Materials Research Laboratory
X-Ray Diffraction Shared Experimental Facility

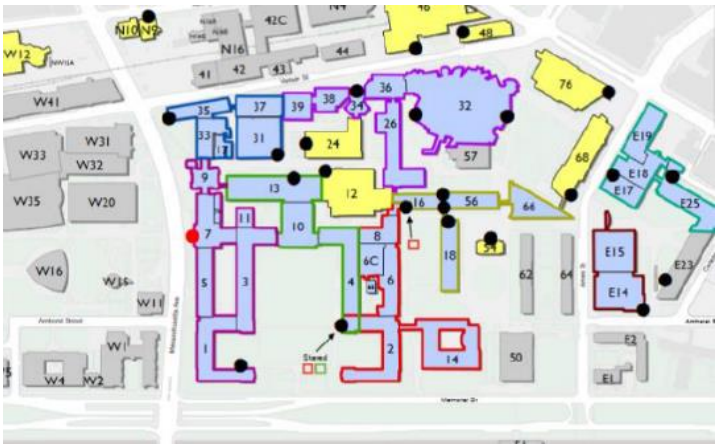
SAMPLE SUBMISSION AND DATA COLLECTION FORM
EXTERNAL USERS ONLY

Please complete this form and e-mail it to settens@mit.edu
Cell Phone: 845-430-2584

Sample drop off:
When: Mon-Friday 9AM-3PM
Where: Front door of Building 13 (Lobby)
How: Email staff 1 day prior to drop off.

Sample shipping:
Ensure you have tracking # for your parcel.

Charles Settens
77 Massachusetts Ave
Building 13 - Room 4027
Cambridge, MA 02139



Academic assisted use rate: $120/hr
Commercial assisted use rate: $360/hr

Name: Click here to enter text.
Date: Click here to enter text.
MUMMS ID: Click here to enter text.
E-mail Address: Click here to enter text.
Mailing Address: Click here to enter text.
Mobile phone: Click here to enter text.

What type of samples are you studying?

☐Powder or Bulk Polycrystalline (pellets, coatings, machined parts, etc)
☐Polycrystalline Thin Film
☐Nanocrystalline Powder or Films
☐Epitaxial Thin Films
☐Large Molecules (zeolites, MOFs, etc)
☐Mesostructured Samples (mesoporous silica, quantum dots, etc)
☐Polymers
☐Other: Click here to enter text.

What is the general composition of your samples (chemical formula or expected major phases)? Click here to enter text.

Broadly describe your project goals in a few sentences. Click here to enter text.

What type of information do you want to learn about your sample?

☐Phase identification
☐Crystallite Size and Microstrain
☐Lattice Parameter
☐Crystallographic Texture
☐Crystal structure via Rietveld refinement
☐Quantitative phase analysis of powders
☐Residual Stress of Polycrystalline Sample
☐Nanoscale size and size distribution
☐Orientation parameter of fiber
☐Single Crystal orientation
☐Residual Stress of Polycrystalline Sample
☐Relaxation/Strain of Epitaxial Film (in-plane and out-of-plane lattice parameters)
☐Defect Concentration in Epitaxial Film
☐Curvature of Substrate
☐Thickness and Roughness of Film
☐Elemental Composition
☐Other: Click here to enter text.

What chemical hygiene hazards are associated with your samples?

☐Known Toxin (agents that over time damage specific organs, poisons, etc)
☐High Degree of Acute Toxicity (a single exposure may be fatal or cause severe damage)
☐Potentially Hazardous (must wear gloves when handling but does not require additional PPE)
☐Contains Heavy Elements (Sb, As, Ba, Bi, Cd, Ce, Ga, In, Pb, Hg, Se, Te, Th, V, actinides)
☐Respirable
☐Nanopowder or free nanoparticles
☐Corrosive
☐Irritant
☐Flammable or Highly Reactive
☐Carcinogen
☐Reproductive Toxin

What type of X-ray technique do you want staff to perform?

☐ XRPD (X-Ray Powder Diffraction)- used to study polycrystalline samples, including polycrystalline thin films and solid samples
☐ HRXRD (High Resolution X-Ray Diffraction)- used to study epitaxial thin films and, to a lesser extent, single crystals
☐ XRR (X-Ray Reflectivity)- used to study polycrystalline, epitaxial, or amorphous thin films
☐ SAXS (small angle X-ray scattering) used to study mesostructure such as particle or pore size
☐ SCD (single crystal diffraction)- used to analyze single crystal samples orientation. Single crystal structure solution is available in MIT Dept. of Chemistry XRD facility.
☐ XRF (X-Ray Fluorescence)- used to determine chemical composition of inorganic samples

What instrument(s) would you like staff to use for data collection?

☐ PANalytical X'Pert Multipurpose Diffractometer—a flexible Cu-source instrument used for high-speed XRPD analysis of polycrystalline samples
Details of Data Collection: Click here to enter text.

☐ Rigaku SmartLab Multipurpose Diffractometer- a flexible high-power instrument optimized for thin film analysis (XRPD, HRXRD, XRR, GI-SAXS)
Details of Data Collection: Click here to enter text.

☐Bruker D8 HRXRD—high resolution diffractometer for HRXRD analysis epitaxial thin films and XRR analysis of thicker thin films (>60 nm)
Details of Data Collection: Click here to enter text.

☒Bruker D8 GADDS—2-dimensional detector and small X-ray beam for XRPD texture analysis and microdiffraction
Details of Data Collection: Click here to enter text.

☐Bruker Handheld XRF—elemental composition analysis of Mg through U
Details of Data Collection: Click here to enter text.

☐Multiwire MWL120 Back-Reflection Laue instrument—used to determine orientation and quality of single crystals
Details of Data Collection: Click here to enter text.

☐SAXSLAB instrument—small/wide angle X-ray scattering for studying nm-scale structure
Details of Data Collection: Click here to enter text.