

## Executive Summary

1. This is the summary page of the design document entitled **“Radio & Superposition Considerations for generating Hydrogen/Graphite/Silica Impermeable Plasma Barriers (IPBs) & Associated Space Survival Technologies – by Exploiting Existing Birkeland Filaments & the Atomic Hydrogen Spectral Line (1.42 Ghz).”**
2. This design is potentially a new type of methodology to create graphene. This is NOT meant to create typical granulated graphene or carbon nano-tubes.

Instead, I am attempting to create an advanced graphene product that will potentially deliver the characteristics of a large, macro-tube-sized output (1” inch in diameter) - including high strength, and high electrical conductivity.

3. The design notes are a guide to building an experimental test-bed – to test the feasibility of creating a new graphite allotrope - using cold (room temperature) hydrogen plasma, water steam, graphite particles (44 um) & silica beads (20 um).
4. Even though the experiment is meant (first & foremost) to create a new material - the notes also include a list of peaceful purposes. These include a potential method to shape the graphene into a hollow sphere & a potential method to add mobility to the sphere - without using exhaust or combustible fuel is also discussed. The propulsion method resembles Hyper-accelerated Tubular Linear Induction Motors.
5. Details follow:
  - a. Two opposing interleaved cone-coil systems are being mounted inside a Stainless Steel frame – and will act as atypical Inductively-Coupled Plasma (ICP) jets.
  - b. Patent#512,340 describes how an interleaved cone-coil can potentially hold 250,000 times as much energy as a 1-wire coil.
  - c. Atypical methods are described within the design – which utilize wire-length resonance (instead of the Biot-Savart Law) – to attempt a more efficient ionizing solution.
  - d. The rest frequency of hydrogen is being utilized to add to the efficiency of the ionization & attempt to keep the plasma from heating up. That frequency is 1.42 Ghz. I wish to attempt a near 100% ionized plasma at room temperature – which has not been accomplished or considered by others. Hydrogen plasma becomes non-flammable as it approaches 100% ionization.
  - e. I am expecting the Plasma Barrier to be fortified through the generation of a hybrid material – potentially a graphene/silicene hybrid.
  - f. Multiple academic articles describe resonant plasma – as having the ability to trap radio waves – instead of broadcasting them. So, I am expecting no radio interference (RFI) from the device.
  - g. To eliminate impedance mismatching in the coils – $\frac{1}{4}$ -wave primary windings will be wound below their associated secondary windings.
  - h. To contribute more energy to the ionization process – a total of 7 frequencies & 7 multi-layered resonant coils will be utilized. All frequencies will be  $\frac{1}{4}$ -wave divisions of 1.42 Ghz – going down to 346. 778 Khz.
  - i. I also wish to test whether the barrier can be made buoyant – or relatively weightless – within

the presence of local Birkeland filaments (currents) that flow around the Earth.

j. To keep the design deterministic & Newtonian – I adopted competing scientific philosophies to describe its function & logistics. I am utilizing Pilot Wave Theory (Bohm-DeBroglie Theory) instead of the Standard Model for Quantum Mechanics (Copenhagen Interpretation). I am also utilizing Plasma Cosmology – instead of Big Bang Cosmology – to mitigate unknown variables.

k. Signaling software has been written by me for the Parallax Propeller 2 microcontroller – which give the ability to synchronize and utilize 54 different frequencies from 1 Hz – 25 Mhz. Higher frequencies will require either Voltage Controlled Oscillators or separate signal generators.

l. My design notes are currently open-sourced under the Creative Commons license.