

First operated in 1987, the Saskatchewan TORus Modified (STOR-M) is currently the only <u>tokamak</u> in Canada! Developed at the University of Saskatchewan Plasma Physics Lab under the direction of Prof. Skarsgard and Prof. Hirose, STOR-M continues to contribute to humanity's understanding of <u>plasma</u> physics and engineering, required to one day build nuclear <u>fusion</u> power plants!

## Plasma Physics Lab Research Areas

- Tokamak Physics
- Dusty Plasmas
- Plasma Assisted Material Synthesis
- Ion Implantation
- Dense Plasma Focus
- Theoretical/Computational Plasma Physics





**Plasmas** are the fourth state of matter. As energy is added to a gas, electrons separate from their nuclei forming a sea of charges which exhibit complex collective behavior. The overall charge of a plasma remains zero. Sufficiently hot, ions within the plasma may undergo fusion.



**Fusion** occurs when two light nuclei collide with sufficient energy to produce a new heavier nucleus, releasing a large amount of energy. Deuterium and Tritium (hydrogen isotopes) are the fusion fuels of choice, having the highest probability to fuse at a lower temperature than other alternatives.



**Tokamaks** are a type of magnetic confinement fusion device. They confine as much hot plasma as possible, for as long as possible using a strong magnetic field. In STORM, 20,000 Amps of current is passed through the plasma, resulting in Ohmic heating of hydrogen nuclei to over 1 million degrees Celsius! This incredibly hot gas is contained by a large 1Tesla magnetic field.