, is critical to the understanding of how it may interact with other molecules. Therefore, structure determination using NMR becomes an important step in the often arduous task of modern drug discovery, - one of the primary missions of the Department of Chemistry.

The Department of Chemistry at the College of Arts and Sciences at USF, offers NMR spectrometers from low to intermediate and ultra high field and from manual to high-throughput operation modes. These magnet labs support the research of over thirty USF principal investigators from a variety of scientific disciplines, including organic chemistry, inorganic chemistry, natural products, drug discovery, pharmacy, physics, archeology engineering and geology.

The USFINMRF Ultra High Field Magnet Lab (UHFML) is equipped with the latest advanced hardware and software for the most demanding bio-NMR (2D, 3D, 4D...) and multi resonance experiments. This magnet lab performs experiments for structure elucidation and investigation of the dynamics of biologically relevant molecules intrinsically disordered proteins and natural products. Natural products and small molecules also benefit from the enhanced sensitivity probes in both  $^1\text{H}$  and  $^{13}\text{C}$  channels for low mass samples.

## ❁ INSTRUMENTATION ❁

**unity<sup>inova</sup> 400 spectrometer** This spectrometer is a two-channel instrument with liquid and solid-state capabilities and a single axis gradient amplifier. It's primarily used for routine 1D and 2D experiments and overnight acquisition. There are three probes associated with this instrument: 5mm  $^1\text{H}/^{19}\text{F}/^{13}\text{C}/^{31}\text{P}$  (Quad) with single Z axis gradient coil, 5mm (ID) with single Z gradient coil, a 7mm CPMAS cross polarization and magic angle spinning probe for solids (currently not configured) and a 4mm (ID) nano probe for samples in a semi-solid/liquid state (gel) and for solid-state synthesis. The instrument is currently configured for high throughput acquisitions with an SMS-100 auto sample changer (shown in photo).



**mercury 400 spectrometer** This spectrometer is a two channel spectrometer capable of observing for  $^1\text{H}$ ,  $^{19}\text{F}$  on one channel and a broad band channel for all other nuclei. The spectrometer is equipped with a Auto Triple Broadband probe with simultaneous dually tuned  $^1\text{H}$ ,  $^{19}\text{F}$  and a broad band channel tuned to a specific nucleus such as  $^{13}\text{C}$ ,  $^{31}\text{P}$  etc (normally set to  $^{13}\text{C}$ ). A variety of probes are associated with this spectrometer including a 5mm Broad Band (BB), a 5mm Indirect Detection (ID) with single axis gradient, and the ATB ( $^1\text{H}/^{19}\text{F}/\text{BB}=\text{C}/^{31}\text{P}$ ) can be configured with their spectrometer. The instrument is configured for high throughput acquisitions with an SMS-100 auto sample changer (shown in photo) and an ATB probe tuned to  $^1\text{H}$ ,  $^{19}\text{F}$  and  $^{13}\text{C}$ .

**unity<sup>inova</sup> 500 spectrometer** This three-channel single axis gradient spectrometer is used for long-term acquisitions of spectra of natural products, proteins, peptides and small molecules. The three-channel capability in combination with the triple axis bioprobe allows for the study of small  $^{13}\text{C}/^{15}\text{N}$  labeled biomolecules. Probes available for this spectrometer include: 5mm  $^1\text{H}/^{13}\text{C}/^{15}\text{N}$  (ID) with single axis gradient bioprobe, 3mm BB with single axis gradient, 3 mm ID probe with single axis gradient and a 4mm (ID) nano probe for study of small size samples, slurry samples and solid state synthesis.

**unity<sup>inova</sup> 600 spectrometer** Installed in 2010 with funds from the Department of Molecular Medicine, The Office of the Vice President of Research and the Chemistry Department. Like the Inova500, this instrument is dedicated for long-term acquisition and structural characterization of natural products, proteins, peptides and synthetic organic molecules. Probes available for this spectrometer are 5mm ( $^1\text{H}/^{13}\text{C}/^{15}\text{N}$  (ID) with single axis gradient bioprobe, a 5mm auto dual (BB) single axis gradient probe and a 10 ul capillary probe, supplied by

**direct drive (VNMR) 500 spectrometer** Acquired in 2010 with a grant from the James & Esther King Foundation. Installed September 2011. This three independent RF channel and single axis gradient spectrometer is configured with a triple axis 5mm cold probe with auto tuning capability and an AS7600 96 tray sample changer for automated acquisitions (shown in photo). Used in walkup (45min blocks) and long reservations (12hours) provides flexibility for the most simple to the most demanding pulse sequences.



**unity<sup>inova</sup> 300 spectrometer** The inova300 is a two-channel instrument with liquid and some solid-state capabilities and a single axis gradient amplifier. It's primarily used for upper level undergraduate instruction, 1D and 2D experiments and overnight acquisition. There are three probes associated with this instrument: 5mm  $^1\text{H}/^{19}\text{F}/\text{X}$  probe with single Z axis gradient coil, 7mm CPMAS cross polarization and magic angle spinning probe for solids (currently under configuration)

**direct drive (VNMR) 600 spectrometer** Purchased in 2010 with funds from the Florida Centers of Excellence, currently USFINMRF UHFML, and installed in 2011. This spectrometer is configured with four independent RF channels and a 5mm  $^1\text{H}/^{13}\text{C}/^{15}\text{N}$  (ID) cold probe with a single axis Z gradient coil with proton auto tuning capabilities. Proton and carbon channels are sensitivity enhanced. The sensitivity specification for the 0.1% ethybenzene and ASTM standard samples have been recorded at over 5000:1 and 600:1, respectively.

**direct drive (VNMR) 800 spectrometer** Purchased in 2010 with funds from Florida Centers of Excellence, currently USFINMRF UHFML and installed 2012. This spectrometer is configured with four independent RF channels, a single axis Z gradient coil and a 5mm  $^1\text{H}/^{13}\text{C}/^{15}\text{N}$  (ID) cold probe with proton auto tuning capabilities. Proton and carbon channels are sensitivity enhanced. The sensitivity specification for the 0.1% ethybenzene and ASTM standard samples have been recorded at over 6000:1 and 1200:1 respectively. This represents an enhancement factor of over six times that of a similar RT probe.

All Varian/Agilent spectrometers operate under OS Red HAT Linux Enterprise 6.X and vnmrJ 4.2 software as of Feb 2019. All cold probes are removable without the need to warm probes to room temperature when interchanging with other available probes. For more info follow the links below.