

Subject: Plasma Science & Technology Mission Statement	Effective Date: December 12, 2006	Initiated by: Head, Plasma Science & Technology
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The Plasma Science and Technology Department’s mission is to study basic plasma science as it relates to many fields and to develop new plasma technologies. This research diversifies the Laboratory’s program and strengthens its connections with other fields of science. It also plays a major role in the training of graduate students and postdoctoral associates. The Plasma Science and Technology Department accomplishes this by:

- Performing small-scale experiments at PPPL and other U.S. universities on basic plasma physics and innovative fusion concepts, and by applying plasma theory and plasma techniques to other disciplines including astrophysics and accelerator physics.
- Developing near-term applications of plasma science that demonstrate its practical use to meet both industrial and scientific needs.
- Providing experimental and theoretical research topics for both graduate student Ph.D. theses, for pre-thesis graduate and undergraduate projects (with students from both Princeton and other Universities), and for postdoctoral research.

The present organization of the Plasma Science and Technology Department consists of the following divisions and their associated missions:

- The Lithium Tokamak eXperiment (LTX) is designed to test theoretical predictions of the effects of a complete particle-absorbing liquid lithium boundary on tokamak equilibria, including the production of low gradient electron temperature profiles in the core, low-shear current profiles, and increased confinement time.
- The Magnetic Reconnection eXperiment (MRX) tests the physics understanding of magnetic reconnection and explores innovative fusion concepts.
- The Magnetic Nozzle & FRC eXperiments develop innovative ideas for fusion plasmas and new applications of low temperature plasmas.
- Beams Dynamics & Nonneutral Plasmas examines the physics and applications of non-neutral plasmas and high-intensity charged particle beams, theoretically and experimentally.
- Applications Research / Technology Transfer develops new applications for plasmas and transfers technology between PPPL and industry.
- Off-Site University Support provides PPPL’s scientific and technological resources to university programs in fusion science.

- Plasma Thrusters examines the physics of magnetically insulated plasma flows and Plasma Thrusters devices.
- Laboratory Astrophysics examines basics MHD waves and the Magnets Rotational Instability (MRI) in liquid metal experiments. The MRI experiment investigates mechanisms for angular momentum transport in astrophysical accretion disks.