Lawrenceville Plasma Physics, Inc

High technology research, development and consulting in plasma physics, X-ray sources, and Focus Fusion

FOR IMMEDIATE RELEASE

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FOCUS FUSION-1 IS BORN!
Powerful New Fusion Device Achieves First Shots
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MIDDLESEX, NJ – October 20, 2009 - Lawrenceville Plasma Physics Inc. (LPP), a small research and development company based in Middlesex, NJ, announces the debut of Focus Fusion-1 (FF-1), LPP's dense plasma focus (DPF) fusion research device. After seven years of theoretical work and raising money, five months of design, five months of construction and assembly, and a week of testing, LPP now has a functioning DPF, the most powerful in North America. The machine is capable, for a brief instant, of pouring over 100 GW of power through a space smaller than a pin point. LPP is especially indebted to Dr. John Thompson for the outstanding work he has done in the design of FF-1 and in his unflappable leadership and long hours of hard work in constructing the device over the past six weeks.

The first shot, using helium as the fill gas, was achieved by FF-1 at 5:29 PM, Oct.15. The first pinch, the transfer of energy to the tiny plasmoid or ball of plasma, was achieved at 6:04 PM on the second shot. These shots are the first in a series that will be taken during LPP's two-year long experimental project to test the scientific feasibility of Focus Fusion: controlled nuclear fusion using the dense plasma focus device and hydrogen-boron fuel (pB_{11}).

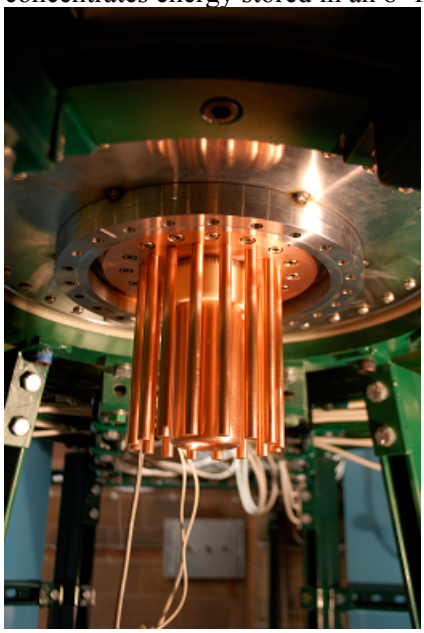
This type of fusion is aneutronic. This means nuclear fusion that produces no neutrons, and hence no radioactive waste, in contrast with Deuterium-Tritium fusion (DT). This makes possible far cheaper energy with direct conversion of energy to electricity. Aneutronic fusion presents significant technical challenges compared with DT fusion that have discouraged funding and research in this area. Ion energies as well as the density-confinement time product must be much higher for pB_{11} fusion than for DT fusion.

LPP hopes to overcome these challenges with several key innovations to be tested with their new DPF. Unlike the tokamak, the DPF is compact and simple. The tokamaks and most other fusion devices operate by attempting to maintain the plasma in a stable condition, while the DPF operates by exploiting a series of natural instabilities in the plasma. Advances in understanding the basic physics of such instabilities have set the stage for LPP's experiments.

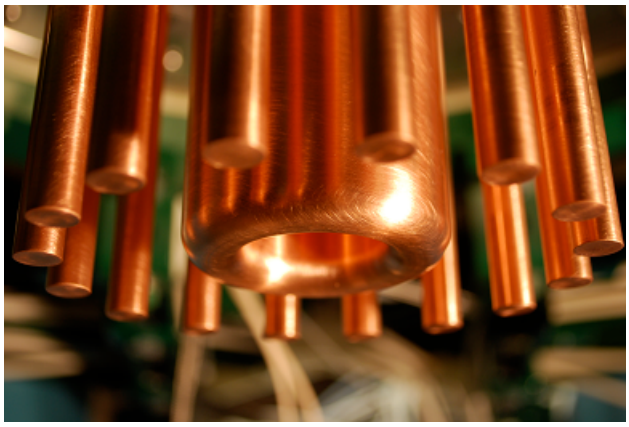
If LPP, using the FF-1, succeeds in harnessing the plasma and generating net energy from a fusion reaction, the world will have a source of clean, safe and inexhaustible energy that is ten times cheaper than any existing source.

For more information or to schedule an interview with LPP President Eric Lerner, or a visit to the lab, please email Aaron Blake at ablake@lawrencevilleplasmaphysics.com

The Focus-Fusion-1 Dense Plasma Focus, shown here before installation of the vacuum chamber, concentrates energy stored in an 8- foot wide array of capacitors (blue) into small copper electrodes (center).



Focus-Fusion-1 electrodes.



Close-up of electrodes. Power equal to that generated in the entire North East US briefly flows through a tiny pinch just below the center of the inner electrode, the anode. (Photos Rezwan Razani, courtesy Focus Fusion Society)