

Introductory Transmission Electron Microscopy Training

Policy Statement

Main policy:

Each user must take the Introductory Transmission Electron Microscopy (ITEM) course at CharFac in order to independently use the facility's non-field-emission TEMs: JEOL 1200 EX, Tecnai Spirit BioTwin, and Tecnai T12.

How do you initiate the training for Transmission Electron Microscopy (TEM)?

- Each user is encouraged to discuss with Jason Myers (jcm@umn.edu) or Bob Hafner (hafne030@umn.edu) for a recommendation on which microscope to start with. Users with biological samples are also encouraged to discuss their plans with Fang Zhou (zhoux341@umn.edu) or Wei Zhang (zhangwei@umn.edu).
- After completion of the registration form, please submit the form to the front office (12 Shepherd Labs; charfac@umn.edu) to schedule a course.

What is the training procedure?

- The "TEM Primer" must be studied prior to the hands-on training. This primer can be found in the "Education" section of the CharFac website (<http://www.charfac.umn.edu>).
- The ITEM course has a maximum of 3 students. The course consists of one 3 or 4-hour group session and one 3-hour session of individualized instruction. Additional instruction, if necessary, will be charged based on the instrument and staff time.

What should you expect at the end of the course?

- For after hours access (weekdays after 4:30 pm and weekends), the users must use the instrument for at least 30 hours² before they can sign up for an after hours driver's test. Some critical issues and worst case scenarios will be discussed after the driver's test.
- To be qualified for training on the Field Emission Microscopes, the user will be asked to show exceptional TEM skills with the T12 or the BioTwin. Please practice on these microscopes as much as possible prior to taking this test. Moving on to field emission microscopes depend solely on the instructor; test results are not sufficient if the instructor doesn't approve you.

¹ See the table below

² Depending on previous TEM experience

Jeol 1200 EX	Tecnai Spirit BioTwin	FEI T12
<ul style="list-style-type: none"> • 3.4 Å point resolution • Bright/dark field imaging • Diffraction • Double-tilt holder • Book a day in advance 	<ul style="list-style-type: none"> • 4.9 Å point resolution • Bright/dark field imaging • Diffraction • Cryo • Low dose • High contrast • Book 1–2 weeks in advance 	<ul style="list-style-type: none"> • 3.4 Å point resolution • Bright/dark field imaging • Selected-area diffraction • EDS • Heating stage • Double-tilt holder • In-situ indentation • Book 1–2 weeks in advance