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*Plasma Propulsion*

My science fair project is a continuation of a project I started in 2007. Pulsed inductive thrusters are currently being researched and developed as a means for powering satellites and other vehicles used in outer space. I am looking for a way to improve the pulsed inductive thruster, which uses a very strong and fast magnetic field to ionize and accelerate a fuel out of the thruster. In my theory if the fuel was pre-ionized, then more of the energy available could go into accelerating the fuel. This is what I tested. I improved on last year's project by building a vacuum chamber out of an unused propane tank to simulate the space environment. I also improved the current and charging capability of the drive capacitor bank. I then did research to determine what the best design of the drive coil and overall thruster would be. After that I built a prototype and tested it in the vacuum chamber using photoflash capacitors as the energy source and a force sensor to measure the thrust, if any. After testing with both high voltage AC and DC as the ionization sources I was not able to measure any thrust. This does not mean that there was no thrust; it just means that I was not able to detect any. It is possible that my meter was not able to measure such a small signal from the sensor. The next step would be to develop and amplifying circuit for the sensor to make it easier for my meter to detect any thrust. I could also make the magnetic coil larger and redesign the capacitor bank to deliver more current to the coil.