

# DEPARTMENT OF CHEMISTRY INSTRUMENTATION FACILITY (DCIF)

The Department of Chemistry Instrumentation Facility is a shared instrument facility for the Chemistry Department located in the sub-basement (18-0090) of the Camille Edouard Dreyfus Building on the main MIT campus. The DCIF's principle function is to maintain state-of-the-art major analytical instrumentation to support the ongoing research programs within the MIT Chemistry Department. Many of your questions may be answered by visiting our website at <http://web.mit.edu/speclab/www>.

The DCIF has four full-time staff members who provide instrument training and applications assistance to over 400 users, and perform maintenance and repair. The DCIF staff are:

person, title	phone	e-mail	area of expertise
Jeff Simpson, Ph. D. Director	253-2016	jsimpson@mit.edu	NMR spectroscopy, solids
Bob Kennedy, Ph.D. Operations Manager	253-1812	rkennedy@mit.edu	Organic chemistry, practical NMR
Anne Gorham, M.S. Experimental Applications Specialist	253-4856	agorham@mit.edu	Practical NMR
Li Li, Research Specialist	258-9354	lili@mit.edu	Mass spectrometry
Lab Phone- rings all offices	253-1806	DCIF@mit.edu	

Instrument training may commence once you join a research group. Please review the information on the New User section of the DCIF website: <http://web.mit.edu/speclab/www/newuser.htm>

The DCIF currently houses seven NMR spectrometers, one EPR spectrometer, a 4.7T Fourier Transform Mass Spectrometer (FT-MS) which includes an EI/CI ionization source, an ESI source, and a MALDI source. A GC-MS, polarimeter, MALDI-TOF-MS, polarimeter, and a FT-IR spectrophotometer are also available. All facility instrumentation requires training by a DCIF staff member. No exceptions. The NMR instrumentation housed in the DCIF is described below:

Instrument	channels	VT	Standard Probe	Comments
Varian Mercury 300	2	no	autoswitchable (broadband)	for $^1\text{H}$ , $^{13}\text{C}$ , $^{19}\text{F}$ , $^{31}\text{P}$ observation only, no tuning (the most popular) No variable temperature (VT)
Bruker Avance DPX 400	2	yes	broadband direct observe	used mostly for routine $^1\text{H}$ and $^{13}\text{C}$ ; tunable for other X nuclei good for 2D, VT: -100 to 150 °C
Bruker Avance DRX 400 "401"	2	no	QNP (auto-tuned)	for $^1\text{H}$ , $^{13}\text{C}$ , $^{19}\text{F}$ , $^{31}\text{P}$ observation only; No variable temperature (VT)
Varian INOVA 500 "500"	3	yes	inverse broadband	best instrument for routine, $^1\text{H}$ -detected work, including 2D, somewhat limited VT range -20 to +80 C
Varian INOVA 500 "501"	2	yes	switchable (broadband)	best instrument for broadband observation (including $^{13}\text{C}$ ); VT: -100 to 150 °C
Varian INOVA 500 "502"	4	yes	switchable (broadband)	best instrument for broadband observation (including $^{13}\text{C}$ ); VT: -100 to 150 °C
Bruker Avance (DRX) 600	4	yes	inverse triple resonance	best instrument for specialized (i.e., high-end bioNMR) Cryoprobe: $^1\text{H}$ , $^{13}\text{C}$ , $^{15}\text{N}$ (only $^1\text{H}$ is cold) VT: +10 to 60 °C

A limited number of additional probes are available for the various NMR instruments. Please inquire if you have any special spectroscopic analysis requirements. <http://web.mit.edu/speclab/www/nmr.html>

Instrument status queries and reservations can be made on-line using a custom-written software package. Research groups are charged for instrument usage.