

# Multi-Program High Bay Facility (Buildings 7625/7627)

## Description

The Multi-Program High Bay Facility comprises buildings 7625 and 7627 and provides space and infrastructure for multiple research & development programs and projects primarily through ORNL's Fusion and Materials for Nuclear Systems Division. Sixteen individual lab spaces with a combined total gross floor area of over 33,000 square feet typically support 10-15 scientists, technicians, and other operations personnel depending on research experiment status.

In Building 7625, a variety of experimental projects are in progress, and currently include

- High power radiofrequency (RF) transmission line component testing for ITER;
- Plasma material interaction experiments and plasma source development using the Prototype Materials Plasma Exposure eXperiment (Proto-MPEX);
- Microwave-assisted plasma processing of materials;
- High temperature superconductivity component and device testing;
- High power electron cyclotron transmission line testing for ITER;
- Electrothermal plasma source development; and
- Specialized helium and hydrogenic species pump testing for ITER.

A set of RF generators (from 3 to 80 MHz ranging from 20 kW to 500 kW steady state and up to 1.5 MW pulsed) and microwave sources (from 18 to 140 GHz at 8 to 400 kW steady state) support experimental operations. A microwave development laboratory, an electronics lab, a laser diagnostics lab, an electrical distribution room, and a small machine shop area provide experiment support. Experiment cooling is provided by a demineralized water system with a cooling tower capable of dissipating 4 MW steady state.

Building 7627 houses high voltage power supply systems supporting experimental operations in Building 7625. These include a pair of 90 kV gyrotron supplies (900 kW and 1.4 MW steady state), high current magnet power supplies, and a tunable 3-27 MHz, 1 MW, steady state RF transmitter. The incoming power capacity is 48 MW, sufficient to power the current experimental demand with headroom for future experimental programs.



*Installing a 4 mm microwave interferometer on Proto-MPEX to measure plasma density*



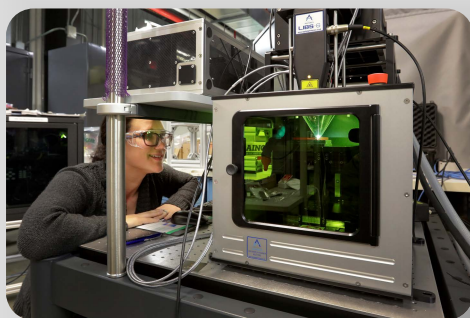
*7625 high bay supports Proto-MPEX helicon plasma source and plasma materials interaction R&D*

## Contact

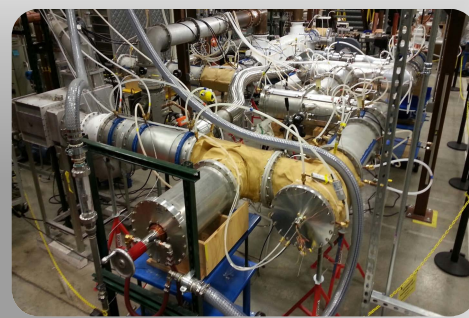
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*A University of Tennessee Knoxville graduate student uses Laser Induced Break-down Spectroscopy in the Laser Diagnostics Lab to characterize the effects of exposing materials to plasmas*



*The Radio Frequency Test Facility for Transmission Lines is used to provide high voltage and high current conditions for testing RF transmission line components consistent with 6 MW steady state operation for up to 1 hour*

Date: April 2017