

Template for Electron Microscope Standard Operating Procedures

1. Electron Microscope Identification

Manufacturer: FEI

Model: Helios Nano Lab 600

Serial Number: D436

Location (room and building): CEMAS 1305 Kinnear Rd. Room 104

Unit is Operable Inoperable

2. Principal Investigator: Dr. David McComb

Telephone: 614 643 3460

E-mail: mccomb.29@osu.edu

3. Additional Contact Person: Daniel Huber

Telephone: 614 643 3461

E-mail: Huber.83@osu.edu

4. Name of Electron Microscope Operator(s)	Date Trained on SOP
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(See list of up to date FOM users)

_____	_____
_____	_____
_____	_____
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5. General Radiation Safety Policies:

Only personnel trained and approved by the Principal Investigator may operate an electron microscope.

- a. Radiation Safety must be notified prior to any changes in location, disposal, transfer, or acquisition of any electron microscope. Radiation Safety must also be notified of any plans for modification made to the unit, including built-in shielding and viewing ports.
- b. Use interlocks, barriers, or administrative controls to ensure no one can gain access to the primary beam or high scatter radiation areas. Stop the primary beam by secured shielding that cannot be readily displaced. Secure unused ports to prevent accidental exposures.
- c. Secure electron microscopes against unauthorized use by using a unit key control or the room lock.
- d. Units must be labeled with a readily discernable sign that bears the radiation symbol and the words "Caution – this equipment produces radiation when energized".
- e. A readily visible warning light labeled "X-ray On" or symbols with a similar intent, must be located near the x-ray source and its controls and be illuminated when the x-ray source is energized for equipment installed after 2/10/06.
- f. An operating log should be maintained including the date, operator, beam voltage and current, and total exposure time.
- g. All locations should have a copy of the OSU Radiation Safety Procedures Manual of Radiation-Producing Devices (Non-human Use) which includes the applicable sections of the Ohio Administrative Code, including 3701:1-68-04.

6. ALARA Philosophy

ALARA is an acronym that stands for As Low As Reasonably Achievable. It is the policy of the University to maintain radiation exposure levels not only below applicable legal levels but to also keep the radiation exposure levels as far below the applicable levels as reasonable.

ALARA means making every reasonable effort to maintain radiation exposures as far below dose limits as is practical consistent with the purpose for which the activity is undertaken, taking into account the state of technology, the economics of improvements in relation to the benefits to the public health and safety, and other societal and socioeconomic considerations.

7. Emergency Contact Information

The 24-hour Emergency Response Pager is 240-0705.

Any individuals have non-emergency questions, concerns, or inquiries pertaining to radiation safety may contact the Radiation Safety Section of Environmental Health and Safety during normal working hours at 292-1284.

8. The Radiation Safety Section of EHS shall be notified immediately of any radiation producing device that is stolen, lost, or missing.

9. Emergency Contact Information

The health physicist on-call can be paged at any time at **240-0705**.

If any individuals have non-emergency questions, concerns, or inquiries pertaining to radiation safety, contact the Radiation Safety Section of Environmental Health and Safety during normal working hours at 292-1284.

10. Specific Standard Operating Procedures – *Note to recipient of this template*. Please describe how to operate your electron microscope in this section. Basic elements shall include

- **key control:** When trained on use of Dual Beam FIB users may be granted key fob access to the Room.
- **safety precautions:** The microscope may not be modified by the user, no ports or devices may be added or removed from the instrument unless specifically directed by the instrument manager.
- **hazards associated with the use of the unit:** When used according to SOP the equipment should produce no hazards to the user.
- **operating log:** All use shall be recorded on the FOM web scheduling log. Please see fom.osu.edu
- **how to operate the unit:** Standard use procedure includes, but is not limited to, venting the chamber, sample loading, chamber pumping, clicking “wake up”, imaging and milling of a sample with either the electron beam or Ga ion beam. Users may deposit Pt and operate the OmniProbe insitu micromanipulator. On completion of imaging and milling work, venting sample unloading and re-pumping of the chamber are necessary.