



Unconventional Science

RL Jones

Horizon Scanning

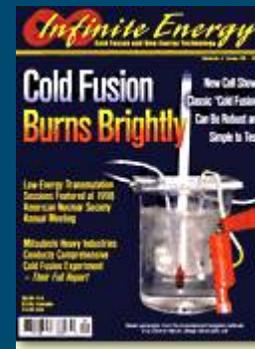
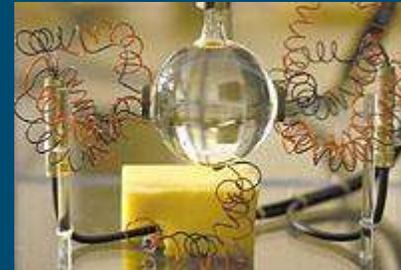
- For MOD to maintain its technical excellence and retain its position of superiority a keen awareness of new technologies is essential.
- 90% of the technology developments are outside the Mod funded arena.
- Developments of current technologies are emerging constantly, and these form a significant part of the defence superiority retention.
- However, in order to identify disruptive technologies it is prudent to “look outside the box”, and it is only here that the high-risk high-gain developments will be found.

Some Examples of Unconventional Science

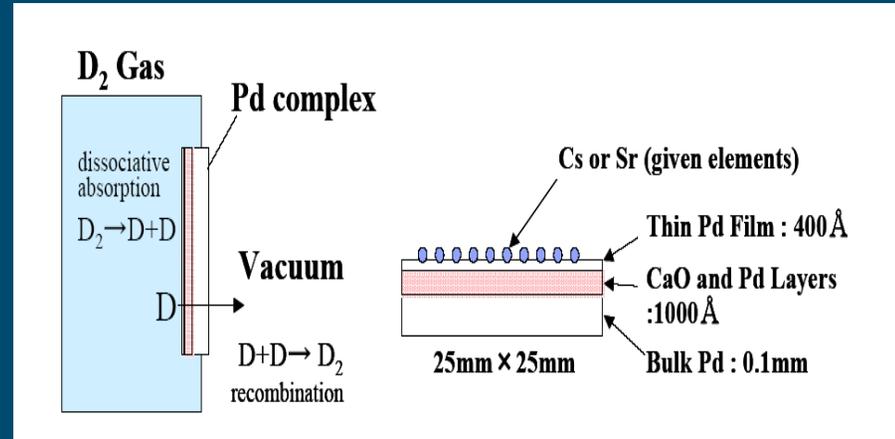
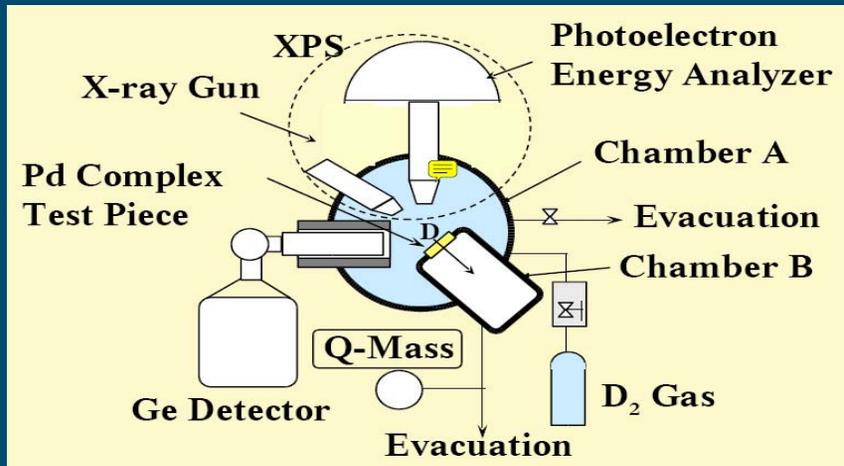
- **Cold Fusion (Low Energy Nuclear Reactions)**
- **Bio-communication**
- **Water Memory**
- **Casimir Force**
- **Hydrogen Storage in Carbon Nanofibres**
- **Podkletnov's Gravity Shielding**
- **Asymmetric Capacitors**

Cold Fusion (Low Energy Nuclear Reactions)

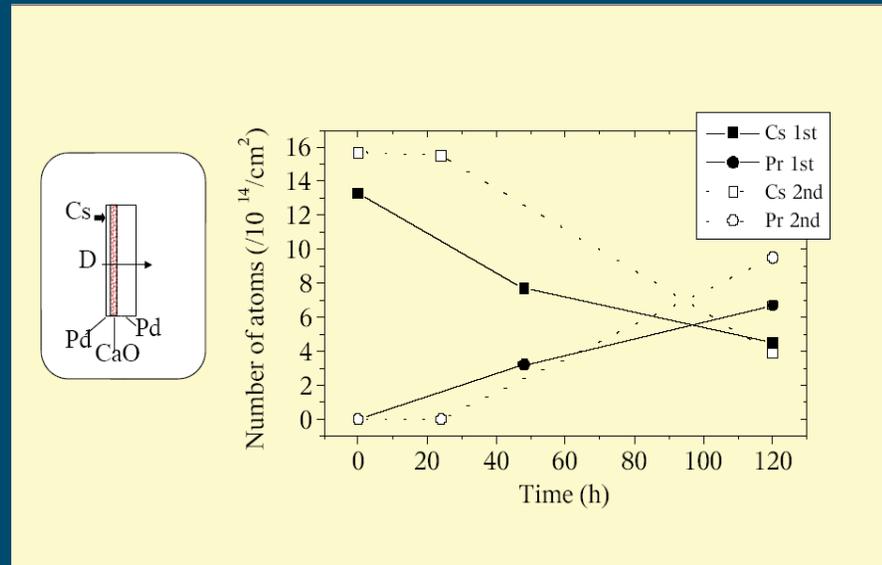
- Original concept by Fleishman and Pons in 1988 entailed fusion of deuterium nuclei in a palladium lattice by electrolysis of heavy water
 - claimed the heat produced was in excess of that generated by energy input.
 - Ability to harness energy at room temperature would have major implications.
 - US DOE study
 - Work criticised as poor science, experimental errors



Transmutation Y Iwamura et al



- Iwamura LENR transmutation experiment in 2002 less ambiguous using XPS.
- Cs transmuted to Pr an increase in A.W of 4 protons and 4 neutrons following gaseous deuterium diffusion
- Ref Iwamura et al 10th Int Conf on Cold Fusion



Intercellular Communication

- Communication between biological systems is traditionally considered in terms of chemical signalling, however:-
 - Japanese work claiming assisted aid growth of neighbouring culture under non growth conditions attributed to sonic waves
 - Russian work claiming sympathetic death of a separated culture via UV signalling
- Suggest possibility of physical signalling
- Ref Distant Intercellular Interactions in a system of two tissue cultures Psychoenergetic Systems 1(3) p141

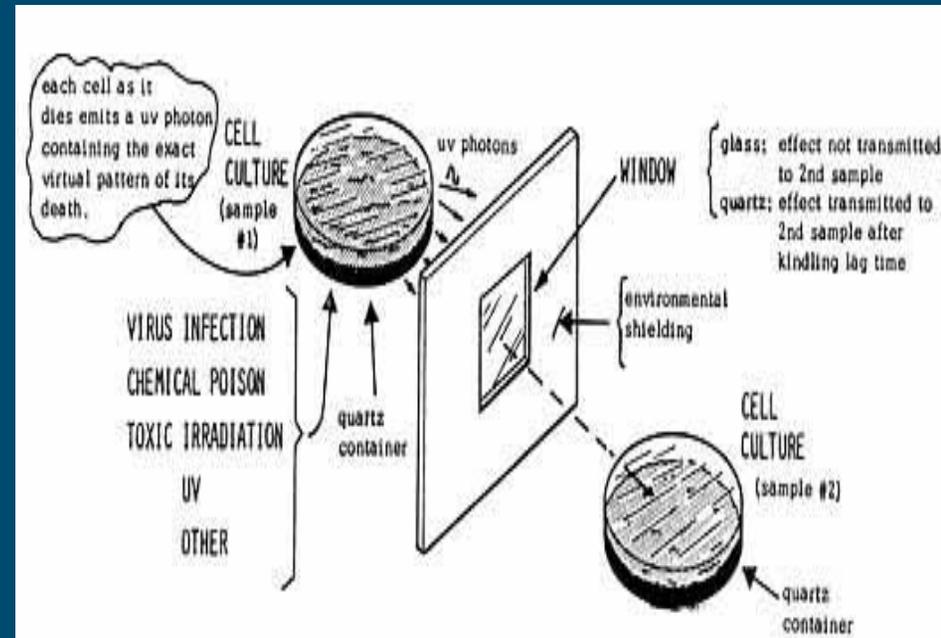
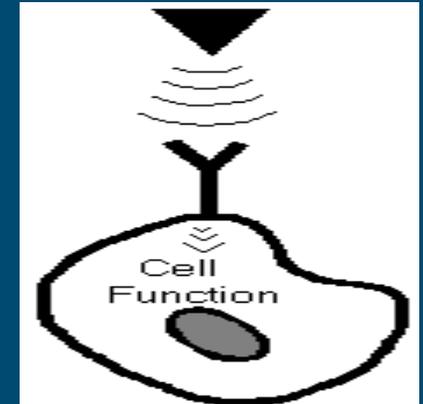
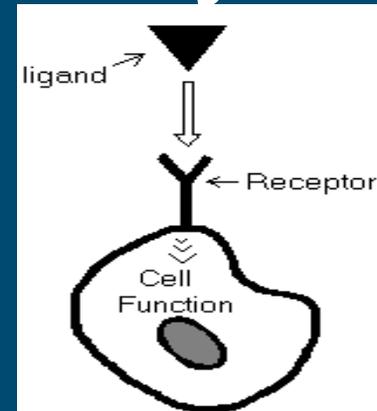


Figure 73. The Kaznacheyev effect. Thousands of experiments proved that (1) cellular disease is electromagnetic, and (2) it can be induced electromagnetically at a distance. Also called the cytopathogenic effect.

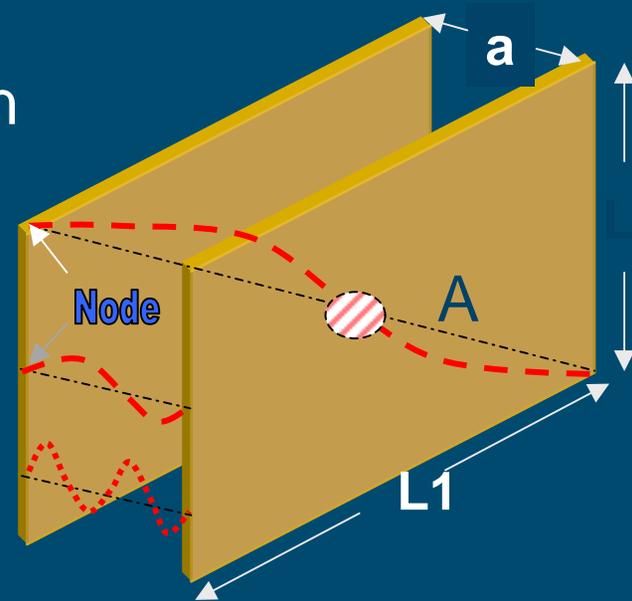
Water Memory

- Originated from J Beveniste claim of persistent activity Billion fold dilution of allergen.
- 1988 paper submitted to Nature.
- More recent work claimed the ability to transfer activity to pure water by EM/RF effects.
- Proposed that Memory of water is electromagnetic in origin and that electromagnetic signals are basis of molecular communication.
- Ref www.digibio.com



Casimir Force

- The force was postulated in 1948 by H Casimir when working for Phillips Labs on colloidal dispersions.
- In essence the field is a result of suppression of EM fields within a cavity.
- Perfect vacuum at absolute zero has fluctuating field of mean energy of half energy of a photon.
- **Plates 1cm² separated by 1micron have Casimir force of 10⁻⁷ N**
- **ie weight of small water droplet**



$$F = - \frac{\pi^2 \hbar c}{240 a^4} A$$

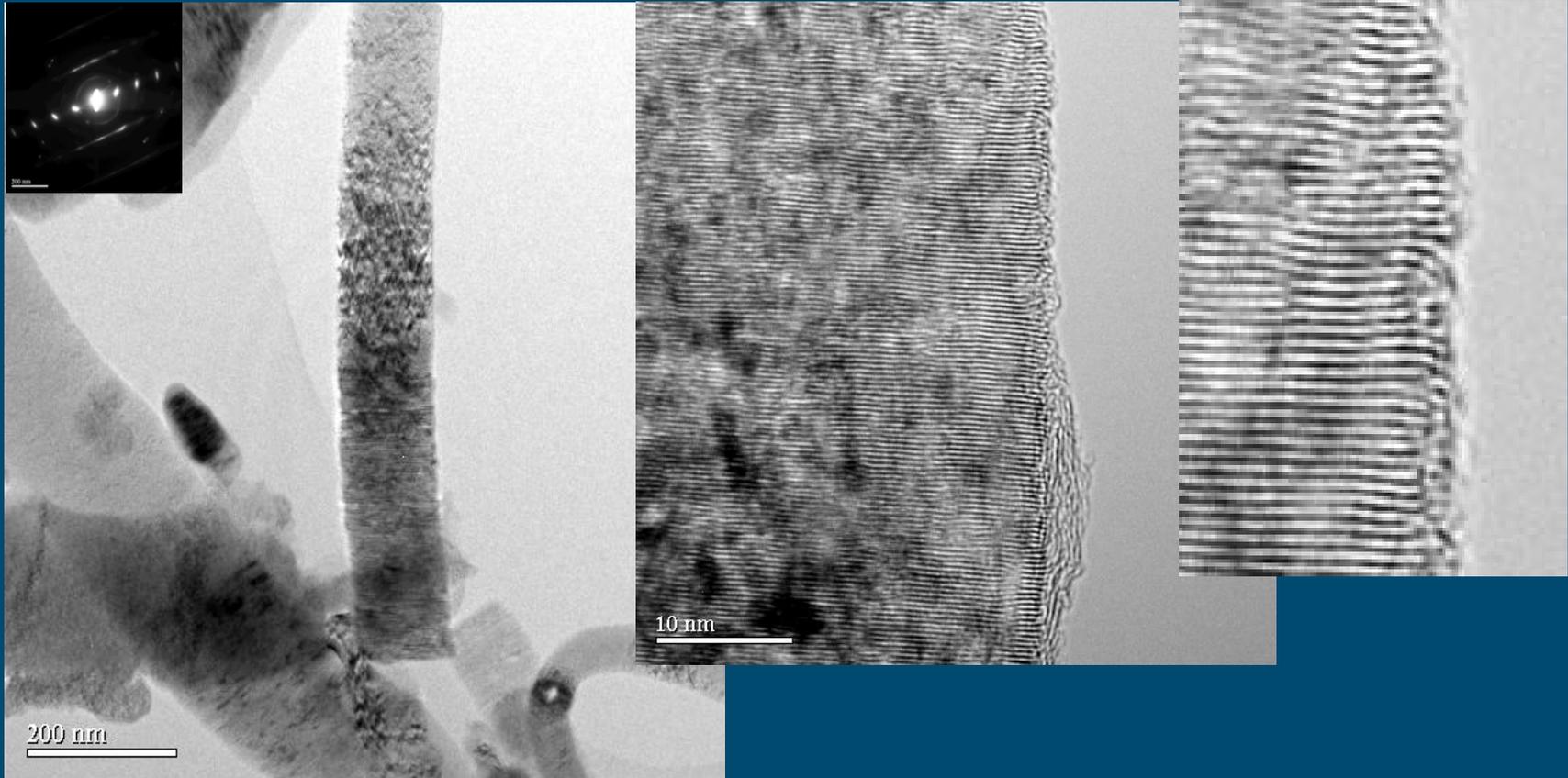
Hydrogen Storage in carbon nanofibres

- New Scientist Dec 1996

“Hydrogen-Powered cars could travel up to 8000 kilometres on a single tank of gas thanks to a graphite storage material developed by researchers at North-Eastern University in Boston.”

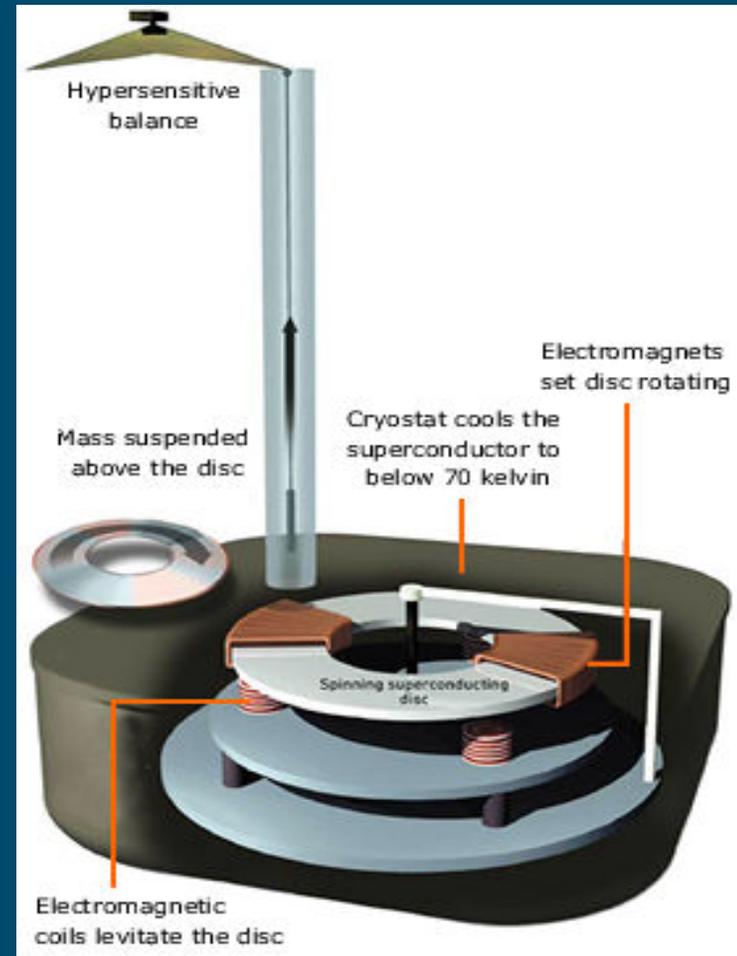
- US Patent Rodriguez et al.
 - Storage of Hydrogen In Layered Nanostructures.
 - Claims 50 - 70% hydrogen absorption at room temperature, 40 - 120 bar.

QinetiQ graphite nanostacks

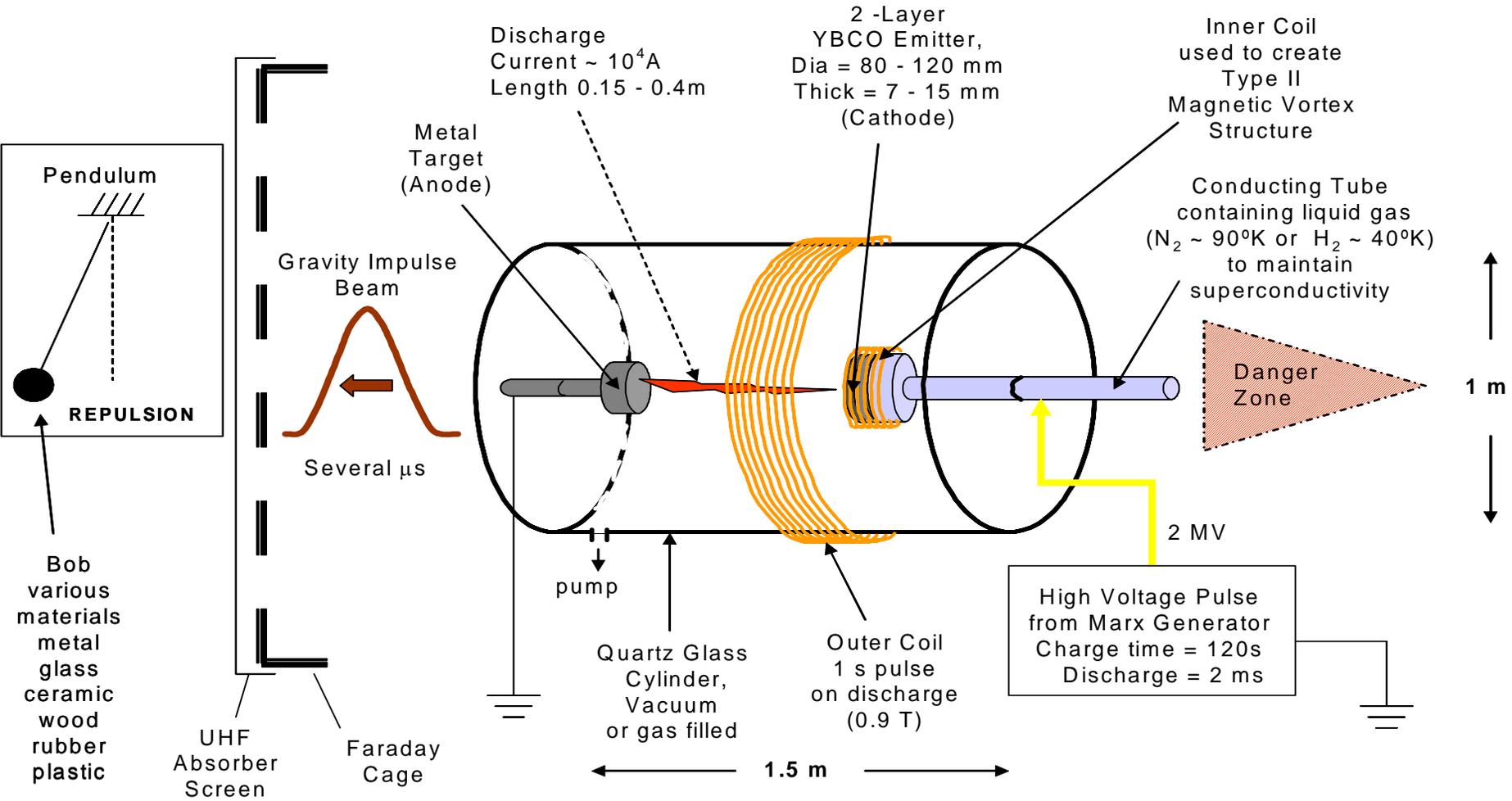


Gravity Shielding

- In 1992 Podkletnov published results of weight loss above a superconducting disc, which was magnetically levitated and rotated at several thousand rpm in presence of magnetic field.
- Showed weight loss of less than 0.5% to 2% as spin increased.
- Further paper accepted by J Physica D in 1996 but withdrawn
- NASA / Ning Li attempted to replicate between 1996 and 2002
- Ref www.holoscience.com/mws/antigravity

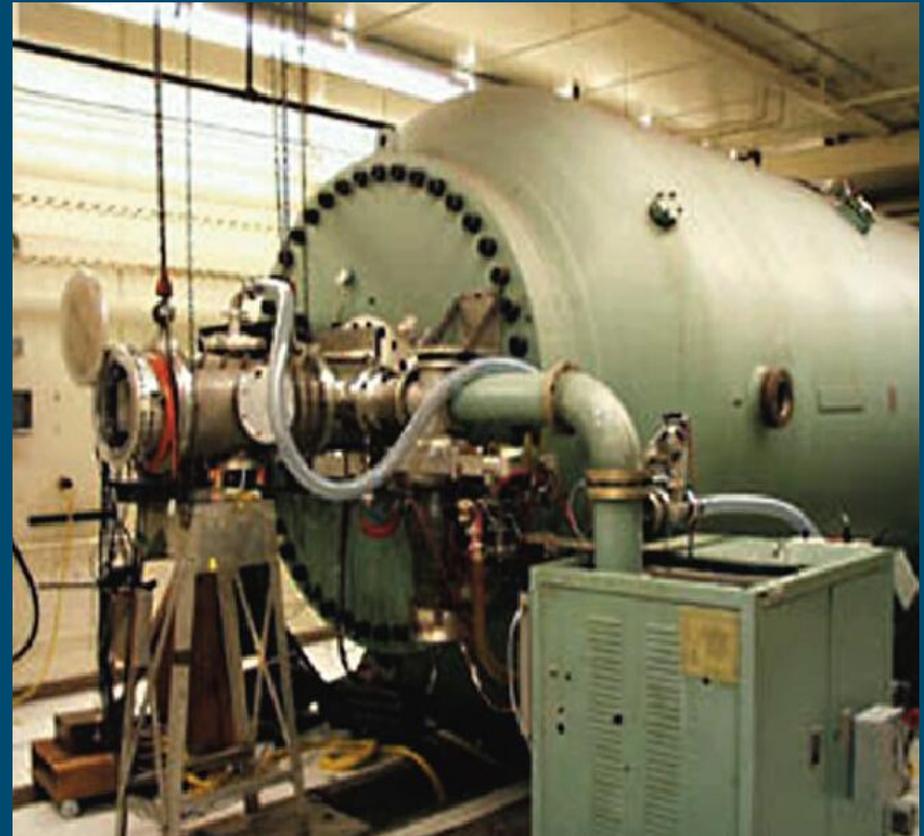


Podkletnov Gravity Impulse Generator



Boeing's Van de Graaff generator proposed for the Podkletnov experiments [15].

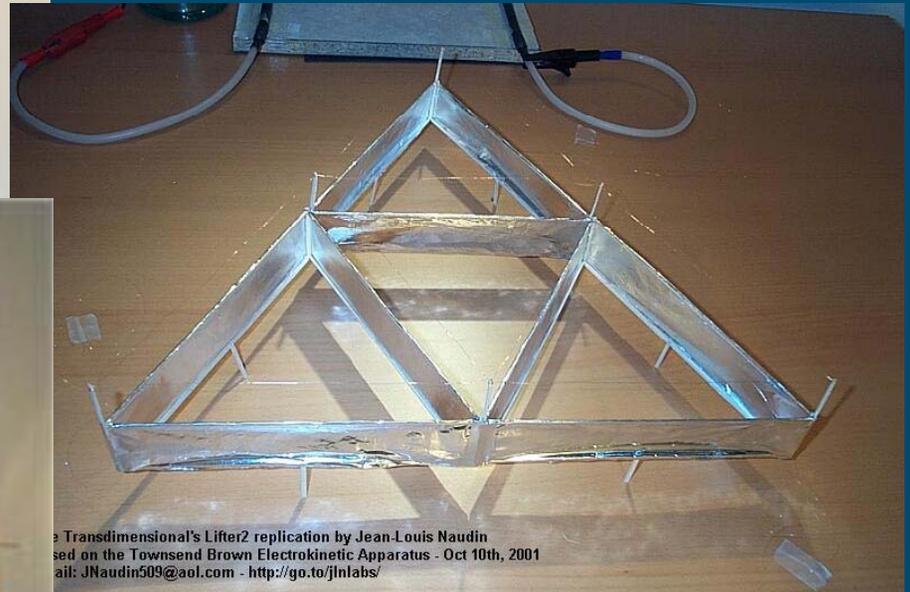
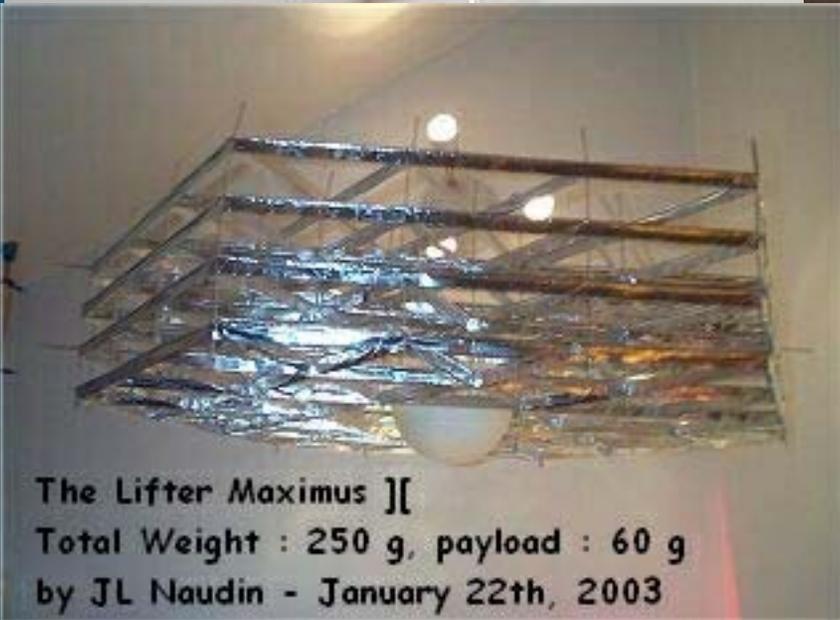
- Device could be used as a ballistic missile shield.
- Reported in Jane's Defence weekly in June 2002 that BOEING Phantom works had a project entitled GRASP to replicate claims.
- No further reports



Asymmetric Capacitors

- Originates from the Biefeld-Brown effect
 - When a high voltage $\sim 30\text{KV}$ is applied to electrodes of an asymmetric capacitor a net force is observed
- Brown was a lab technician and Biefeld a Prof at Denison Uni Ohio
- Work dates back to 1920's when Brown was experimenting with a Coolidge tube.
- Patents issued in 1927, 1957, 1960 by Biefeld –Brown
- And more recently by NASA in Jan 2002 and June 2002

Background



Huge ...!!

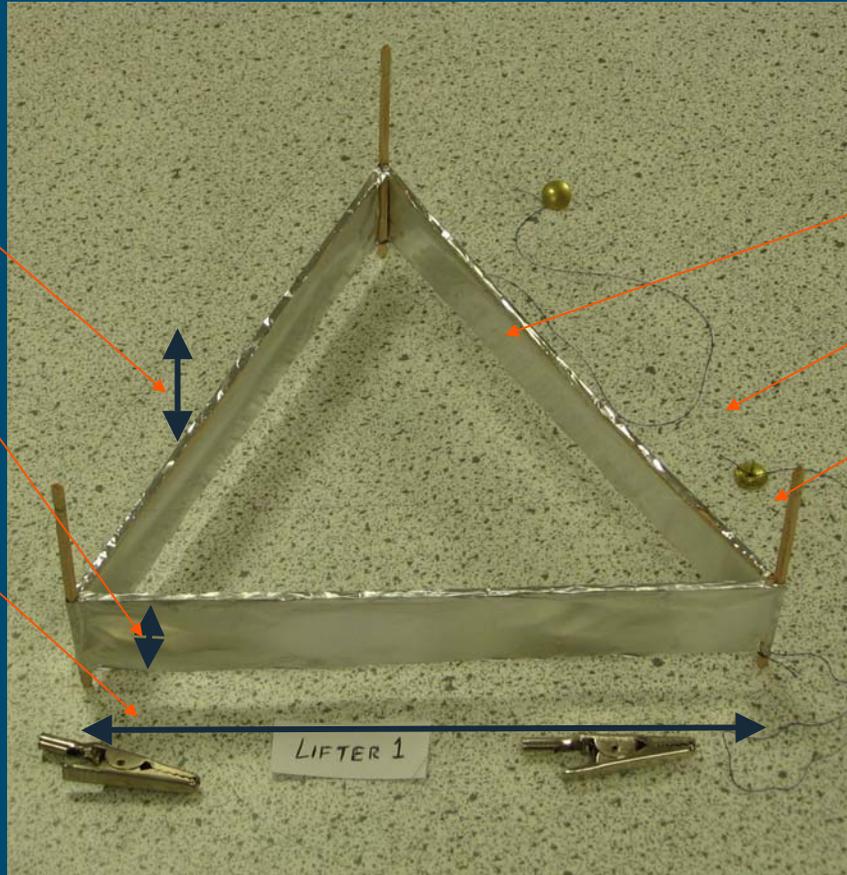
Why are MOD interested?

- Potentially a disruptive technology
- Possible applications include
 - Propulsion
 - Drag Reduction
 - Stealth
 - A full silent flight and no moving parts (no mobile surfaces reflecting radar waves)

Current Dstl project

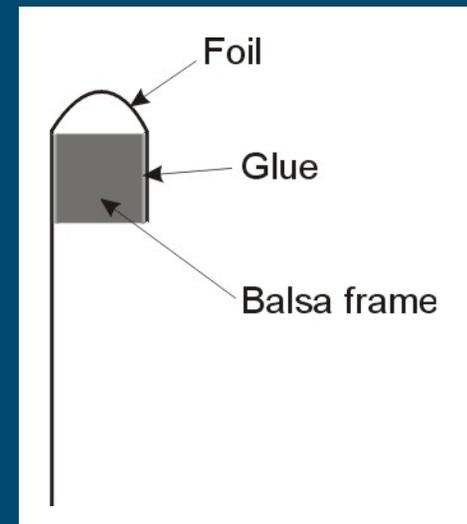
Dimensions

- Wire height
- Foil height
- Length
- (Weight)



Materials

- Foil
- Wire
- Dielectric

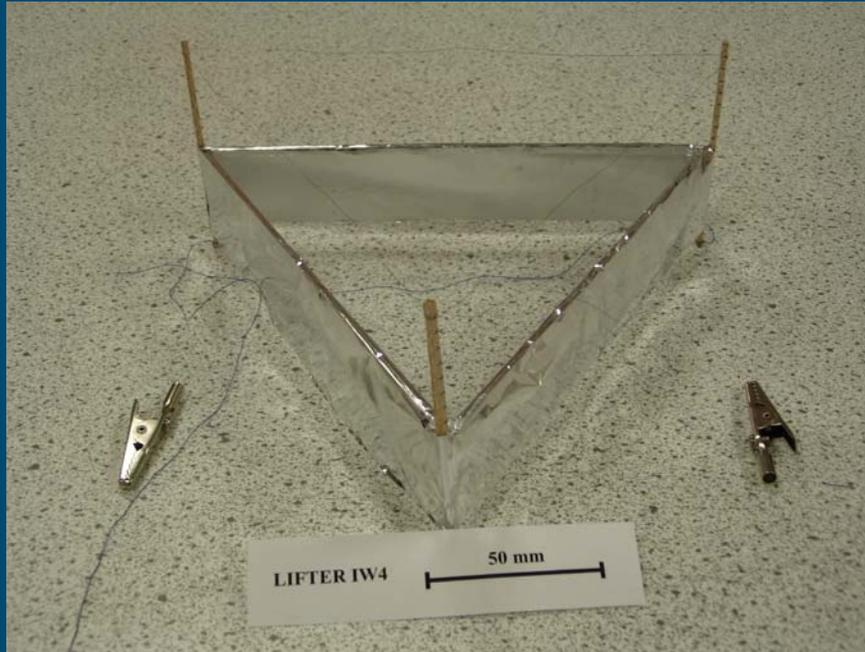


Current Project Aims

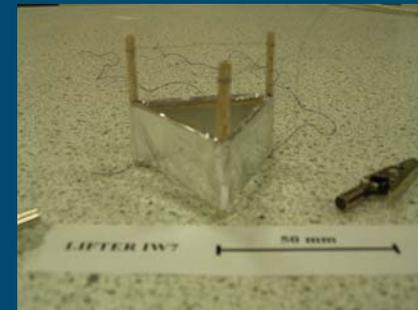
- Attempt to fully understand the physics
- Investigate how voltage/current & thrust are effected by:
 - Capacitor size/shape
 - Scaling effects
 - electrostatic field is a function of electrode geometry ...
 - geometry
 - torroidial (doughnut) ... concentric rings separated by shields to prevent ionic cross-over



Lifter Size



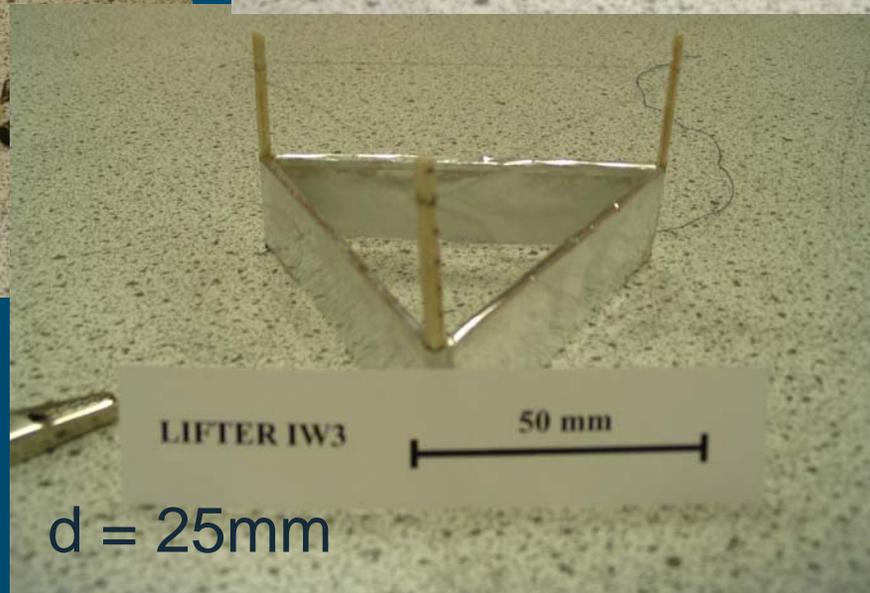
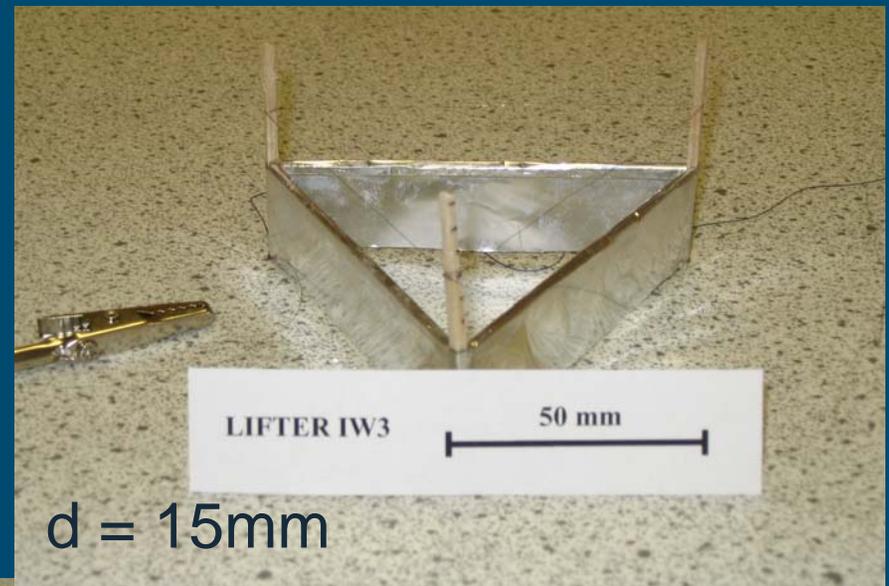
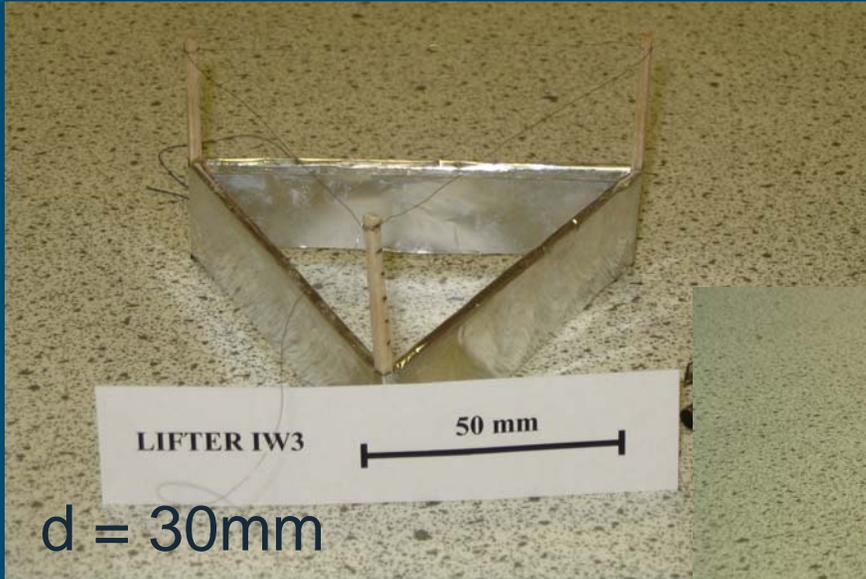
Length = 200 mm



Length = 50 mm

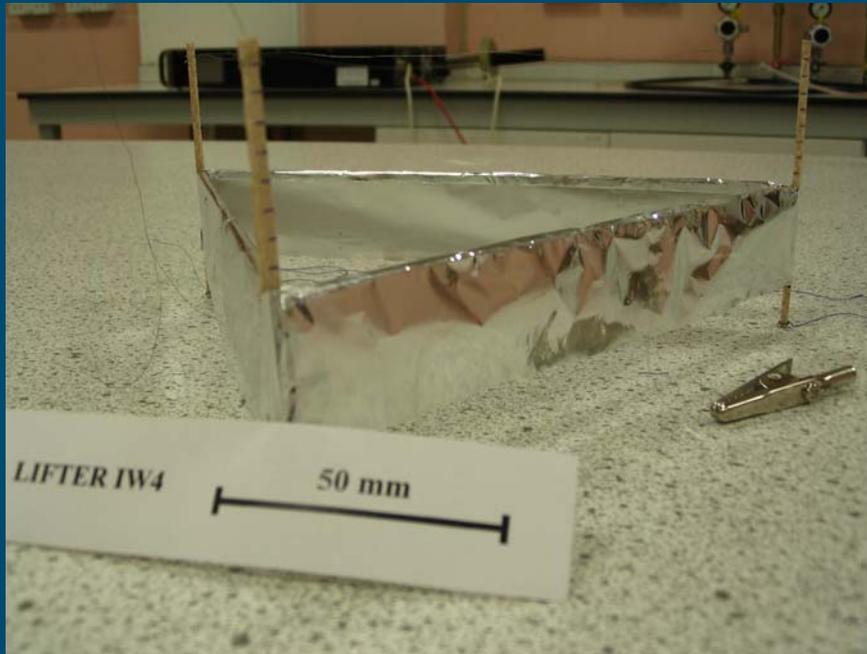
Wire height

- Lifter IW3

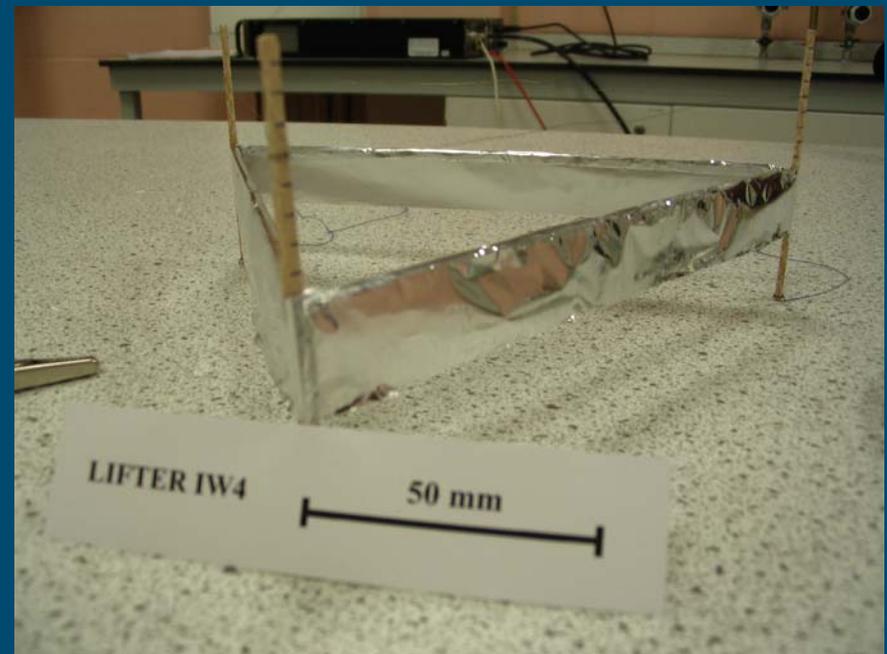


Foil height

- Lifter IW4



Foil height = 36 mm



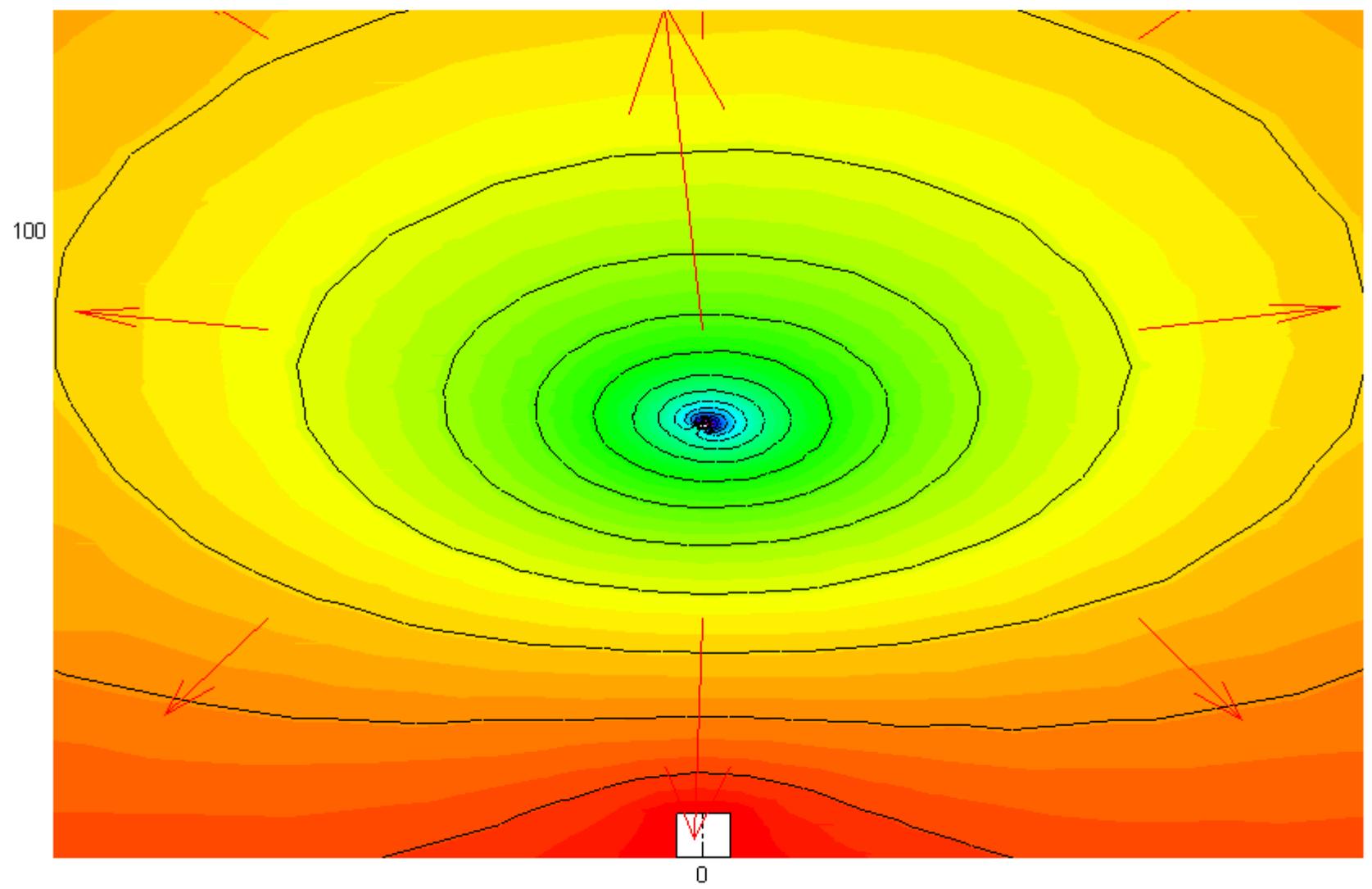
Foil height = 21 mm

Modeling Electrostatic Field

- Using MatLab PDE
- Preliminary results show this could be useful
- Can vary Capacitor geometry as it uses FE
- Also vary input voltage
- However, this is a static solution and as such limited

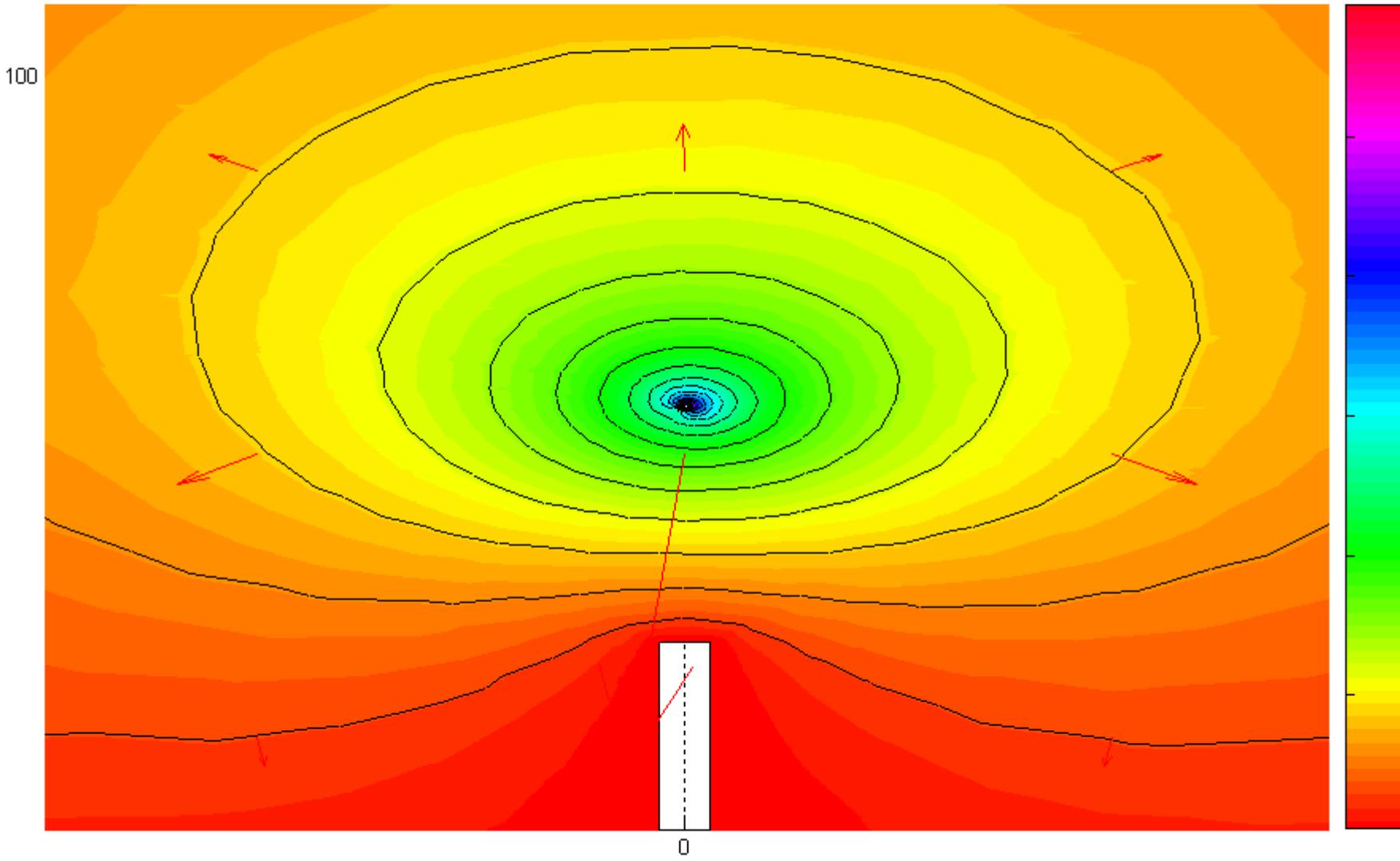
Set formula: R1-R2-E1

Color: V Vector field: E



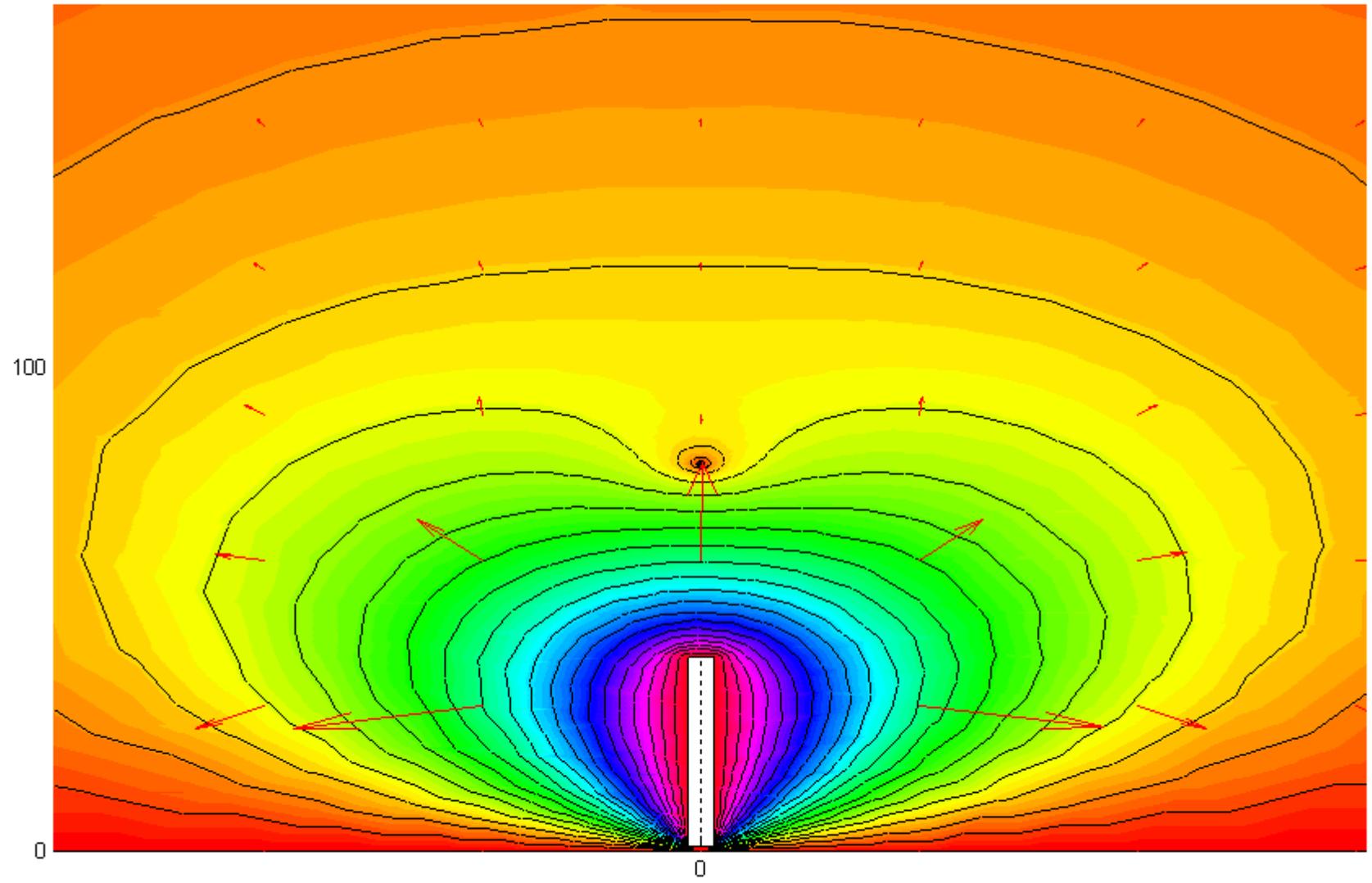
Set formula: R1-R2-E1

Color: V Vector field: E



Set formula: R1-R2-E1

Color: V Vector field: E



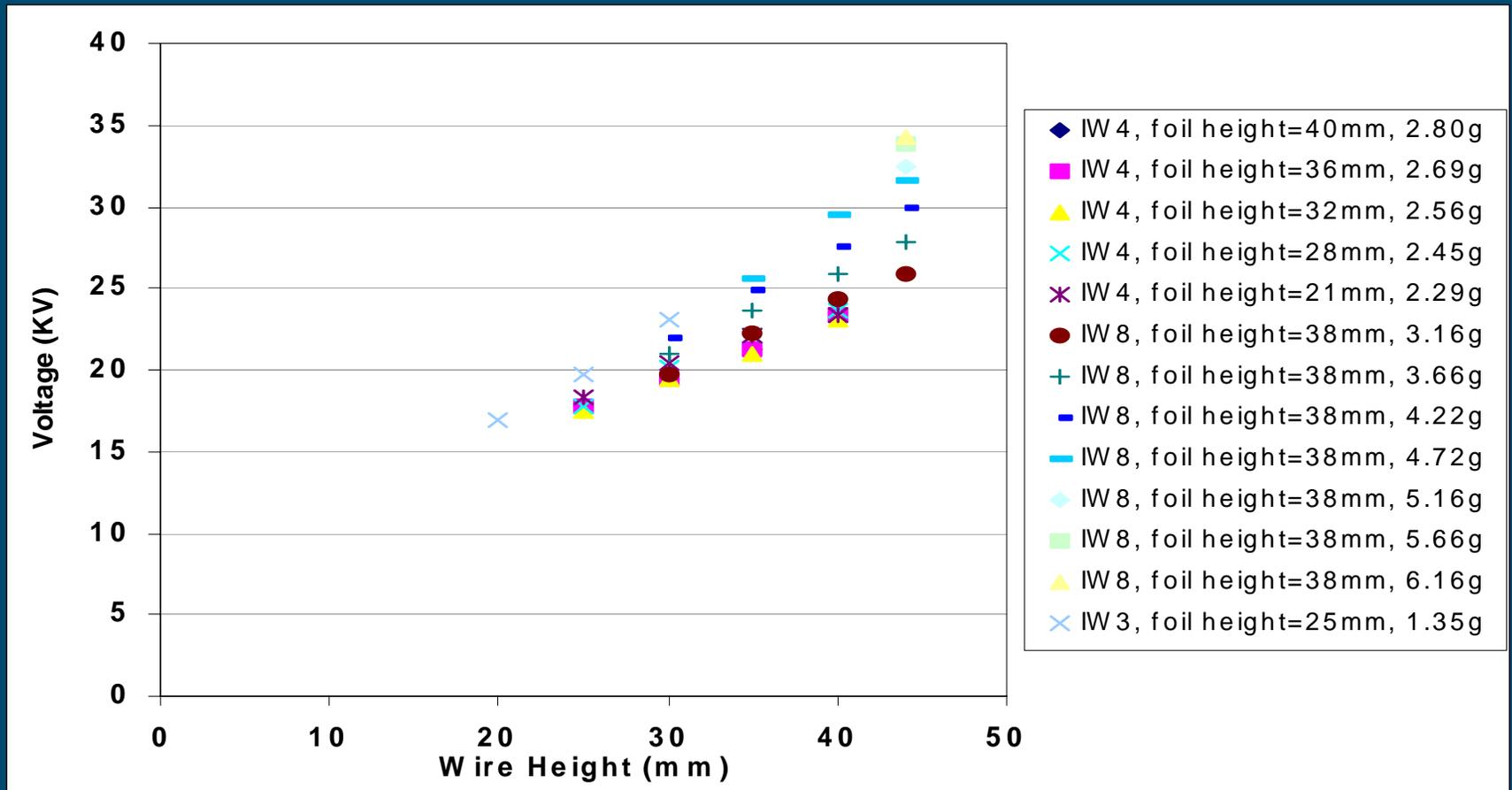
Dielectric Constants

<u>Material</u>	<u>Dielectric constant</u>
Helium	0.2
Air	1
Nitrogen	1.1
Carbon Dioxide	1.8
Polystyrene	2.6
Paper	3
Glass	8
Water	78
Barium Titanate	1,000

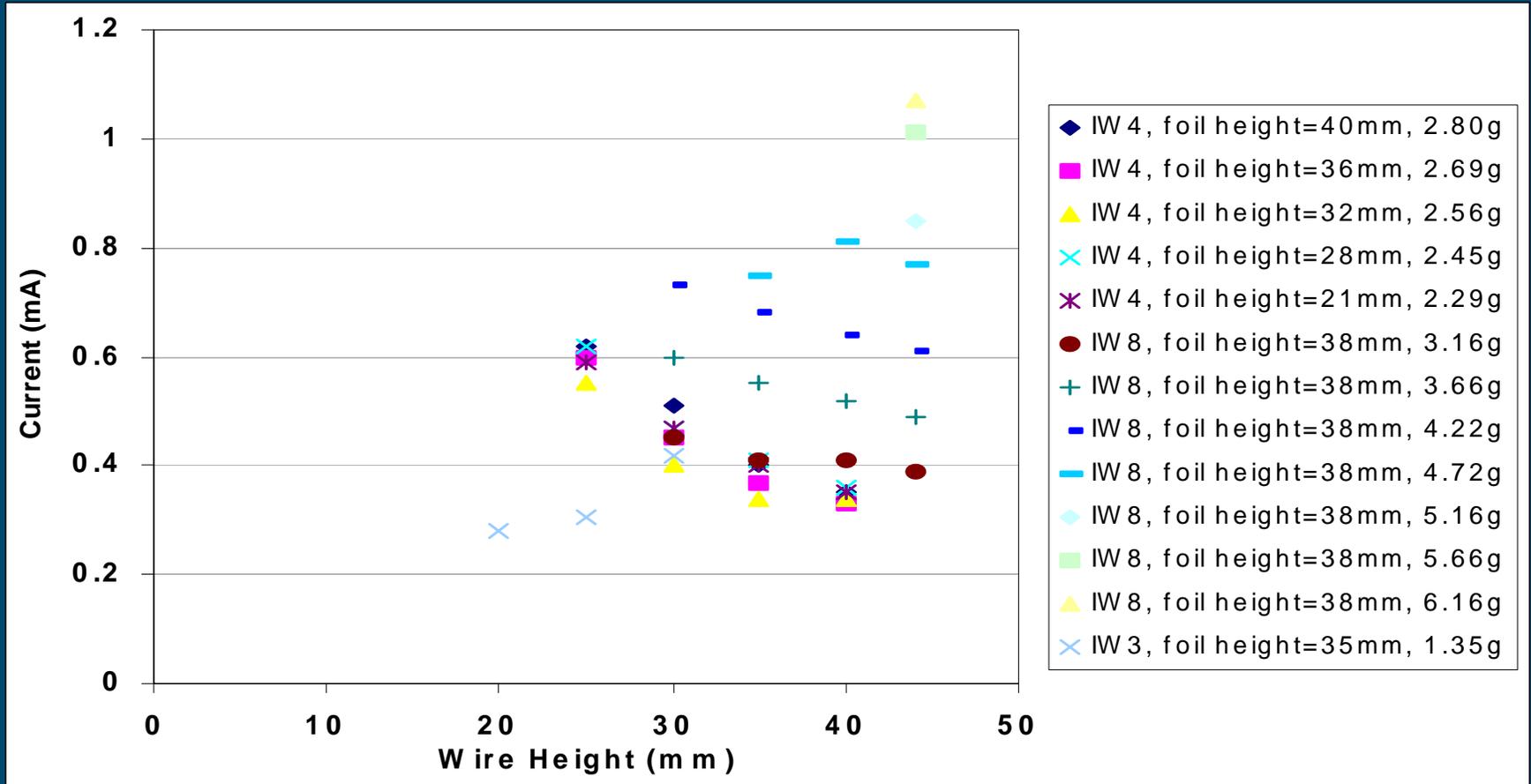
Dielectric – preliminary results

- Air Stable lift: 0.25mA & 19.2KV
- Nitrogen Stable lift: 0.31mA & 18KV ...(similar to air)
- Helium No lift ... at 4.20mA & 12.8KV
- Steam
- CO₂

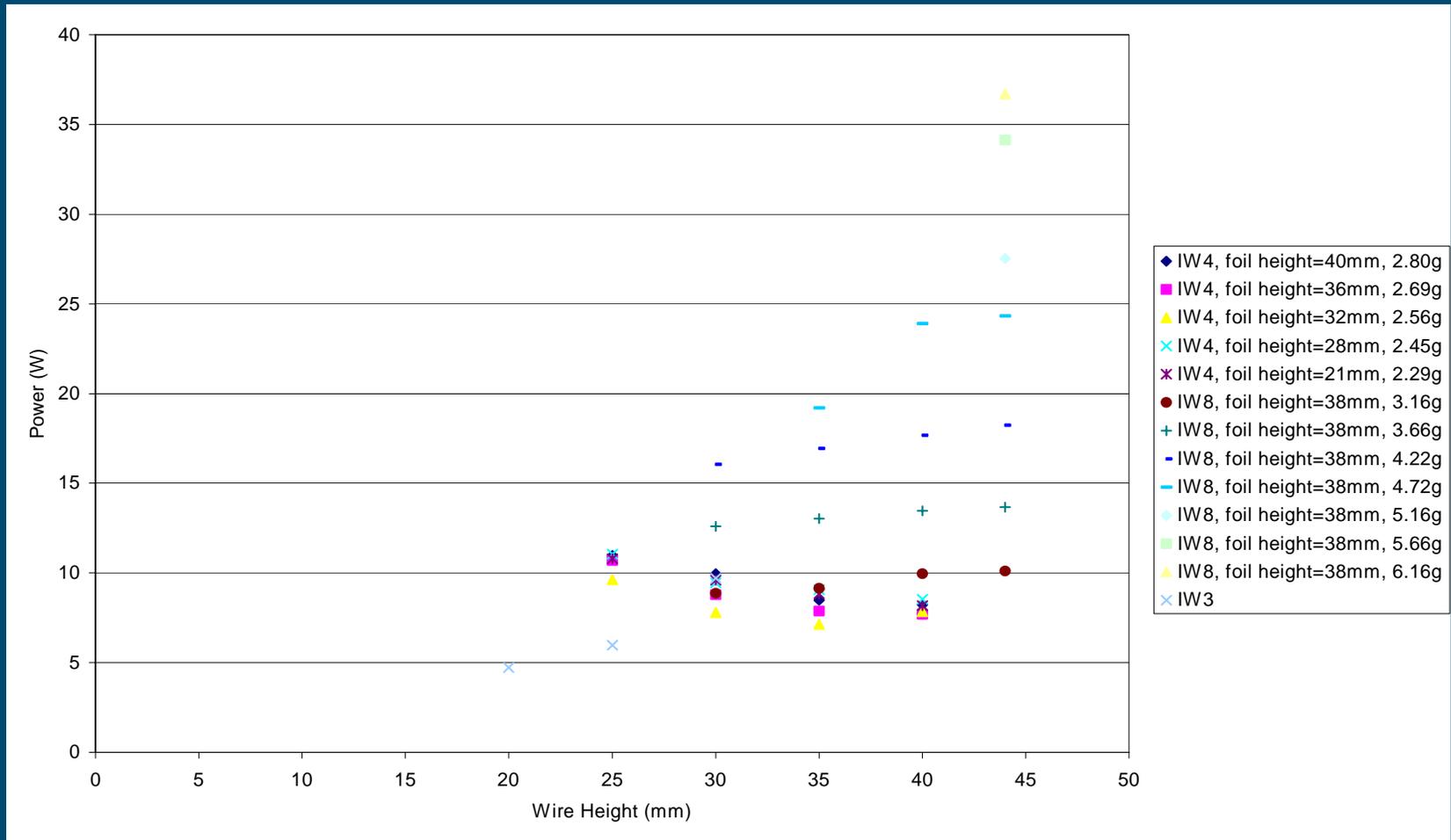
Results – Voltage



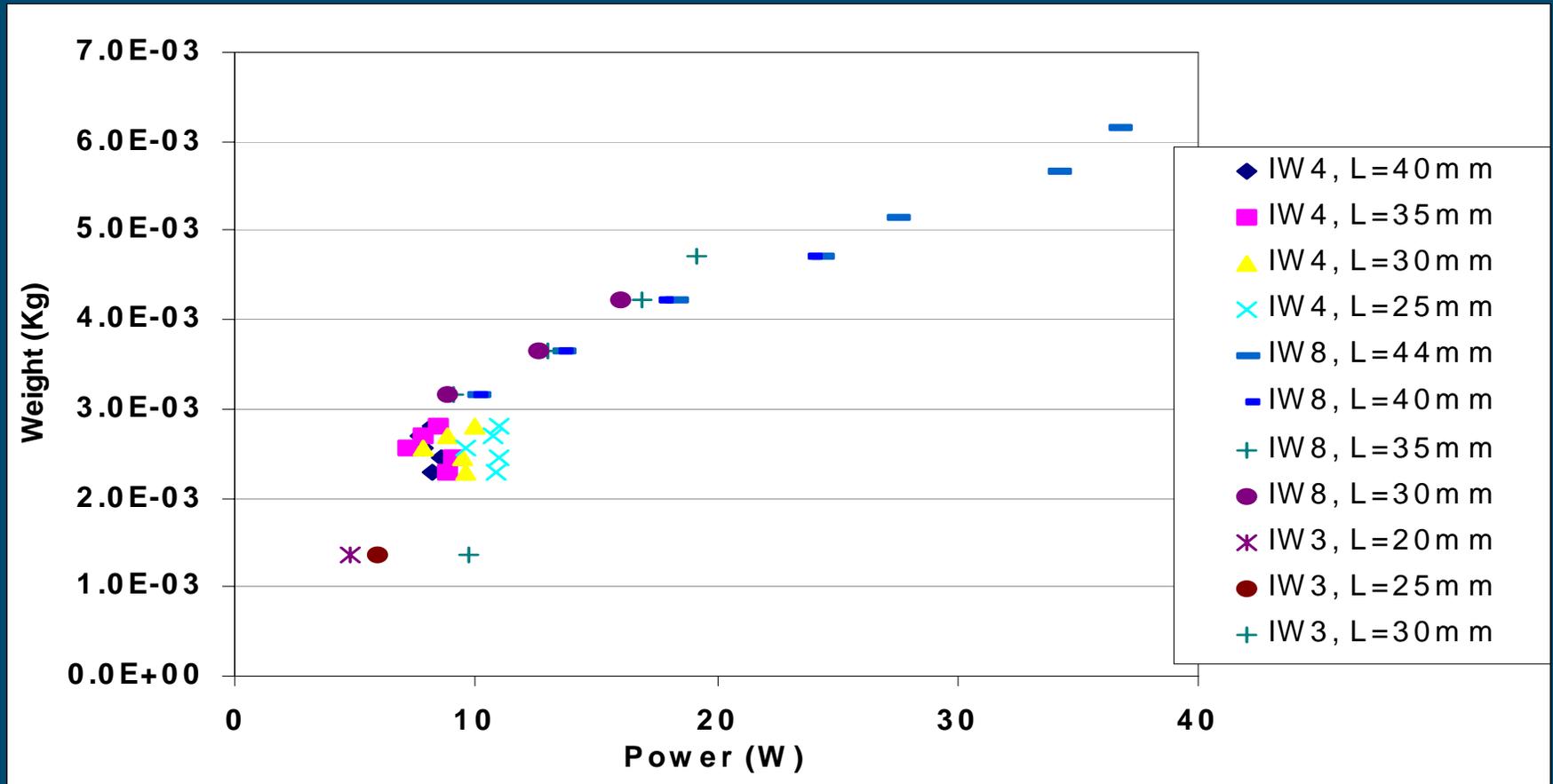
Results – Current



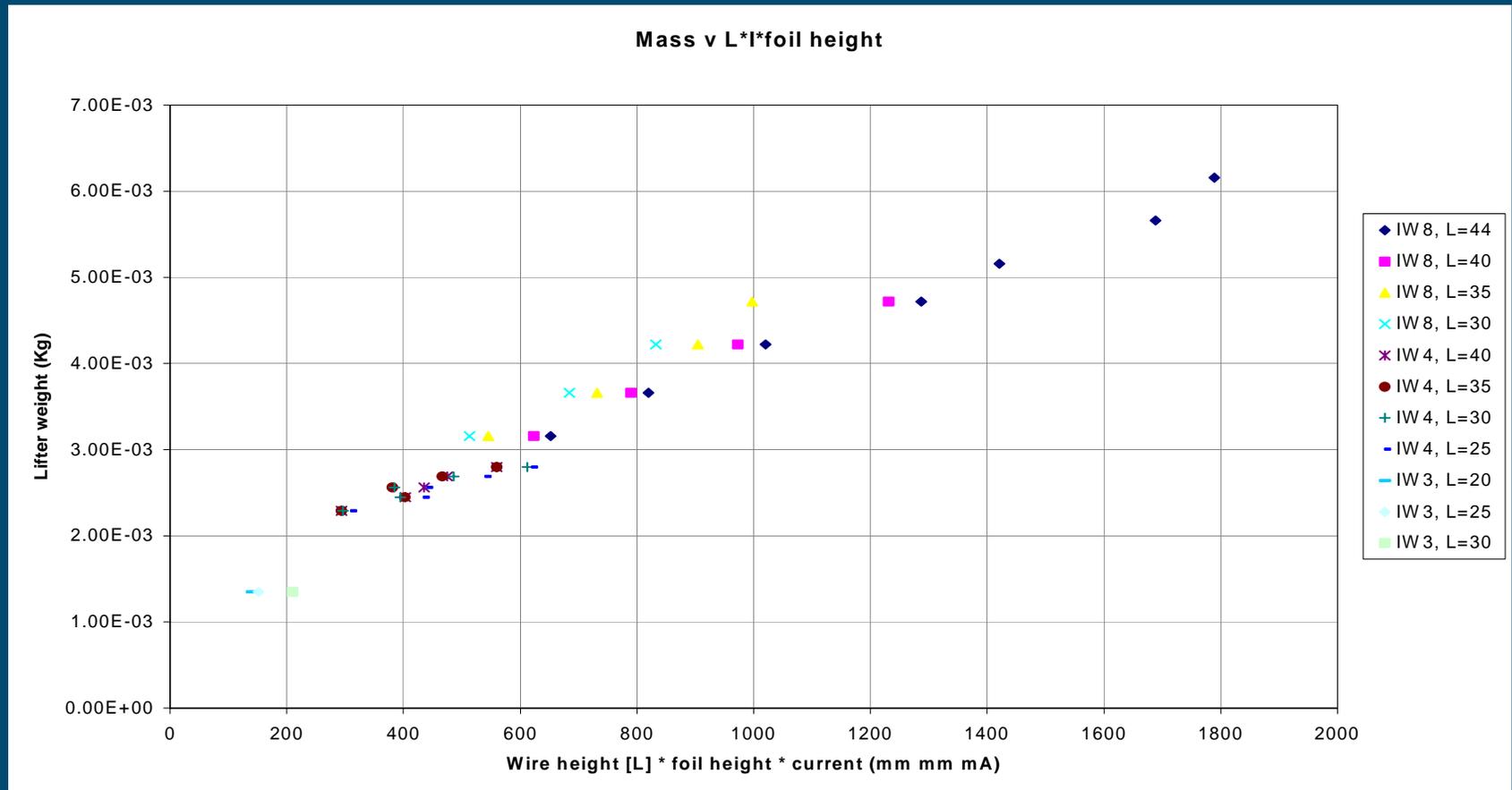
Results – Power



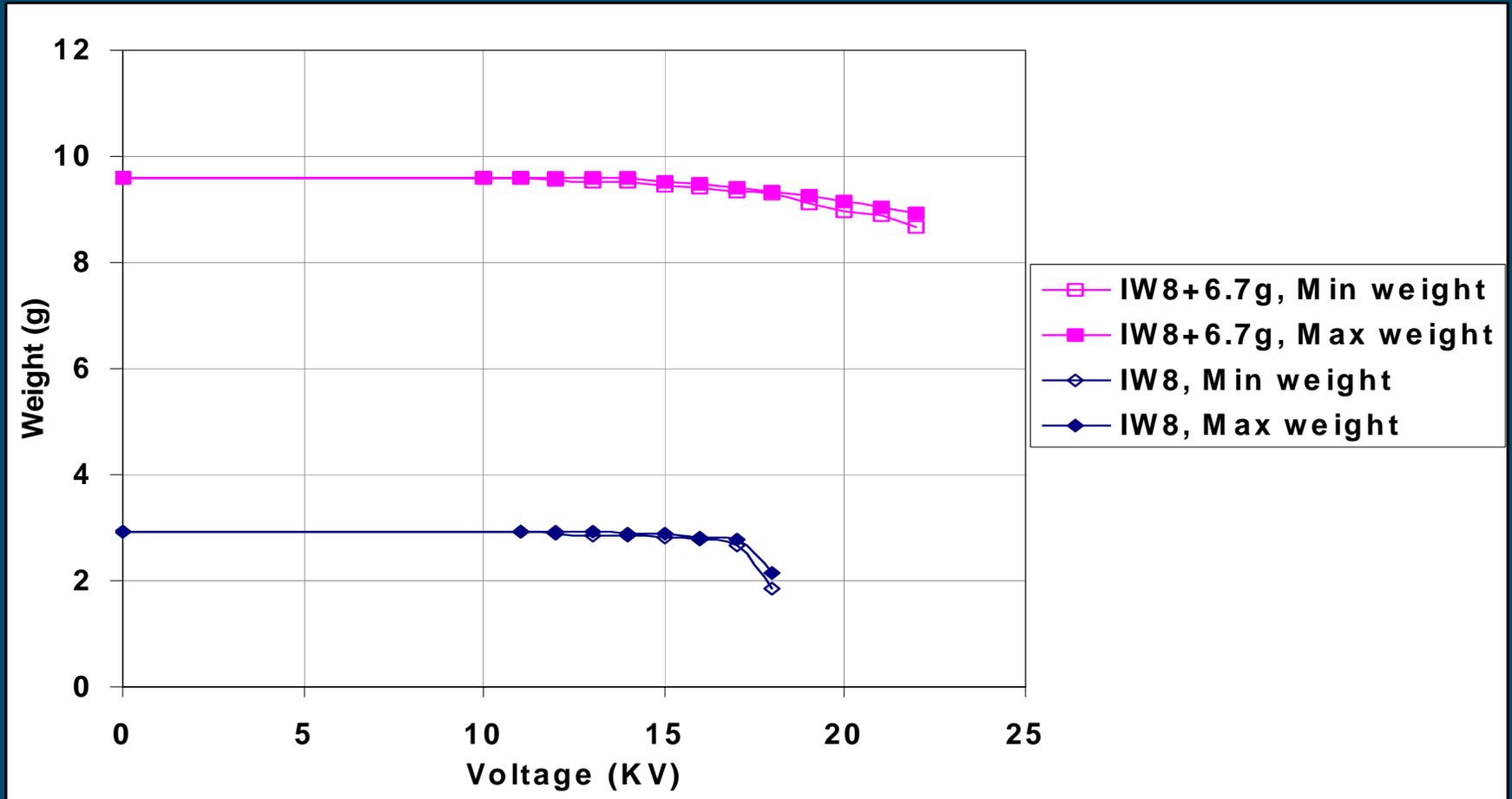
Results – Mass v Power



Mass v wire height, foil height and current



Weight measured on Balance



Results - Summary

- As capacitor plate spacing increases, V increases but current density decrease ... therefore power required is less variable.
- Asymmetry of capacitor plates less significant than the capacitor plate spacing
- The scale effect is not fully characterised as yet , there is an indication that a critical capacitor spacing is necessary.
- Mass is a function of product of current capacitor spacing and collector plate height

Observations

- The greatest force on capacitor is when small electrode is positive.
- The effect occurs in a dielectric medium (air)
- The effect is associated with onset of corona discharge
- The force is independent of spatial orientation
- The details of the physics of the effect is not understood

Observations (2)

- Mechanism generally considered in terms of ionic motion
 - However, has been shown that effect is independent of voltage polarity
 - Also calculations suggest that mass lifted by ionic thrust is more than an order of magnitude less than that observed.
 - Also weight loss observed prior to lifting

Unconventional Science Conclusions

- Unconventional science is by its very nature difficult to verify
 - If you do not understand the underlying science it is difficult to know what are the important boundary conditions.
- A large proportion of the claims made may be down to poor science/ experimental procedure, a sub conscious willingness, nevertheless if any are true then the consequences could be far reaching.
- The initial benefit proposed may not be the major benefit
 - i.e. cold fusion limitless energy perhaps now radioactive waste disposal

Any questions ...?



Experimental Video Clips

