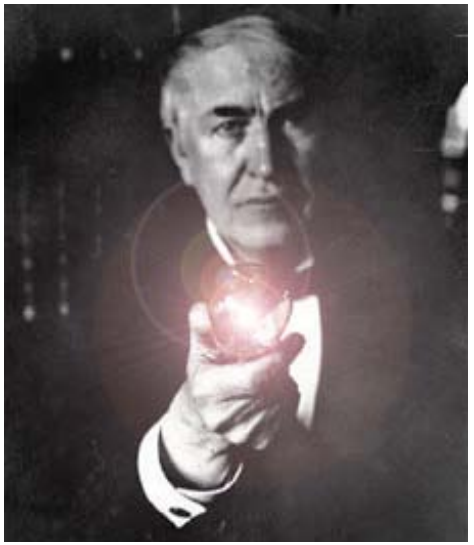
Dr. Randell L. Mills

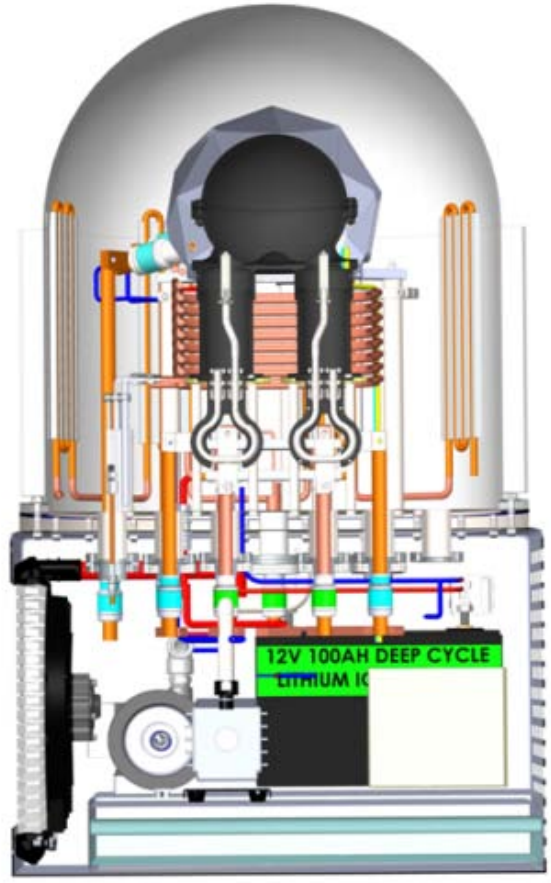
ABM Presentation

About Brilliant Light Power

- Reinventing electricity, independence of being completely off grid
- New, sustainable, nonpolluting energy
- Technology and science validated by independent third parties
- Extensive proprietary methods and systems
- Electricity company, sales via lease agreement, no metering
- Partnership & outsource business model
- Transitioning from research to reality
- Profound implications for electric power – accessible, affordable, clean



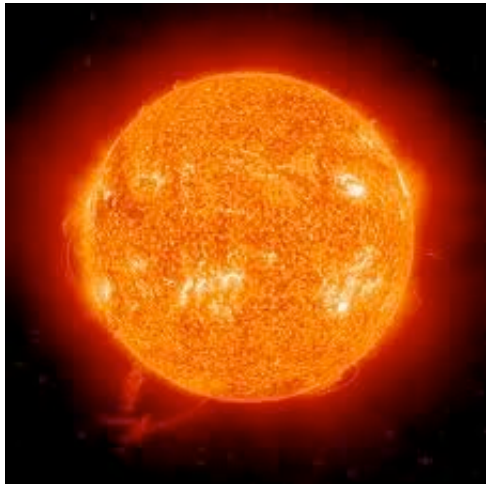
SunCell® - Water Fueled Generator

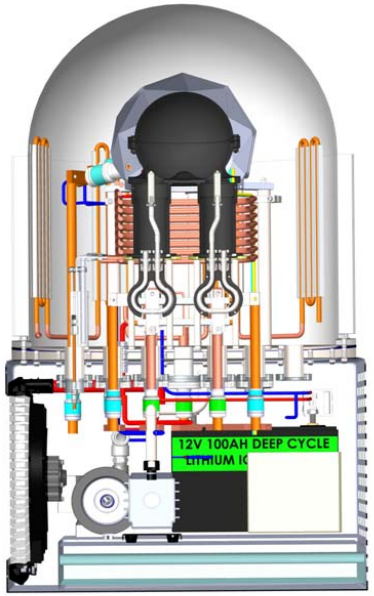


Feature	Est.
Power Output	150 kW DC or AC
DC Voltage	~380 or ~760
AC Inverter for 50/60 Hz	Option
SunCell dimensions (L,W, H)	0.5x0.5x0.5m
Photovoltaic Power Density	2000 Suns
Blackbody Radiator Power Density	5 MW/m2
Weight	100 kg
Warm-up Time	<1 min
Self-consumption power	<3 kW
Response Time (standby to peak)	~100ms
Service Life	15 years
Noise Emission	Sound Proofed
Degree of protection (per IEC 60529)	
Climatic category (per IEC 60721-3-4)	

The Energy Solution: SunCell®

- Continuous power source, developed with proprietary technology
- Non-polluting: by-product is harmless lower energy state of hydrogen called Hydrino®, lighter than air, vents to space
- System is sealed with H_2O fuel injected with nonreactive, recirculated silver, absolutely safe materials and operation
- Capital cost estimated at $50 to $100 per kW at production power & scale, versus $3,463 for solar
- No Metering: Electricity sold at about $0.05 per kWh via a per diem lease fee.
- Low operating cost, only consumable is minimal amounts of water
- Scalable from 10kW to 10 MWs
- Initially stationary, developing to motive
- Field test in 1H 2017
- Commercial launch in 1H 2018



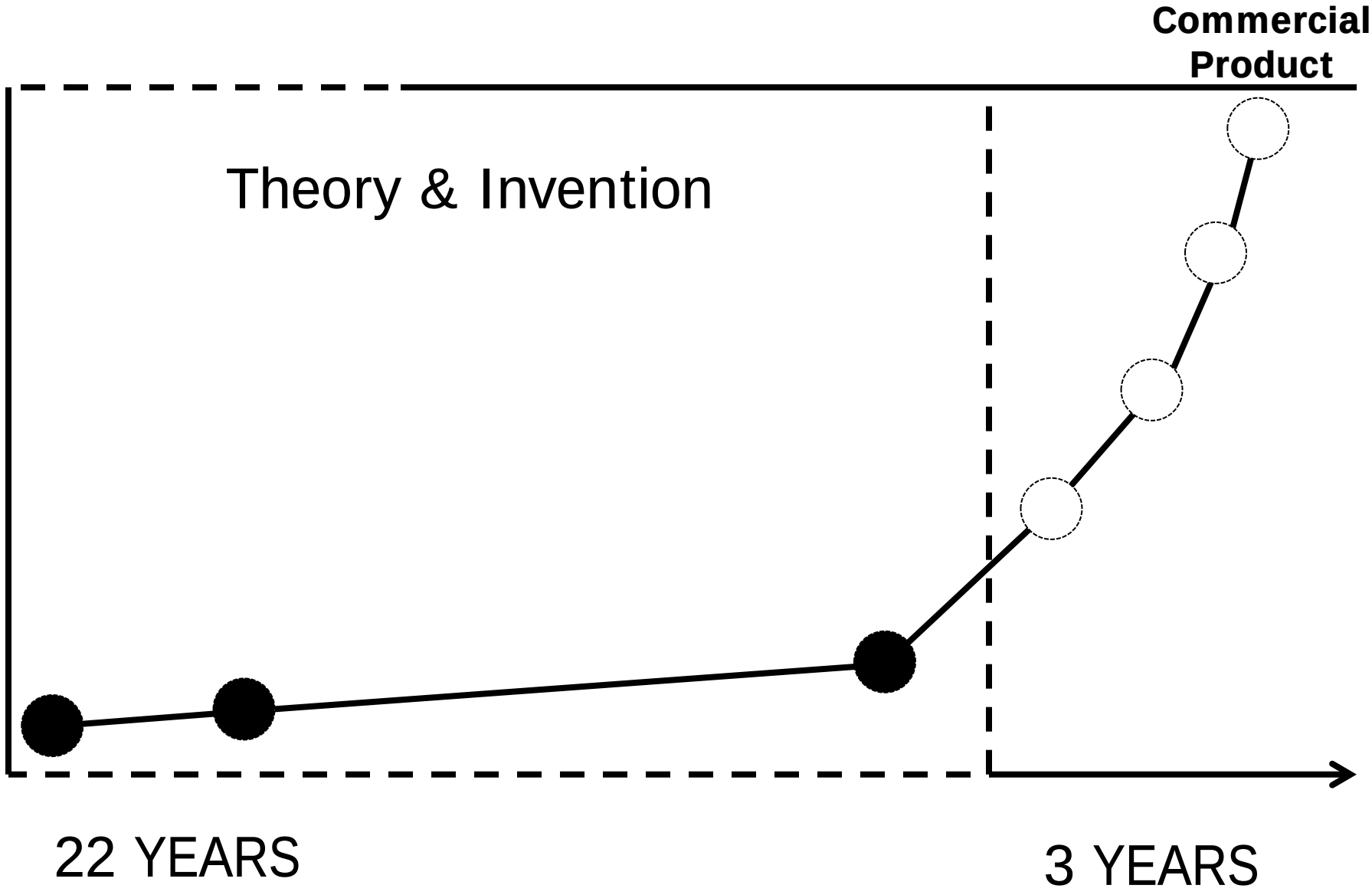


SunCell Economics

- Current Annual Gross Earning Capacity of Any Electrical Generator:
  - o $1/W
- Capital Cost:
  - o $60/kW
- Life Span:
  - o 20 years
- Capital Cost Annually:
  - o $3/kW
- Solar Capital Cost (2013):
  - o $3,463/kW[a]
- Maintenance Cost:
  - o $1.20/kW
- Generation Cost:
  - o $0.001/kWh

[a]http://www.nrel.gov/analysis/tech_lcoe_re_cost_est.html

The SunCell® Development Timeframe



A Long Journey...BUT not a lot of help!

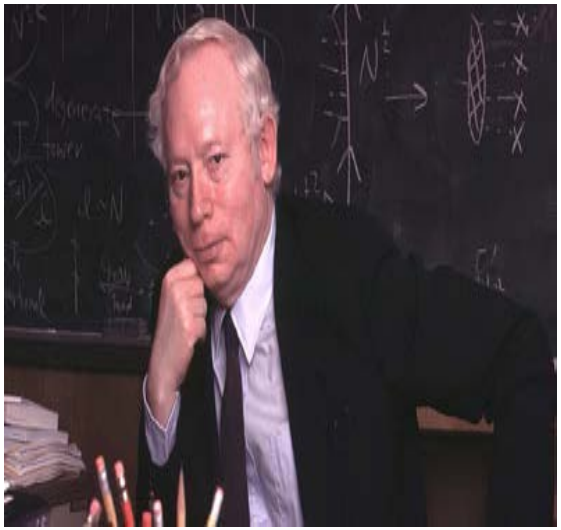
“….it's extremely unlikely that this is real….”

”...there is no state of hydrogen lower than the ground state..."

"If you could fuck around with the hydrogen atom, you could fuck around with the energy process in the sun. You could fuck around with life itself."

Dr Randell L. Mills – World record for pissing-off the largest number of Nobel Laureates

Quantum Mechanics is falling apart since it never dealt with reality and can't!



ScienceNews
MAGAZINE OF THE SOCIETY FOR SCIENCE & THE PUBLIC

CONTEXT
QUANTUM PHYSICS

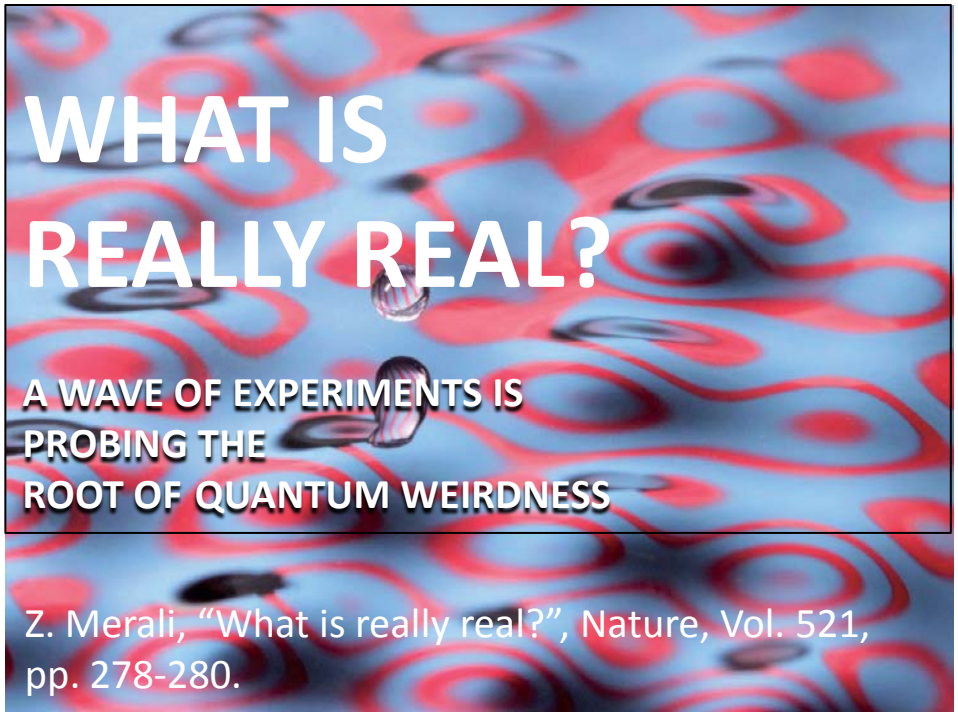
Why quantum mechanics might need an overhaul

Nobel laureate Steven Weinberg says current debates suggest need for new approach to comprehend reality

BY TOM SIEGFRIED 3:37PM, NOVEMBER 4, 2016

Owen Maroney worries that physicists have spent the better part of a century engaging in fraud.

Ever since they invented quantum theory in the early 1900s, explains Maroney, who is himself a physicist at the University of Oxford, UK, they have been talking about how strange it is — how it allows particles and atoms to move in many directions at once, for example, or to spin clockwise and anticlockwise simultaneously. But talk is not proof, says Maroney. "If we tell the public that quantum theory is weird, we better go out and test that's actually true," he says. "Otherwise we're not doing science, we're just explaining some funny squiggles on a blackboard."



Is flawed science causing a failure to invent?

ARE WE OUT OF BIG IDEAS?

Dwindling gains in science, technology and medicine are a hidden drag on economic growth

By Greg Ip

By all appearances, we're in a golden age of innovation. Every month sees new advances in artificial intelligence, gene therapy, robotics and software apps. Research and development as a share of gross domestic product is near an all-time high. There are more scientists and engineers in the U.S. than ever before.

None of this has translated into meaningful advances in Americans' standard of living.

Economies grow by equipping an expanding workforce with more capital such as equipment, software and buildings, then combining capital and labor more creatively. This last element, called "total factor productivity," captures the contribution of innovation. Its growth peaked in the 1950s at 3.4% a year as prior breakthroughs such as electricity, aviation and antibiotics reached their maximum impact. It has steadily slowed since and averaged a pathetic 0.5% for the current decade.

Outside of personal technology, improvements in everyday life have been incremental, not revolutionary. Houses, appliances and cars look much like they did a generation ago. Airplanes fly no faster than in the 1960s. None of the 20 most-prescribed drugs in the U.S. came to market in the past decade.

The innovation slump is a key reason the American standards of living have stagnated since 2000. Indeed, absent a turnaround, that stagnation is likely to continue, deepening the malaise that has left the middle class so dissatisfied.

Economists hotly debate the reasons, but there are several clear forces at play. The hurdles for transforming ideas into commercially successful products have grown. The low-hanging fruit in science,

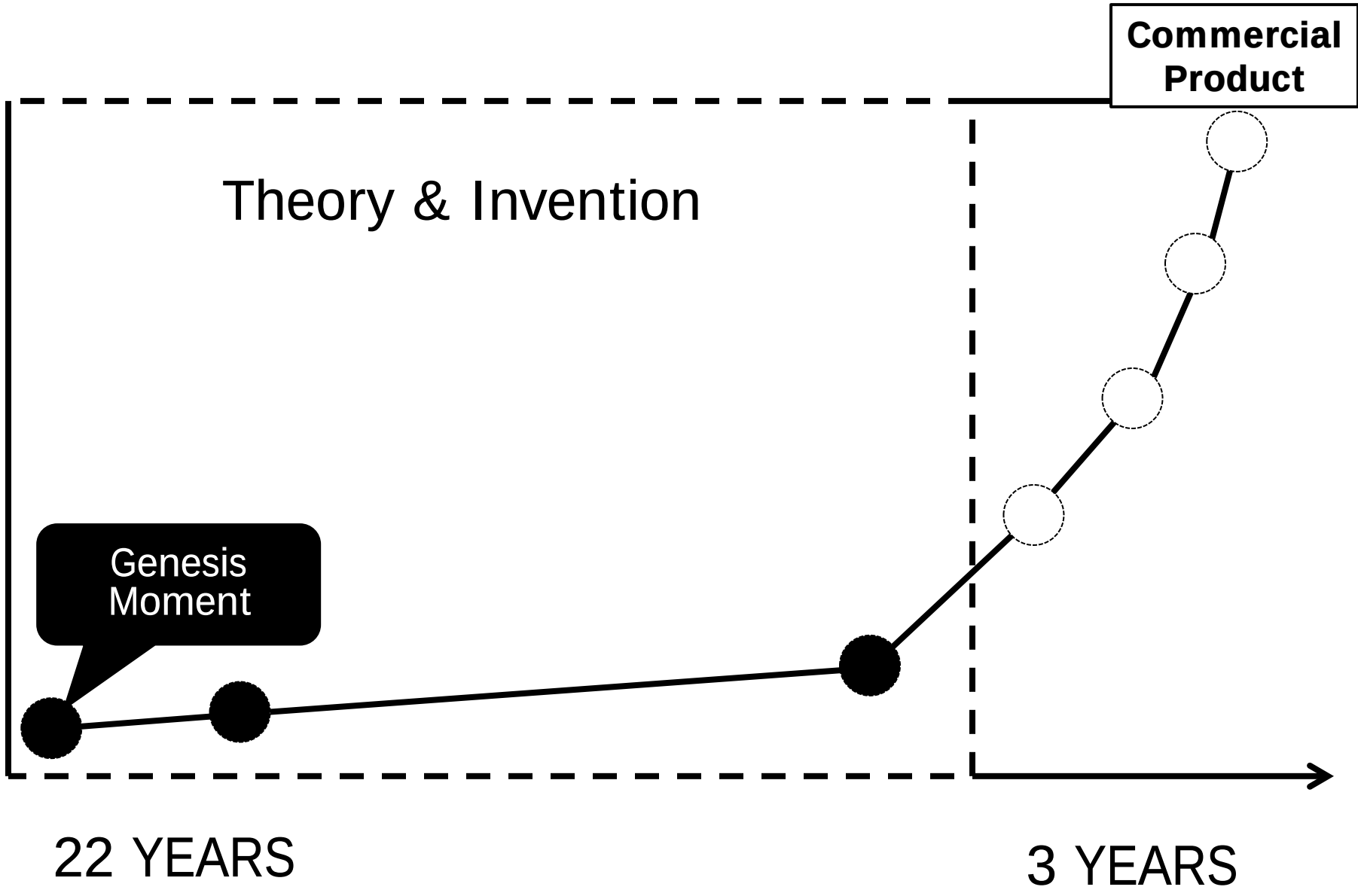
Please see SLUMP page A12

THE INNOVATION PARADOX

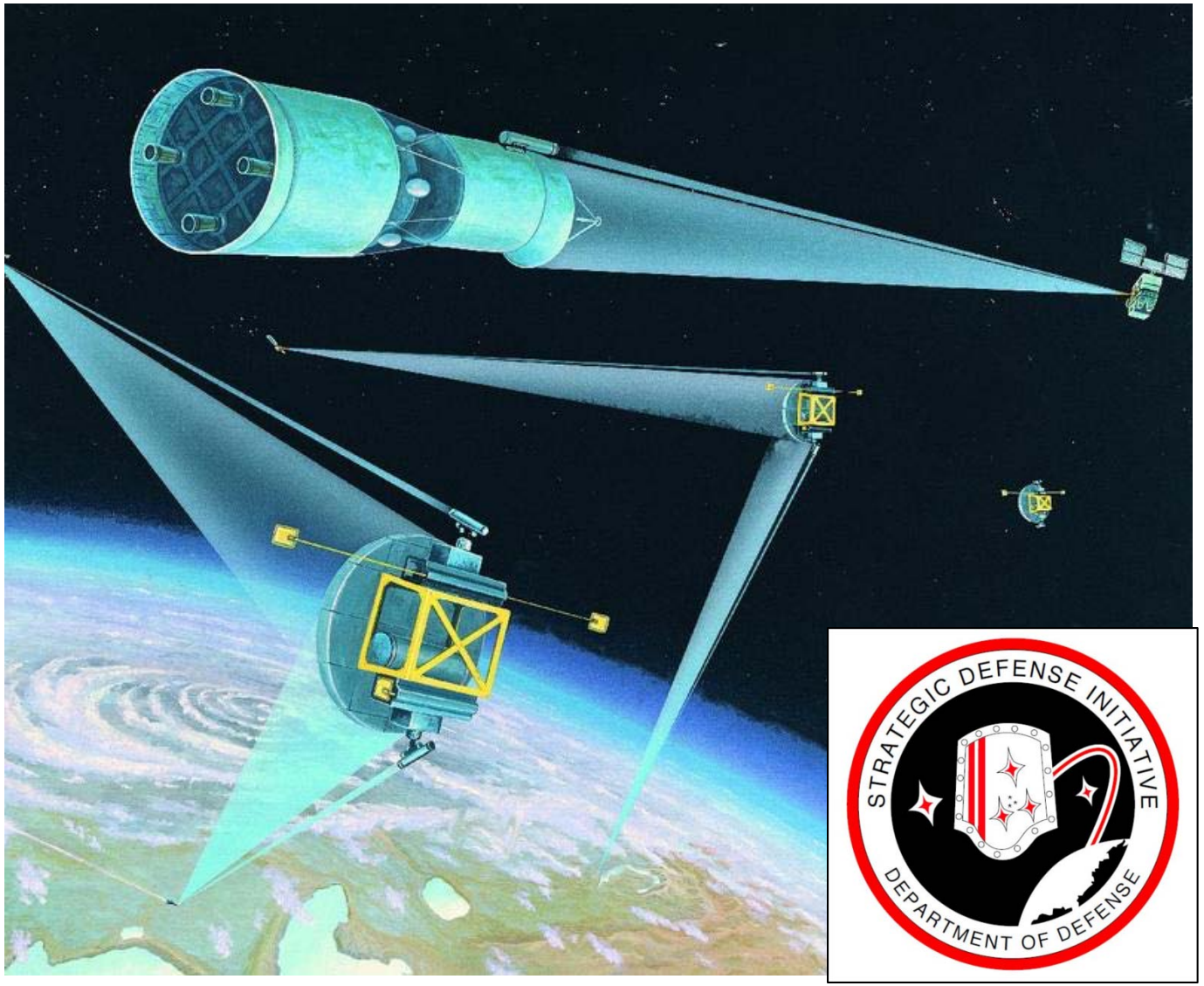
There is a yawning chasm between what innovation promises for the economy and what it is delivering. A Wall Street Journal series, running in full online, explains why and looks at ways to reboot.
on.wsj.com/innovationseries

Source: WSJ article – Greg IP

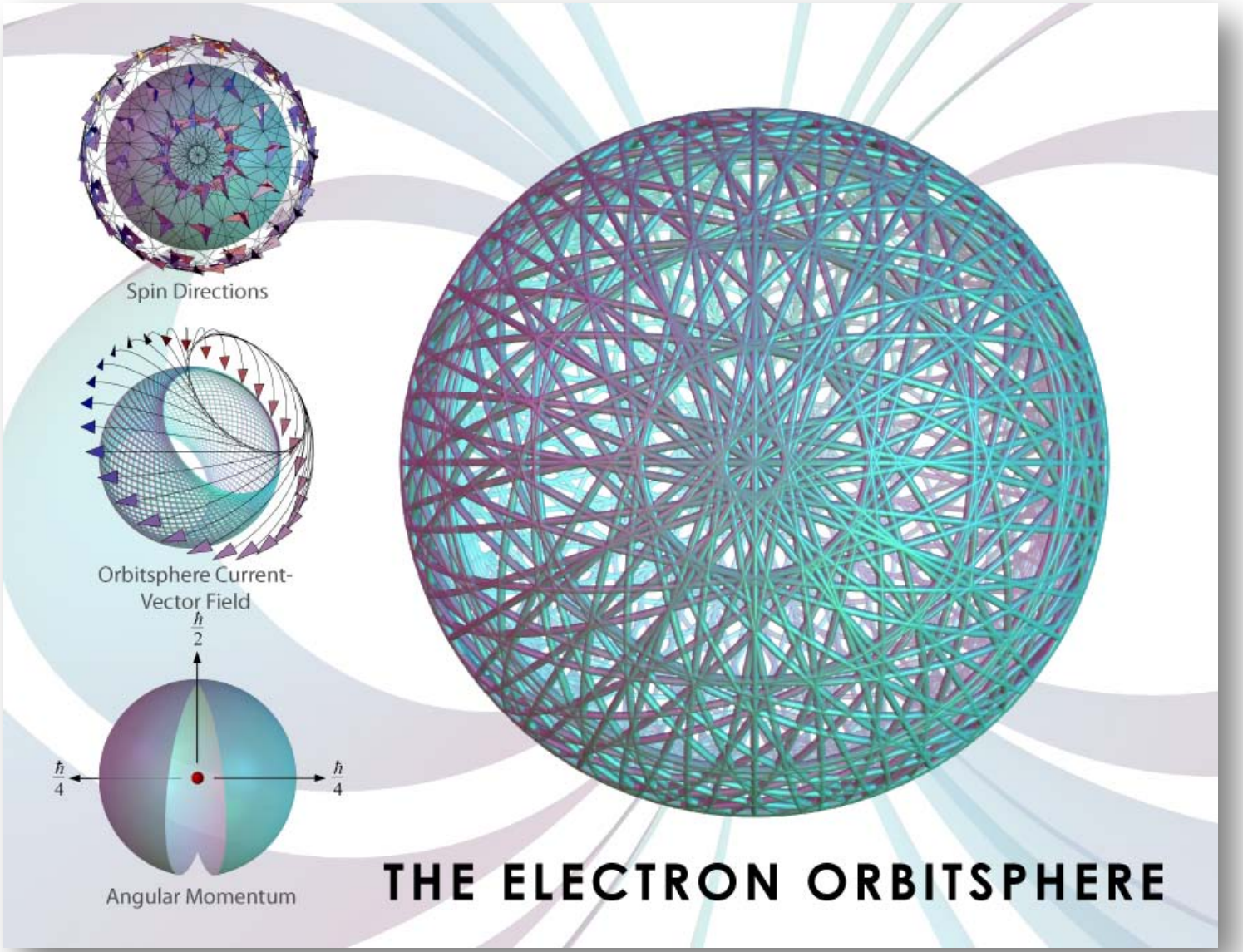
Late 1980's


Commercial Product
Theory & Invention
Genesis Moment
22 YEARS
3 YEARS

Genesis Moment – Free Electron Lasers



Grand Unified Theory of Classic Physics



Partial List of Physical Phenomena Solved by Classical Physics

- Stability of the atom to radiation
- Magnetic moment of a Bohr magneton and relativistic invariance of each of e/m_e of the electron, the electron angular momentum of $\hbar$, and the electron magnetic moment of μ_B from the spin angular momentum
- De Broglie relationship
- Stern Gerlach experiment
- Electron and muon g factors
- Rotational energies and momenta
- Reduced electron mass
- Ionization energies of one-electron atoms
- Special relativistic effects
- Excited states
- Resonant line width and shape
- Selection rules
- Davisson Germer experiment
- Elastic electron scattering from helium atoms
- Ionization energies of multielectron atoms
- Hydride ion binding energy and absolute NMR shift
- Hydride lattice parameters and energies
- Excited states of the helium atom with singlet and triplet vector diagrams
- Proton scattering from atomic hydrogen
- Nature of the chemical bond
- Bond energies, vibrational energies, rotational energies, bond distances, magnetic moment and fields of hydrogen-type molecules and molecular ions, absolute NMR shift of H_2

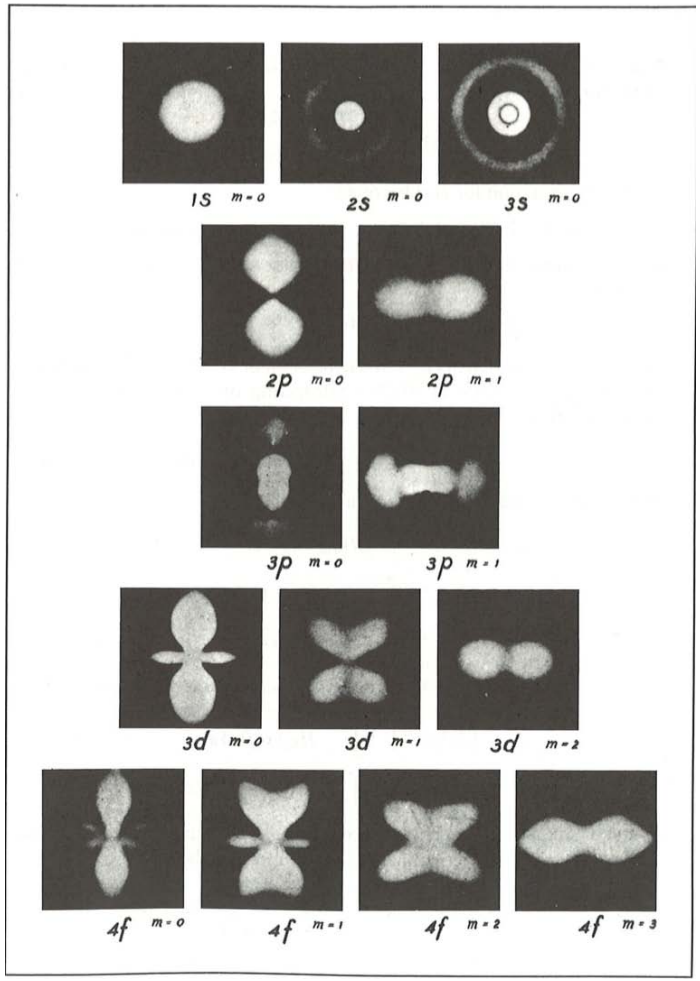
Partial List of Physical Phenomena Solved by Classical Physics

- State Lifetimes and line intensities
- Correspondence principle
- Orbital and spin splitting
- Stark effect
- Lamb Shift
- Knight shift
- Spin-orbit coupling (fine structure)
- Spin-nuclear coupling (hyperfine structure)
- Hyperfine structure interval of muonium
- Nature of the free electron
- Nature of the photon
- Photoelectric effect
- Compton effect
- Wave-particle duality
- Double-slit experiment for photons and electrons
- Alpha decay
- Nature of neutrinos
- Proton radius puzzle
- Molecular Ion and Molecular Excited States
- Parameters of polyatomic molecules
- Superconductivity and Josephson junction experiments
- Integral and fractional quantum Hall effects
- Aharonov-Bohm effect
- Aspect experiment
- Durr experiment on the Heisenberg Uncertainty Principle
- Penning trap experiments on single ions
- Mobility of free electrons in superfluid helium
- Gravitational behavior of neutrons
- Hyperfine structure interval of positronium
- Structure of nucleons
- Magnetic moments of the nucleons
- Beta decay energy of the neutron
- Binding energy of deuterium

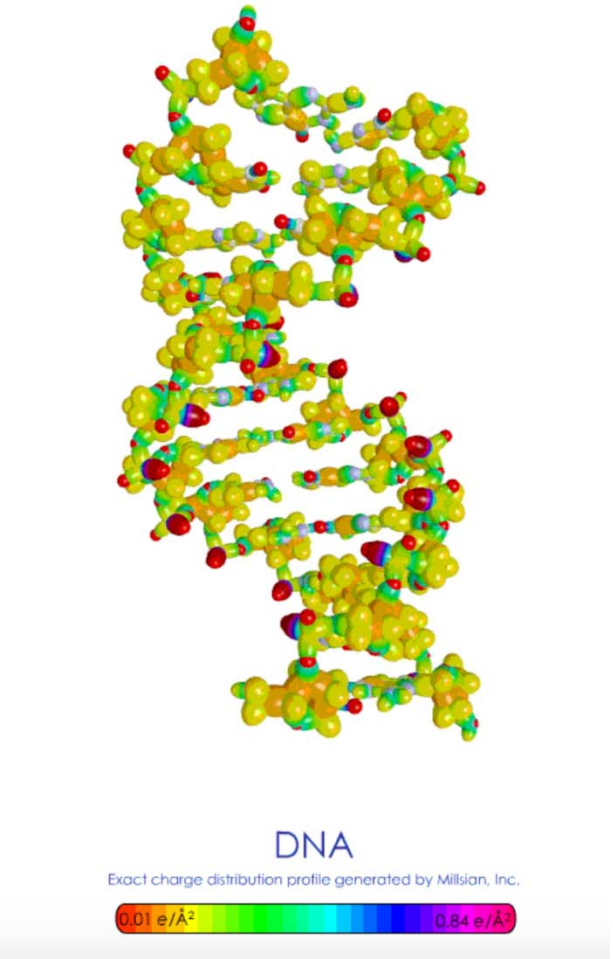
Partial List of Particle and Cosmological Phenomena Solved by Classical Physics

- Equivalence of the inertial and gravitational masses
- Newton's second law
- Deflection of light by stars
- Precession of the perihelion of Mercury
- Lepton masses
- Quark masses
- Hubble constant
- Age of the universe
- Observed acceleration of the expansion
- Power of the universe
- Power spectrum of the universe
- Microwave background temperature
- Uniformity of the microwave background radiation
- Microkelvin spatial variation of the cosmic microwave background radiation (CMBR)
- Polarization of the CMBR data
- Observed violation of the GZK cutoff
- Mass density of the universe
- Large scale structure of the universe

Prediction with incredible accuracy



Quantum illustration of the probability densities in various states of the hydrogen atom

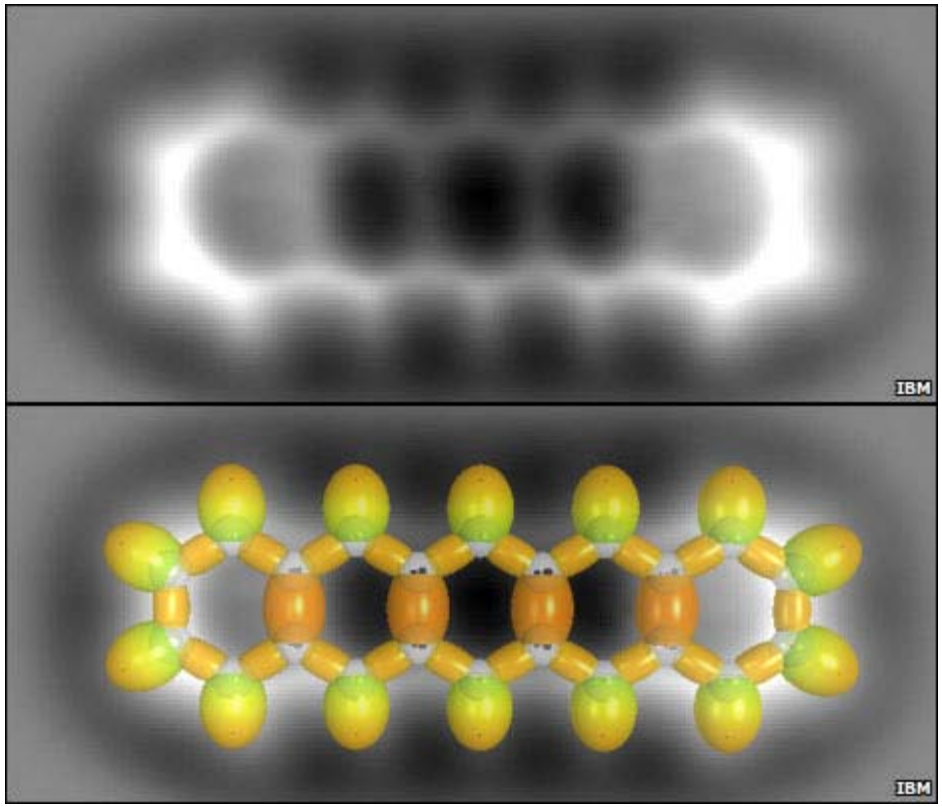


DNA (1DC0) model as generated by Millsian 2.0 Beta, and rendered with POV-ray.

Physical Image Compared to Physical Solution

The polycyclic aromatic hydrocarbon pentacene was imaged by atomic force microscopy using a single CO molecule as the probe. The resulting breakthrough in resolution revealed that in contrast to the fuzzy images touted by quantum theoreticians as proof of the cloud model of the electron, the images showed localized bonding MOs and AOs in agreement with the classical solution.

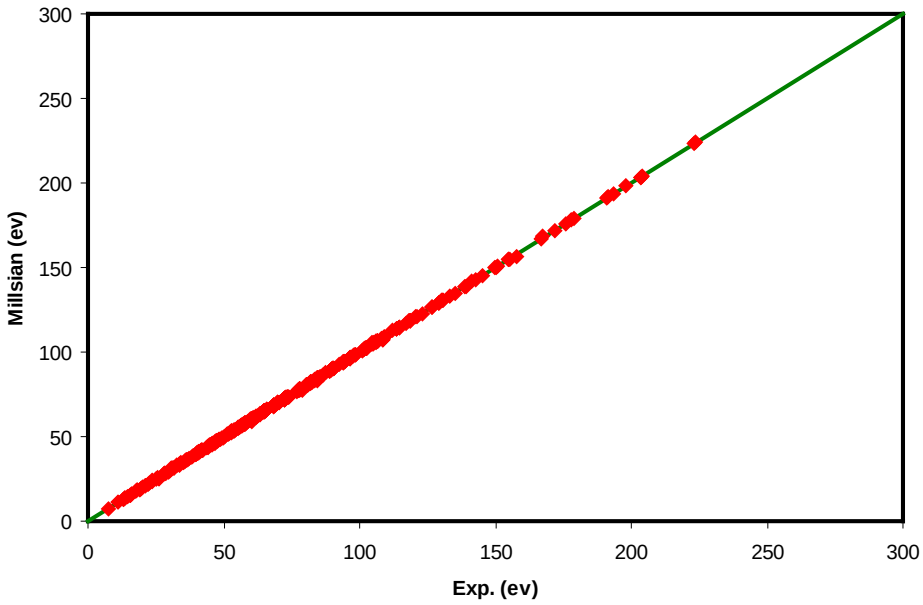
Top, atomic force microscopy image of pentacene by Gross et al. Bottom, the superimposed analytical classical solution that matches the physical structure.

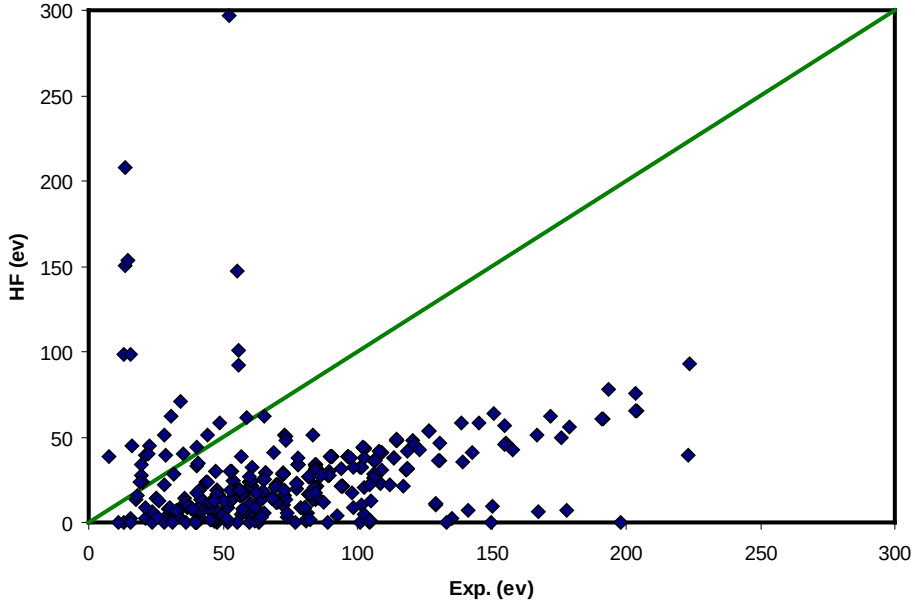


[L. Gross, F. Mohn, N. Moll, P. Liljeroth, G. Meyer, "The chemical structure of a molecule resolved by atomic force microscopy", Science, Vol. 325, (2009), pp. 1110-1114.]

Comparison of Classical to Quantum

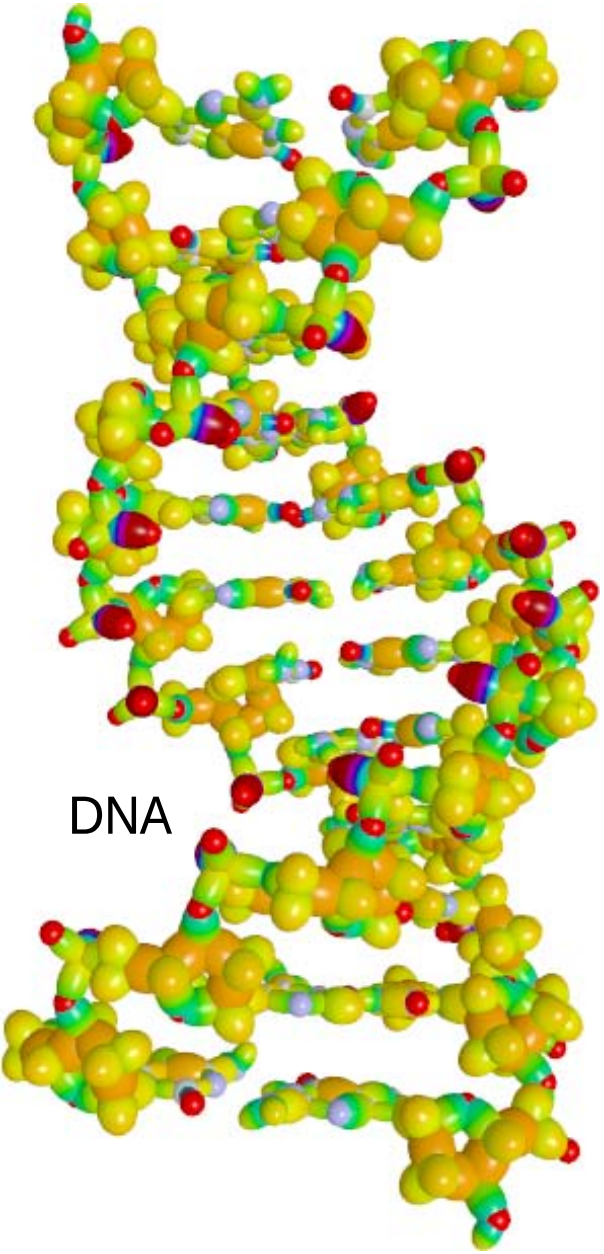
Millsian vs. 6-31G*



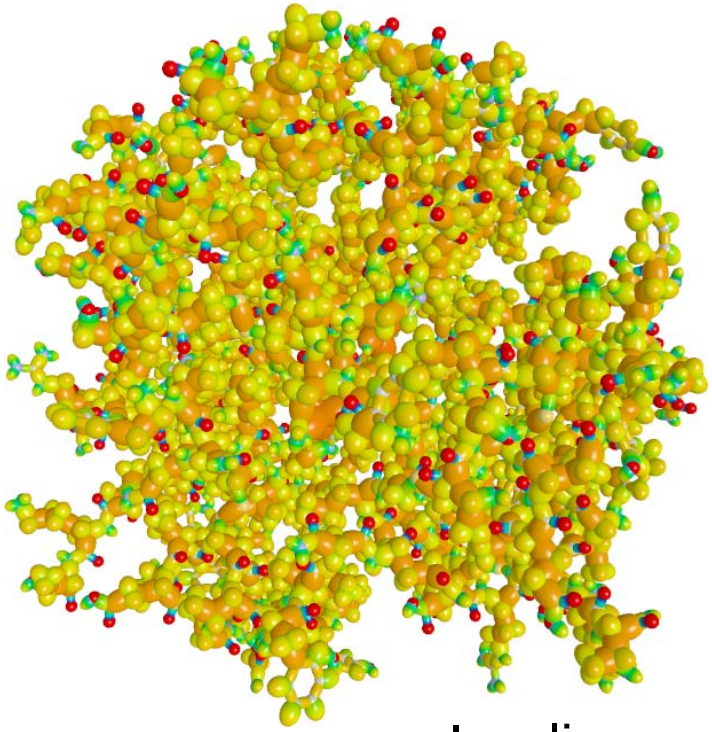


R. L. Mills, B. Holverstott, W. Good, A. Makwana, J. Paulus, “Total Bond Energies of Exact Classical Solutions of Molecules Generated by Millsian 1.0 Compared to Those Computed Using Modern 3-21G and 6-31G* Basis Sets,” Phys. Essays 23, 153 (2010); doi: 10.4006/1.3310832

Millsian 2.0: Modeling Molecules

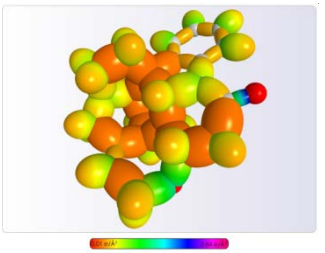


DNA

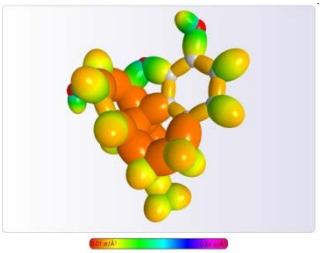


Insulin

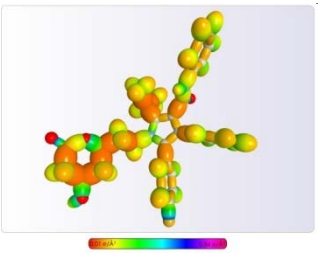
Strychnine



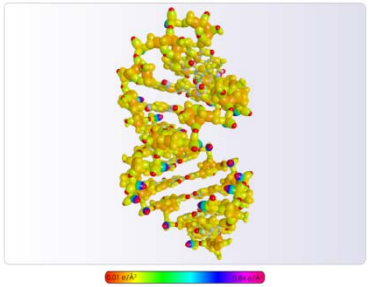
Morphine



Lipitor



RNA



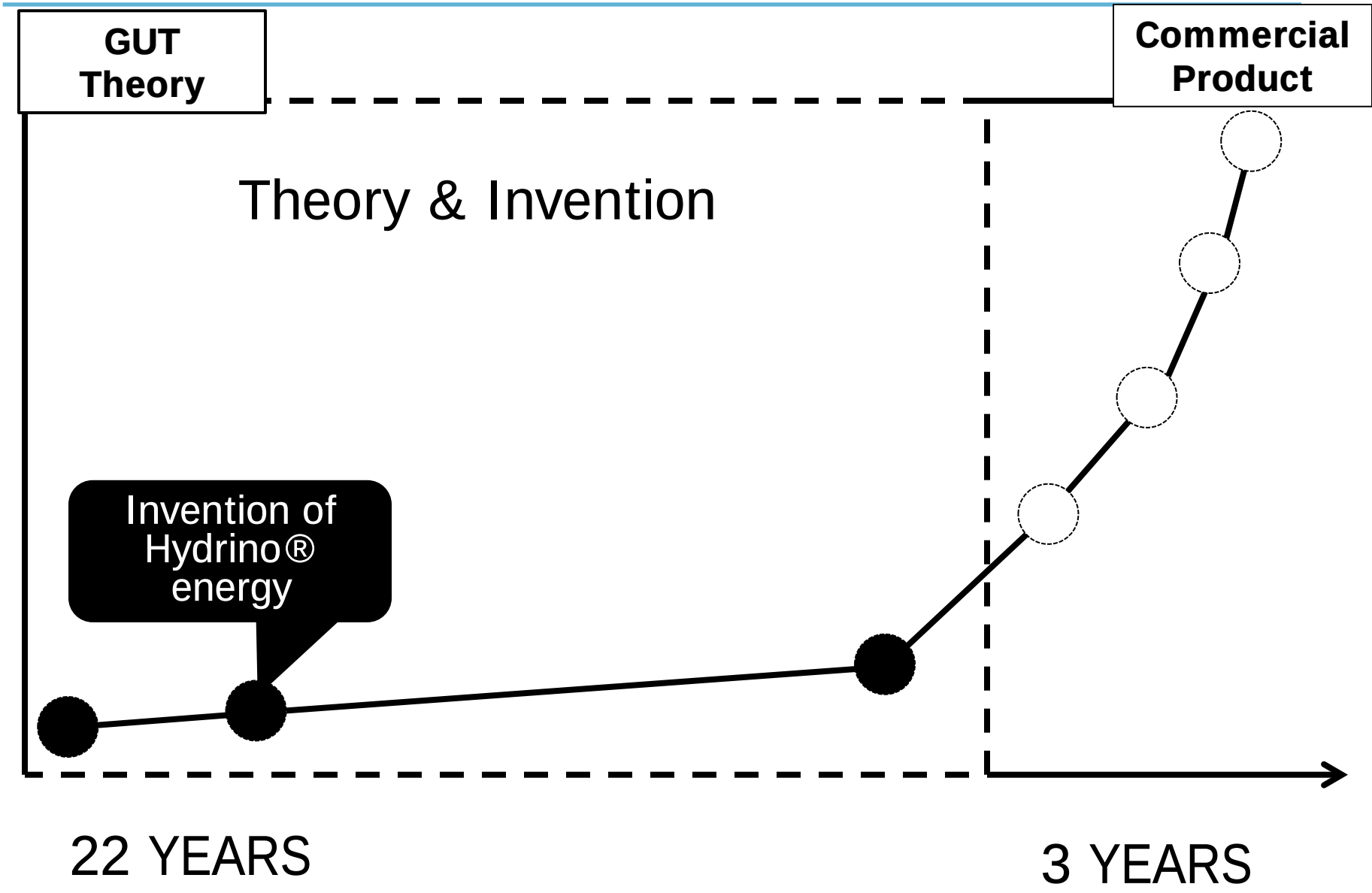
millsian.com

Over 100 peer reviewed publications

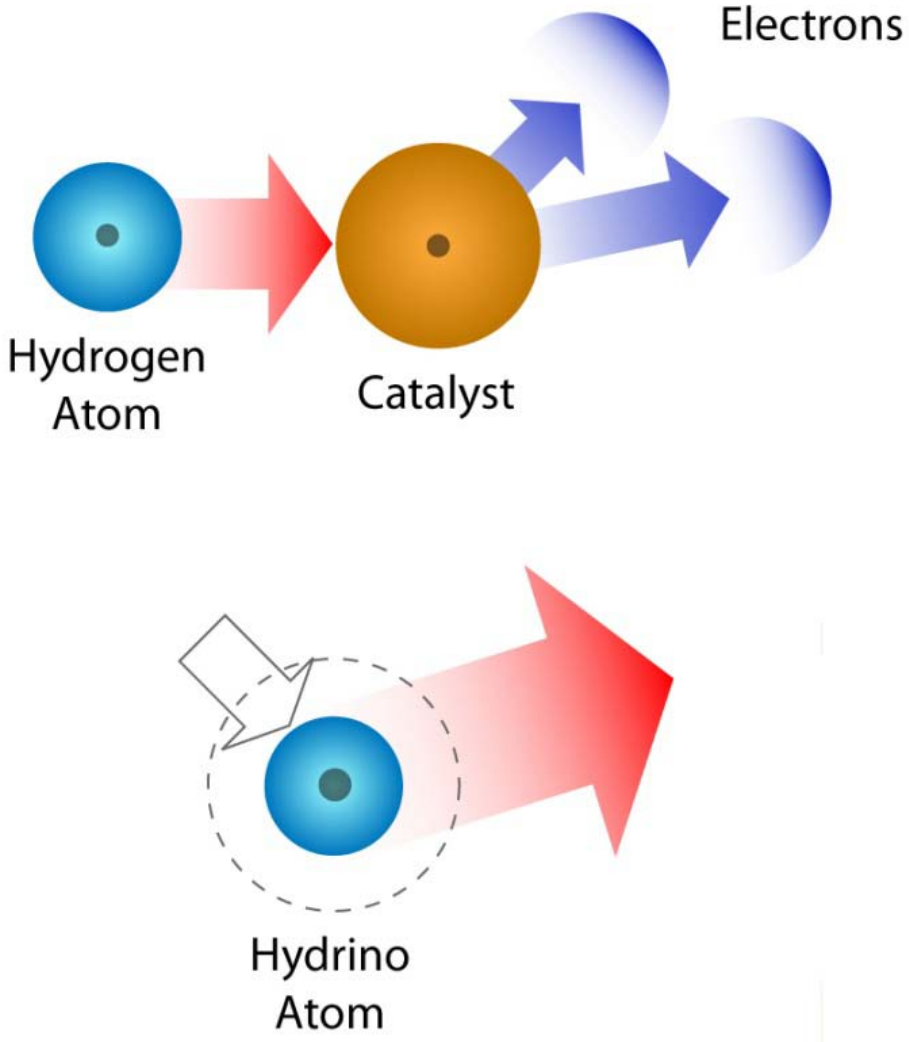

OK... So I've solved the mysteries of the Universe.....
Now what?

Lets create energy from water....

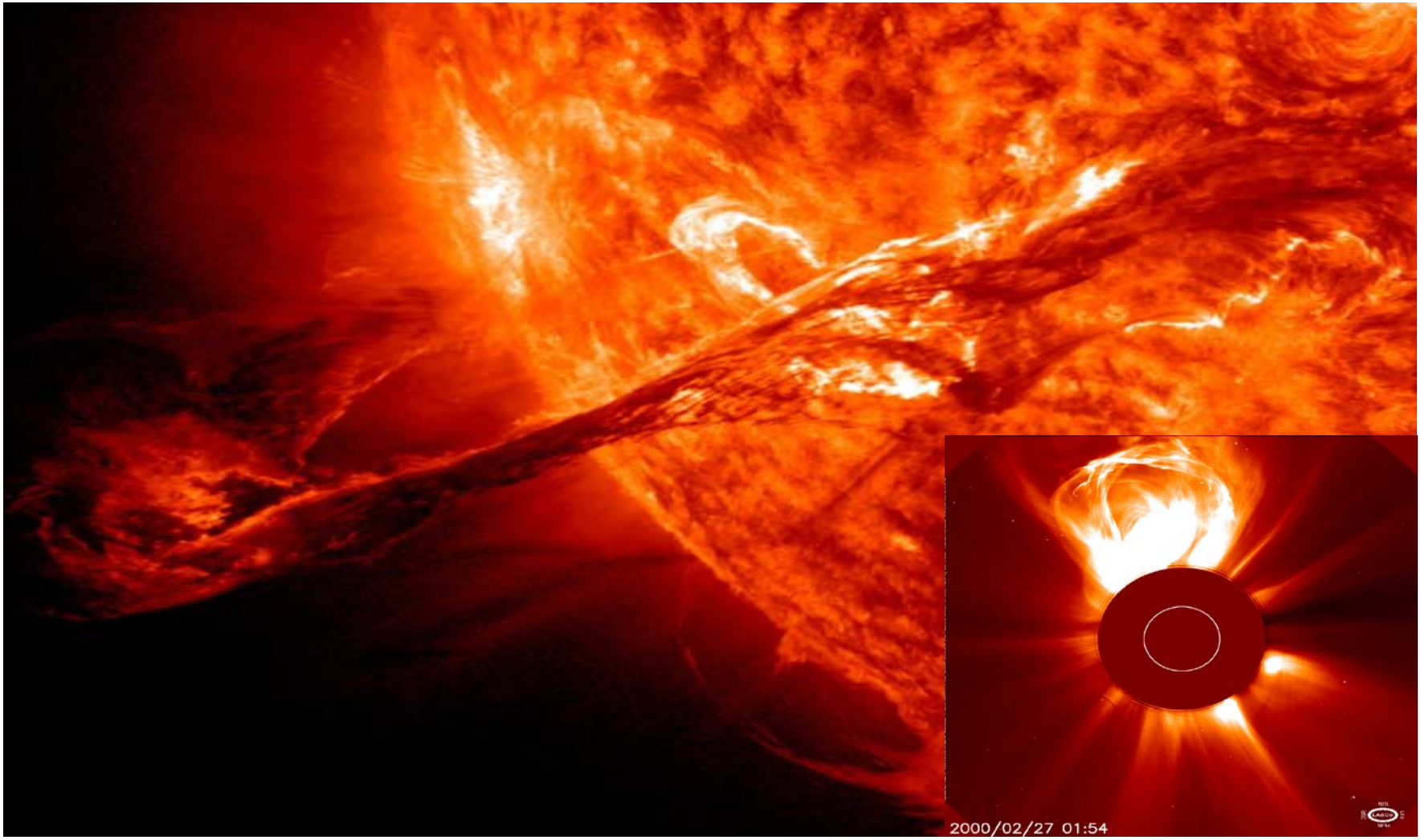
1991-1995


GUT Theory
Commercial Product
Theory & Invention
Invention of Hydrino® energy
22 YEARS
3 YEARS

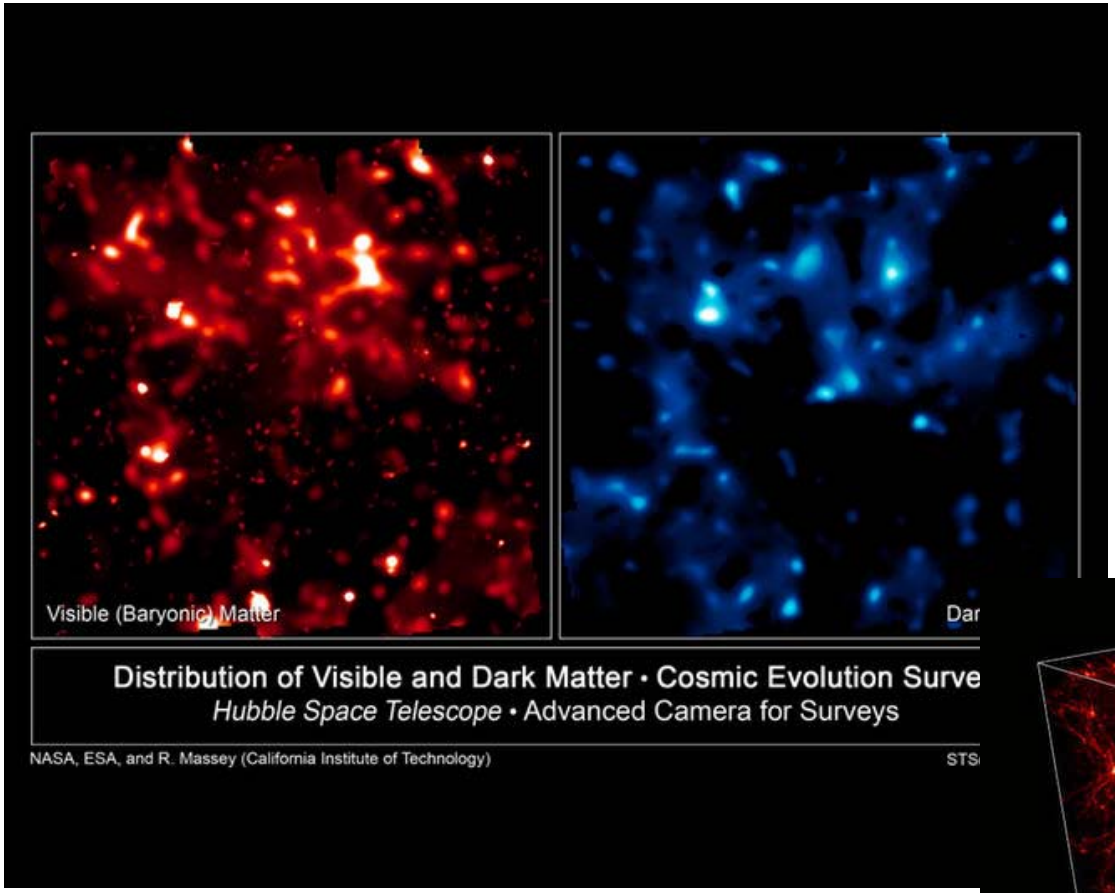
Invention of the Hydrino® energy

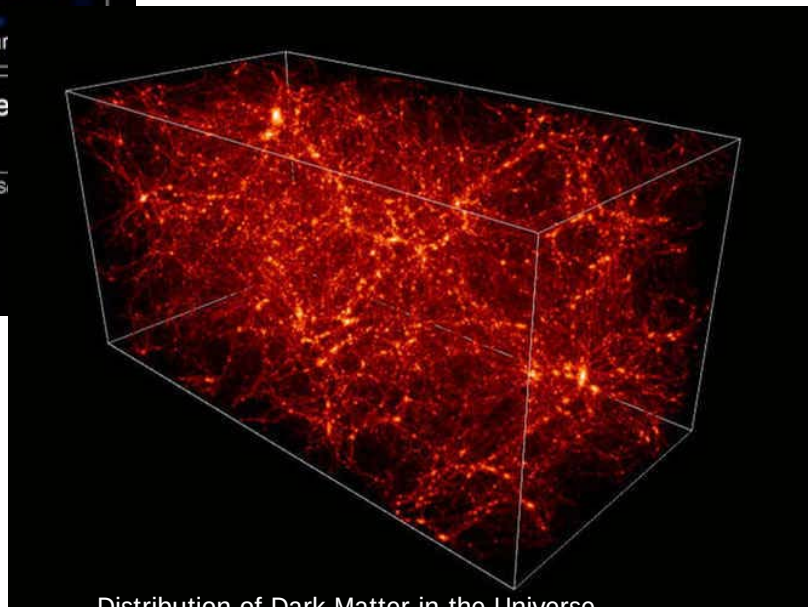


The Hydrino® and the Suns corona



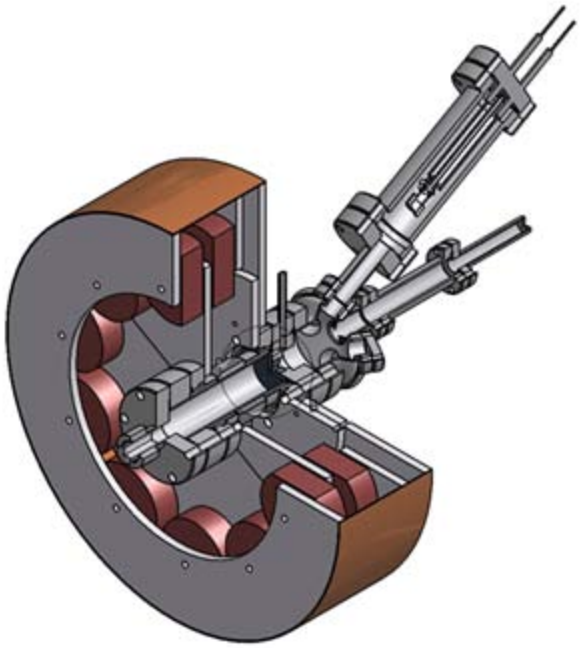
Dark Matter: The Hydrino® observed in nature

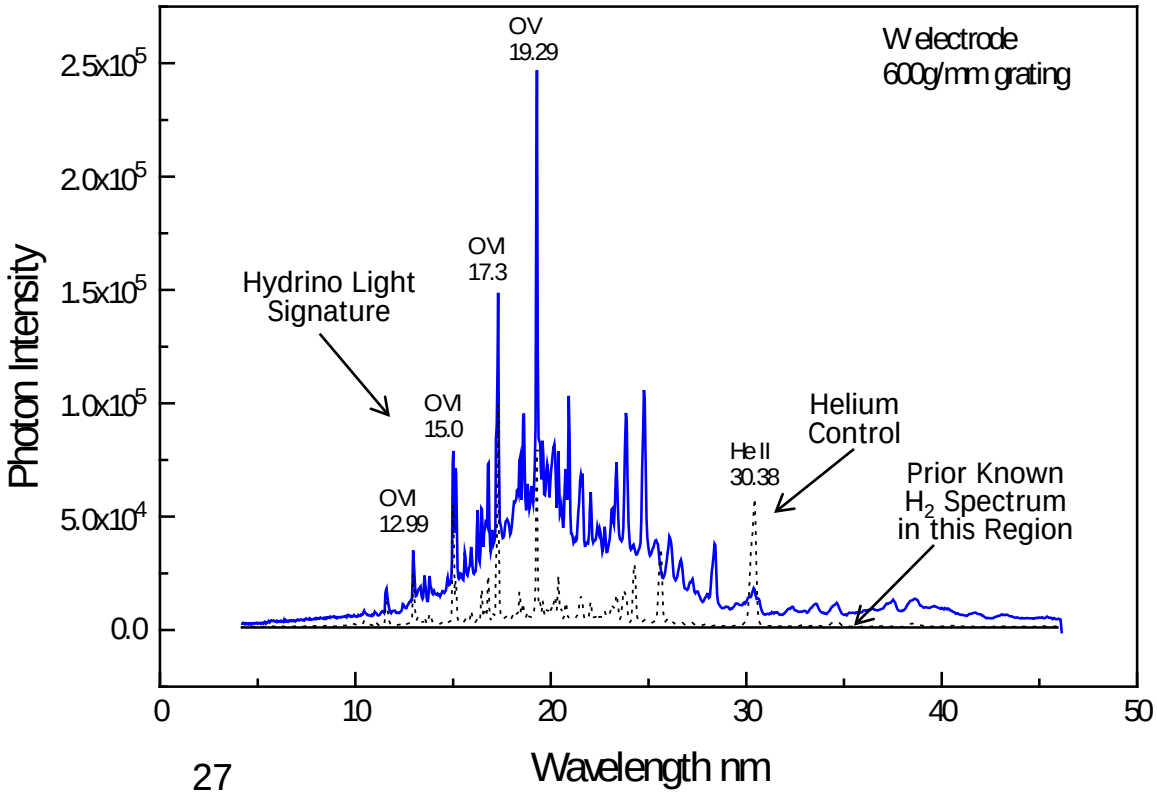




Hydrino Light Signature

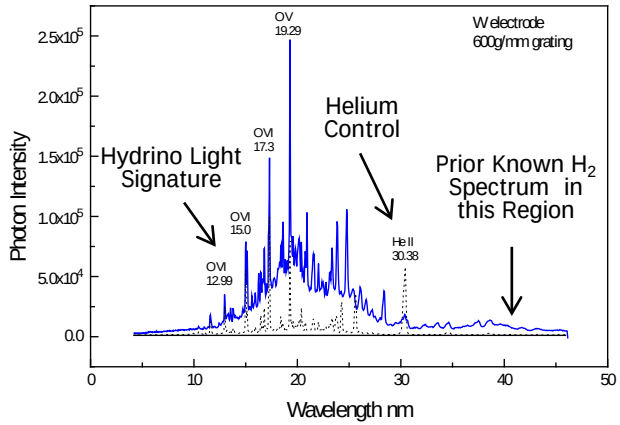
- Experimental Setup for the Observation of the Hydrino Light Signature
  - Light signature from pure hydrogen at much higher energy than deemed possible for this element in any known form
  - Continuum radiation showing H going below the level previously thought to be the “Ground State”





Dark Matter ring in galaxy cluster

$$\lambda = \frac{91.2}{m^2}\ nm \quad (\text{m} = \text{integer})$$

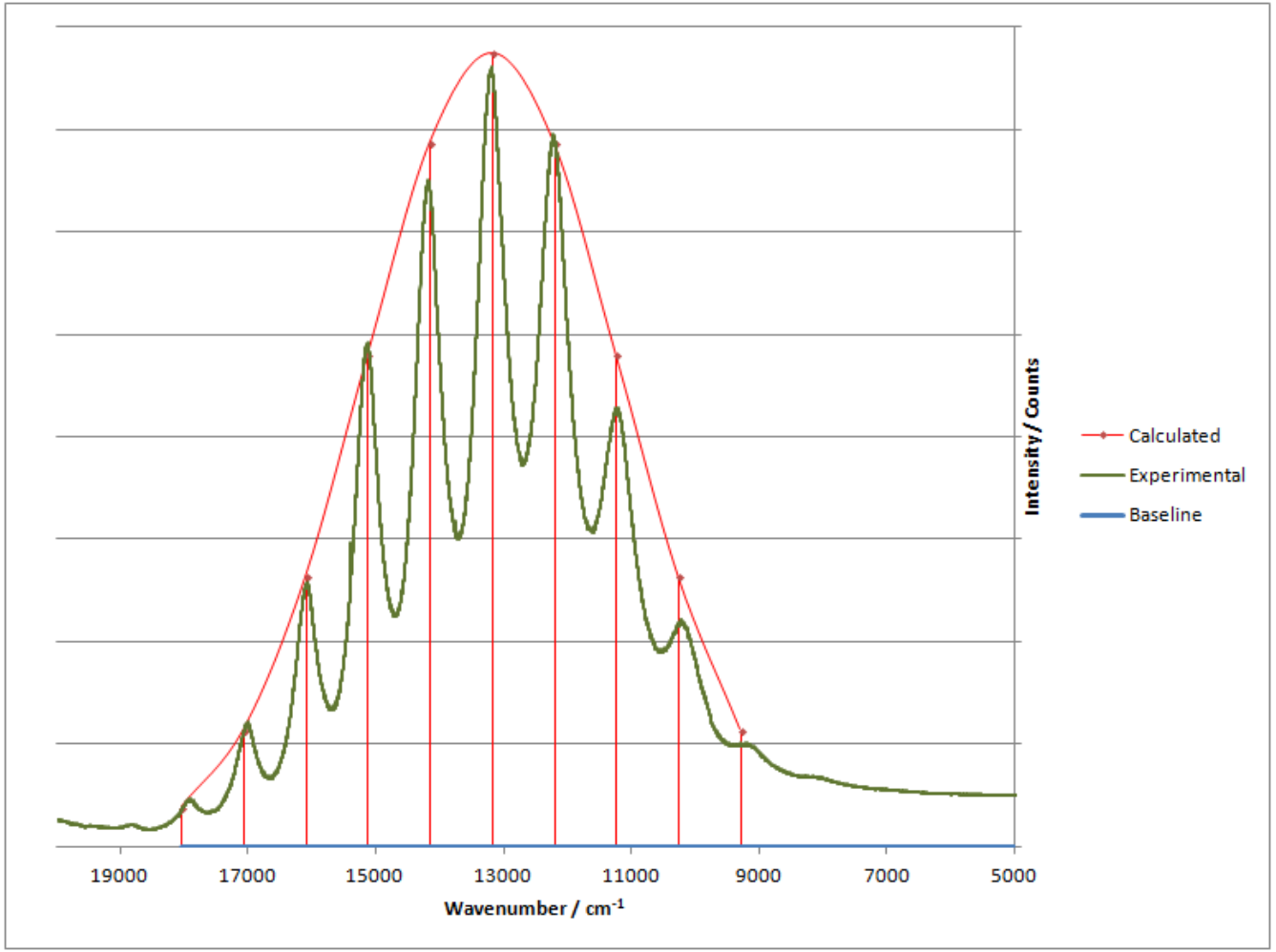


Hydrino Identification

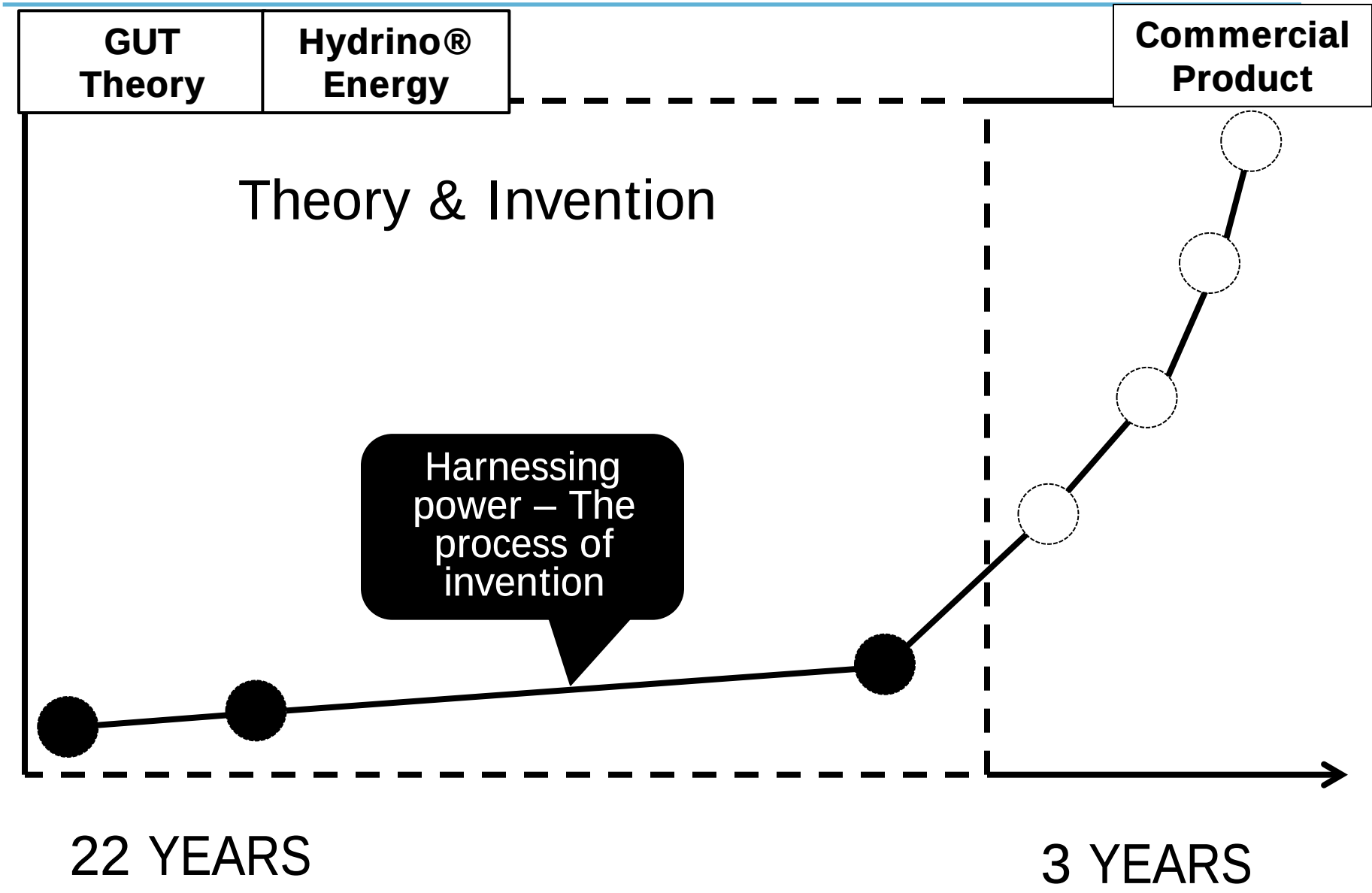
- GUT
- Molecular modeling
- H(1/2) and H(1/4) hydrino transitions observed by continuum radiation
- Astronomy data verifying hydrinos such as H(1/2), H(1/3), and H(1/4) hydrino transitions
- H^-(1/2) hyperfine structure
- H_2 (1/4) XPS binding energy
- H_2 (1/4) ro-vib spectrum in crystals by e-beam excitation
- H_2 (1/4) FTIR
- H_2 (1/4) Raman
- H_2 (1/4) Photoluminescence spectroscopy
- Fast H in plasma including microwave and rt-plasmas
- Rt-plasma with filament and discharge
- Afterglow
- Highly pumped states
- H inversion
- Power with multiple solid fuels chemistries
- SunCell energetic plasma
- ToF-SIMS and ESI-ToF identification of hydrino hydride compounds
- Solid H NMR
- H (1/4) spin-nuclear hyperfine transition
- Electricity gain over theoretical in CIHT cells

Data Comparison

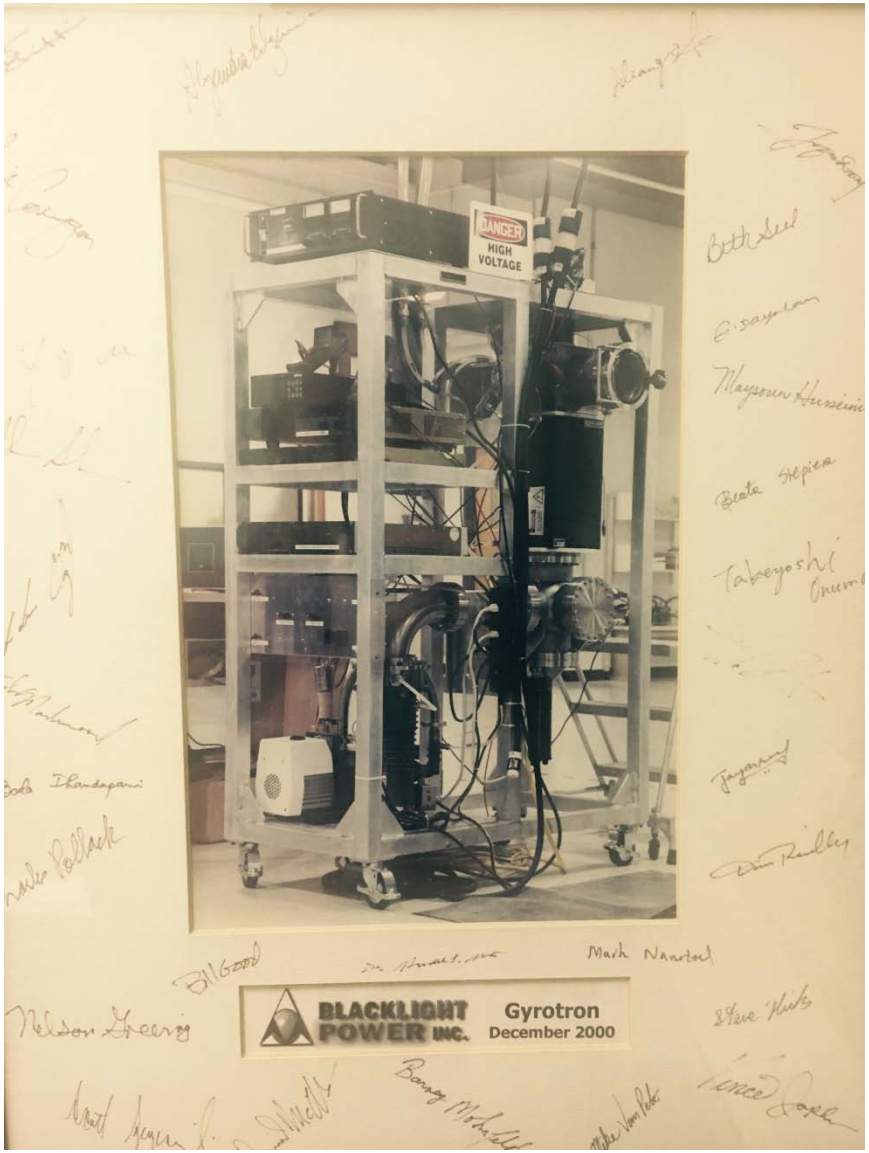
A plot comparison between the theoretical energies and assignments given on the previous slide with the observed Raman spectrum.



1995-2013

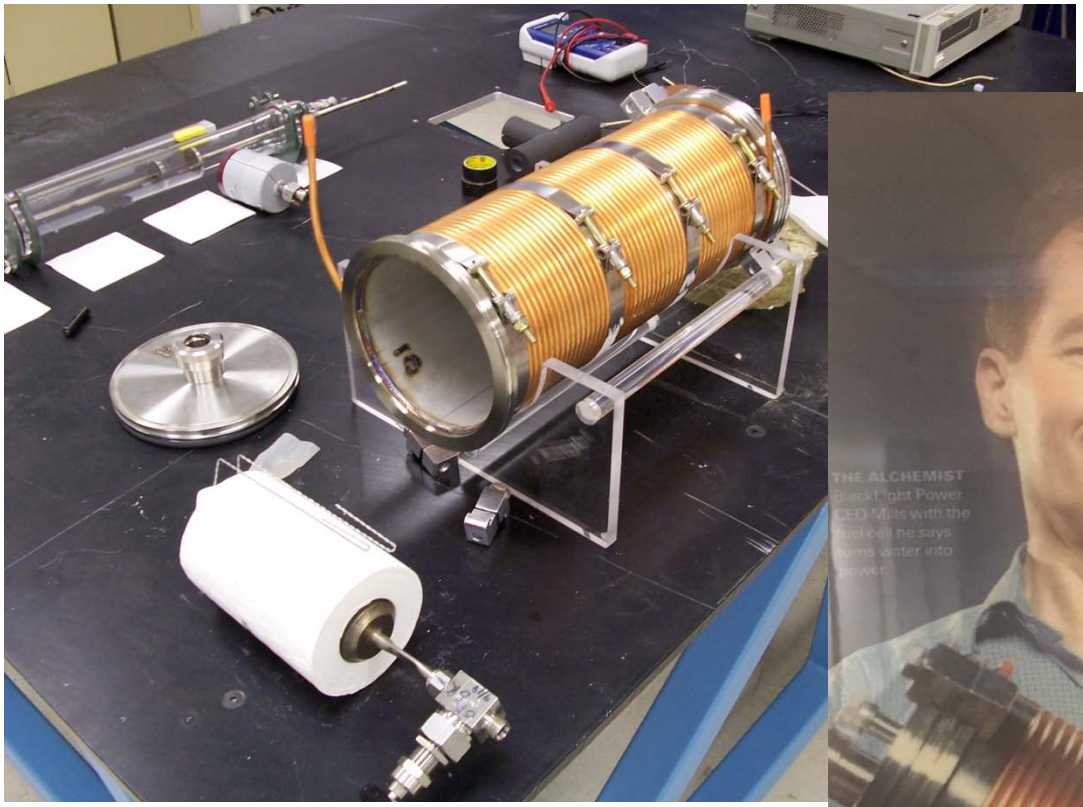

GUT Theory
Hydrino® Energy
Commercial Product
Theory & Invention
Harnessing power – The process of invention
22 YEARS
3 YEARS

Harnessing power - The process of invention



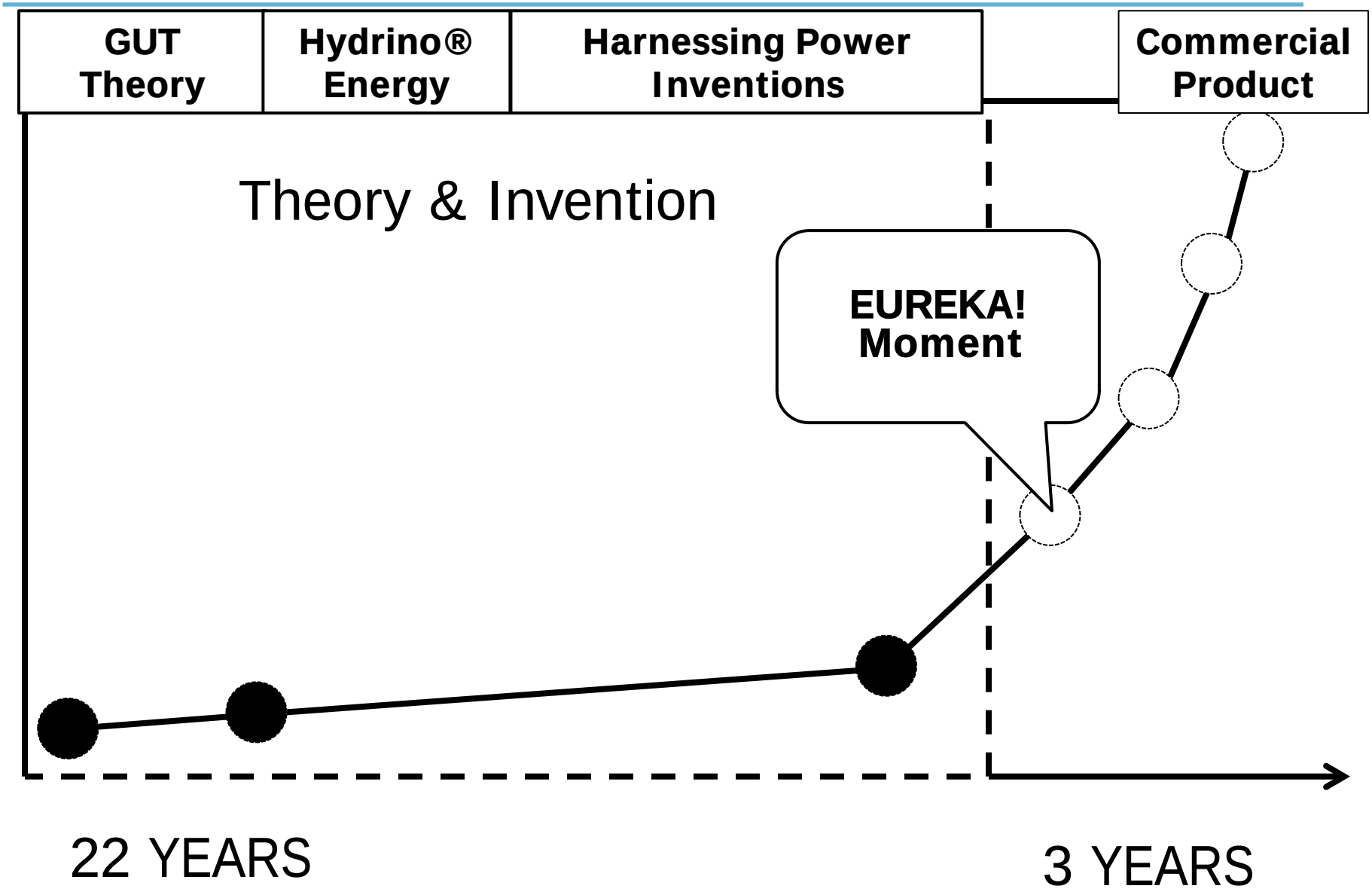
.....some more invention

....and more invention



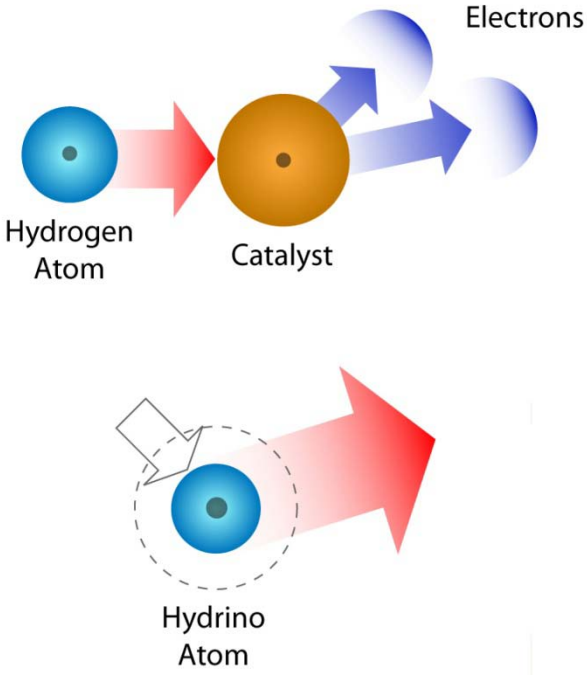
.....and still more invention

Fall 2013


GUT Theory
Hydrino® Energy
Harnessing Power Inventions
Commercial Product
Theory & Invention
EUREKA! Moment
22 YEARS
3 YEARS

EUREKA! moment – The 3rd step

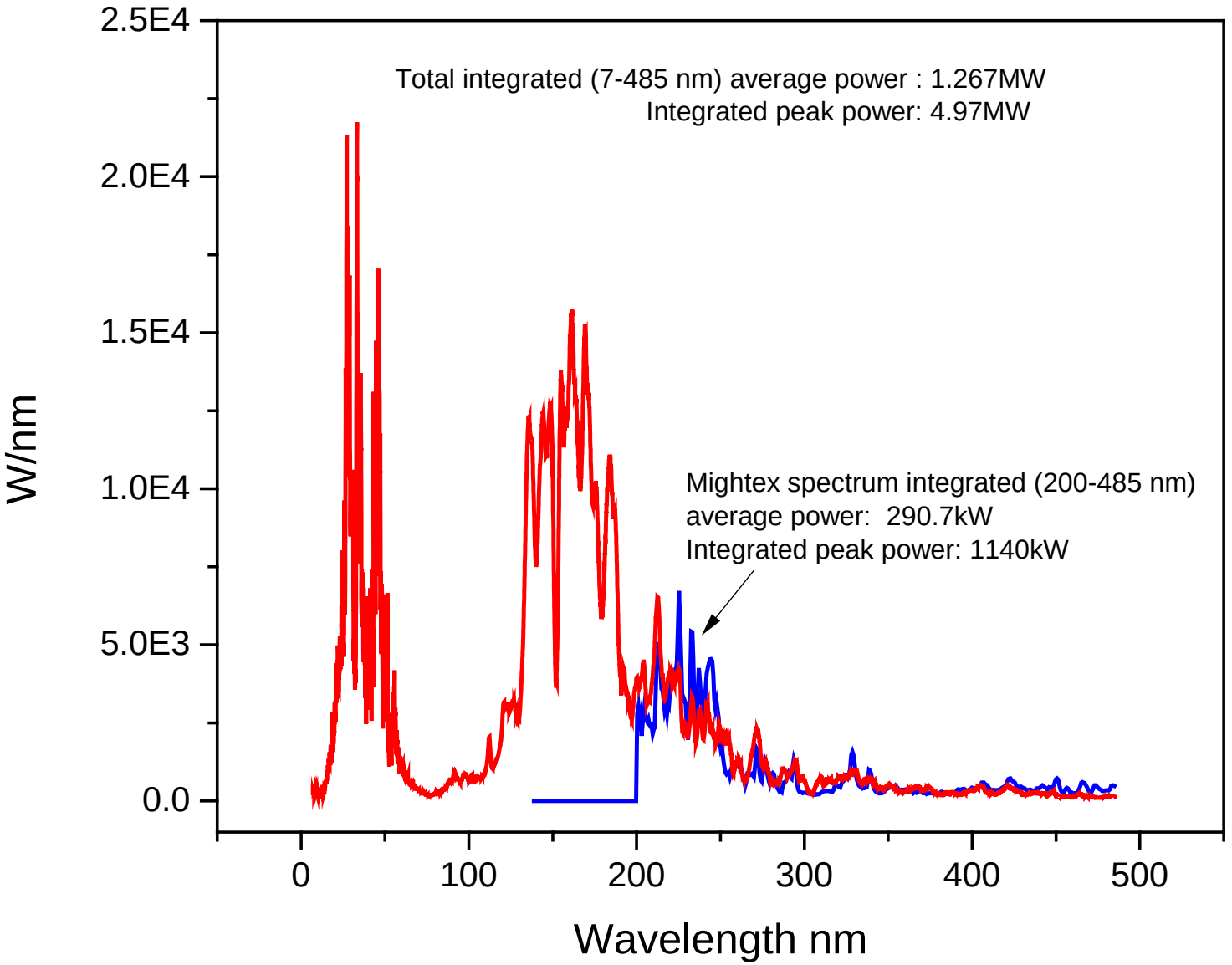
1. Atomic hydrogen reacts with an energy acceptor called a catalyst wherein energy is transferred from atomic hydrogen to the catalyst which forms an ion due to accepting the energy
2. Then, the negative electron drops to a lower shell closer to the positive proton to form a smaller hydrogen atom called a “hydrino” releasing energy that ultimately is in the form of heat
3. ***The catalyst ion regains its lost electrons to reform the catalyst for another cycle with the release of the initial energy accepted from hydrogen. With the imposition of an arc current condition, the limiting space charge of the ionized electrons is eliminated and the rate becomes massively high.***



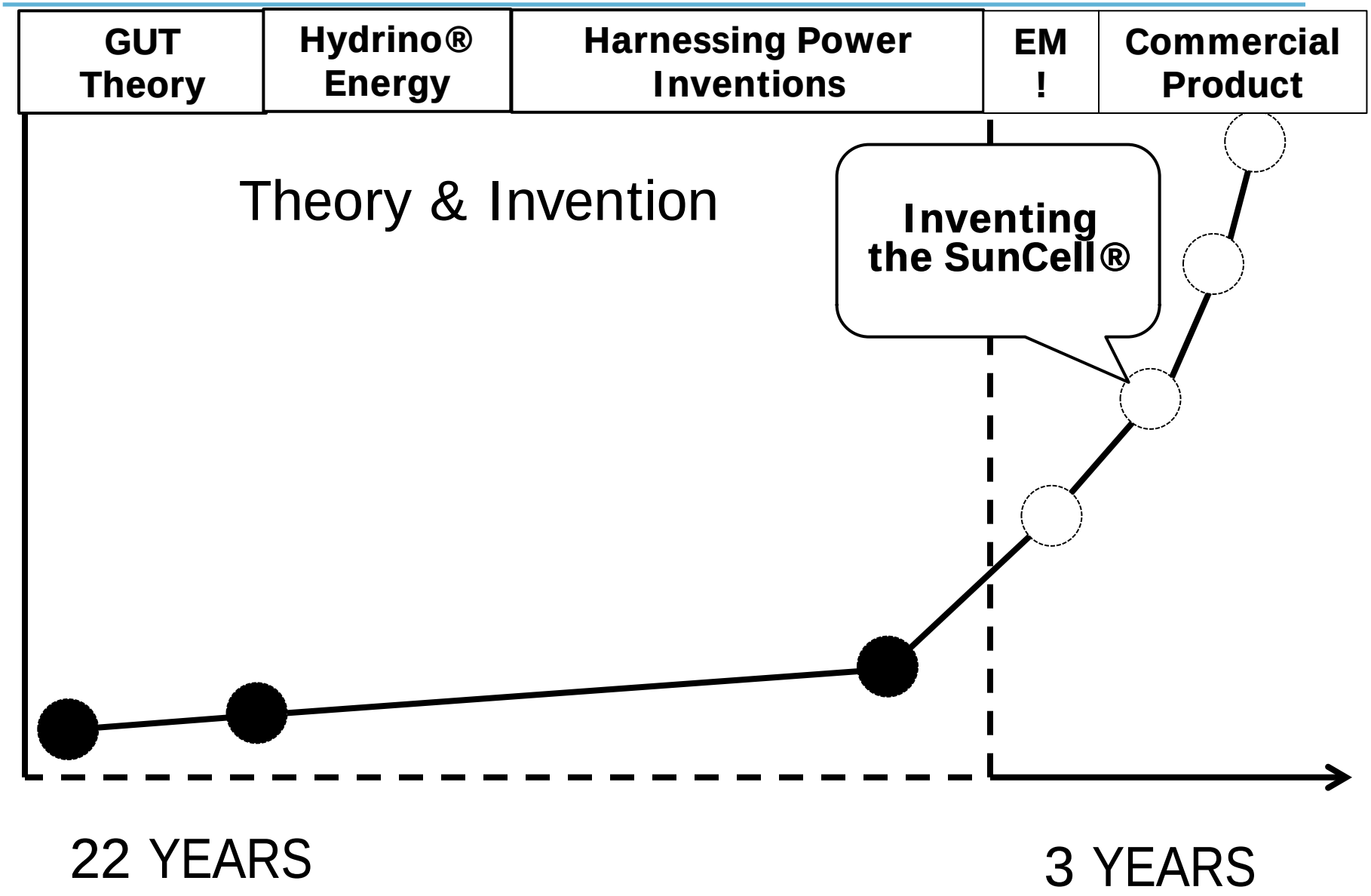
Explosive power

Click the above image to view on YouTube:
https://www.youtube.com/watch?v=SDhRvnYZbng

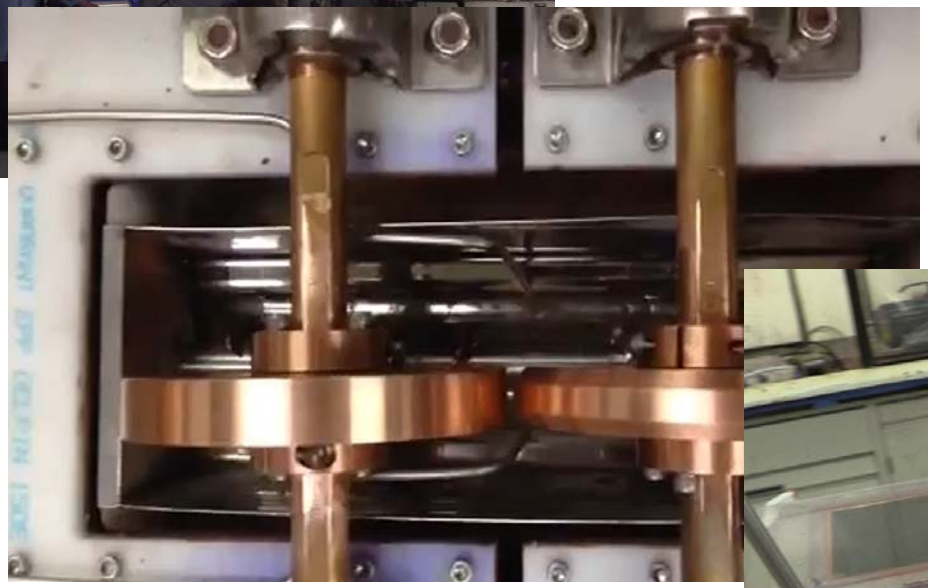
Optical Power Measurement Using NIST Standard Over the UV Region: Spectral Emission in the High Energy Region Only



2014-2016

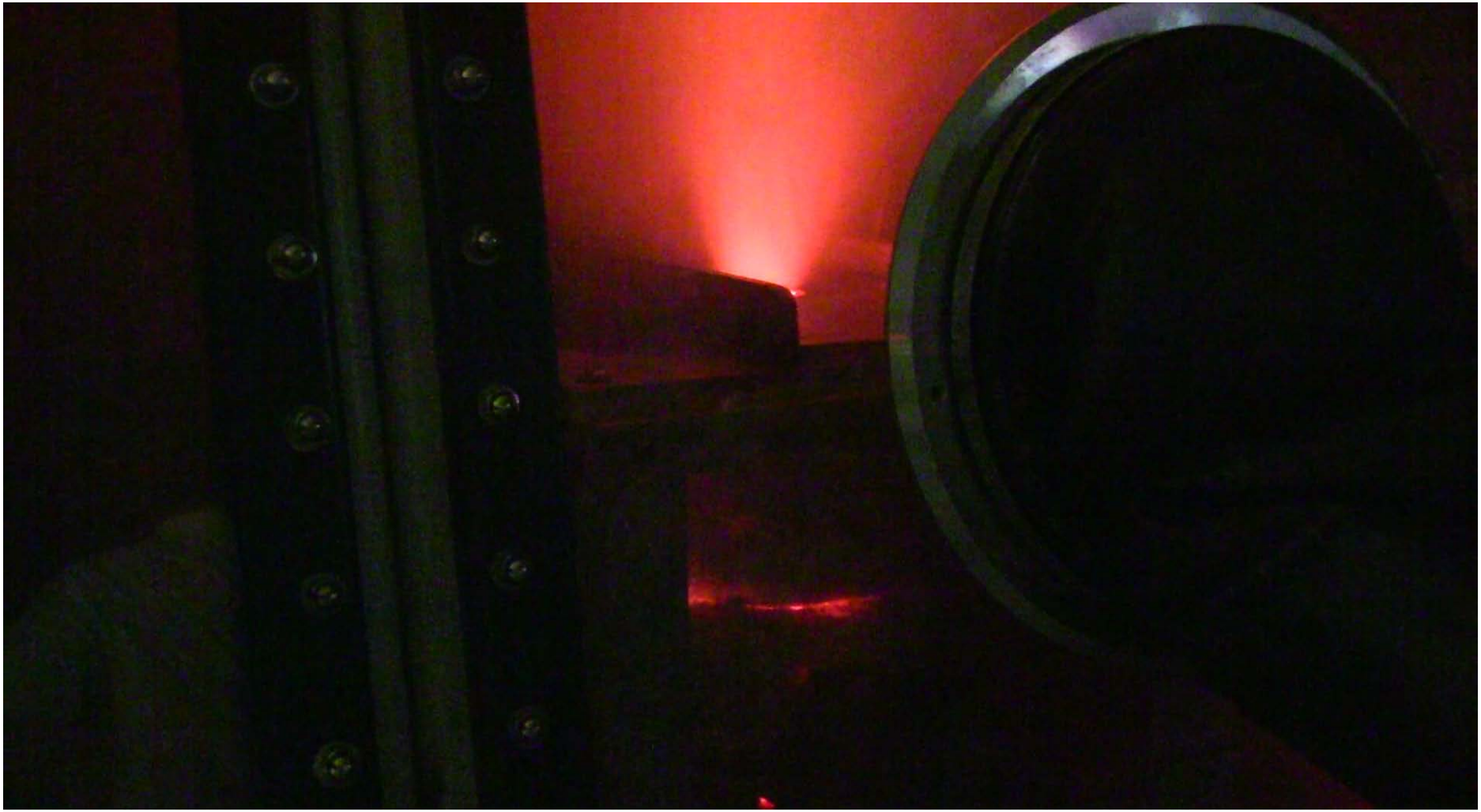

GUT Theory
Hydrino® Energy
Harnessing Power Inventions
EM !
Commercial Product
Theory & Invention
Inventing the SunCell®
22 YEARS
3 YEARS

Slurry pumps, Pneumatic injectors & Cyclones



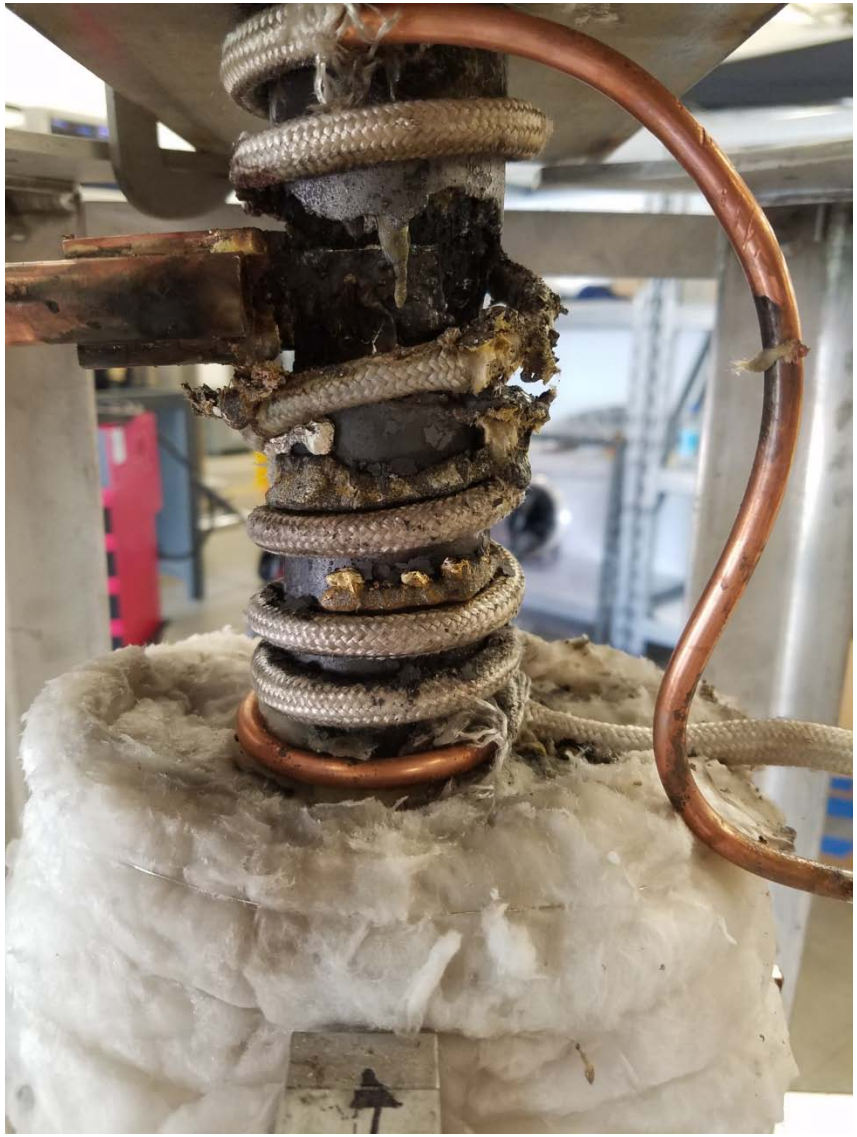
Rollers, Shot Systems & SunCell® Prototypes

A million watts in a teacup

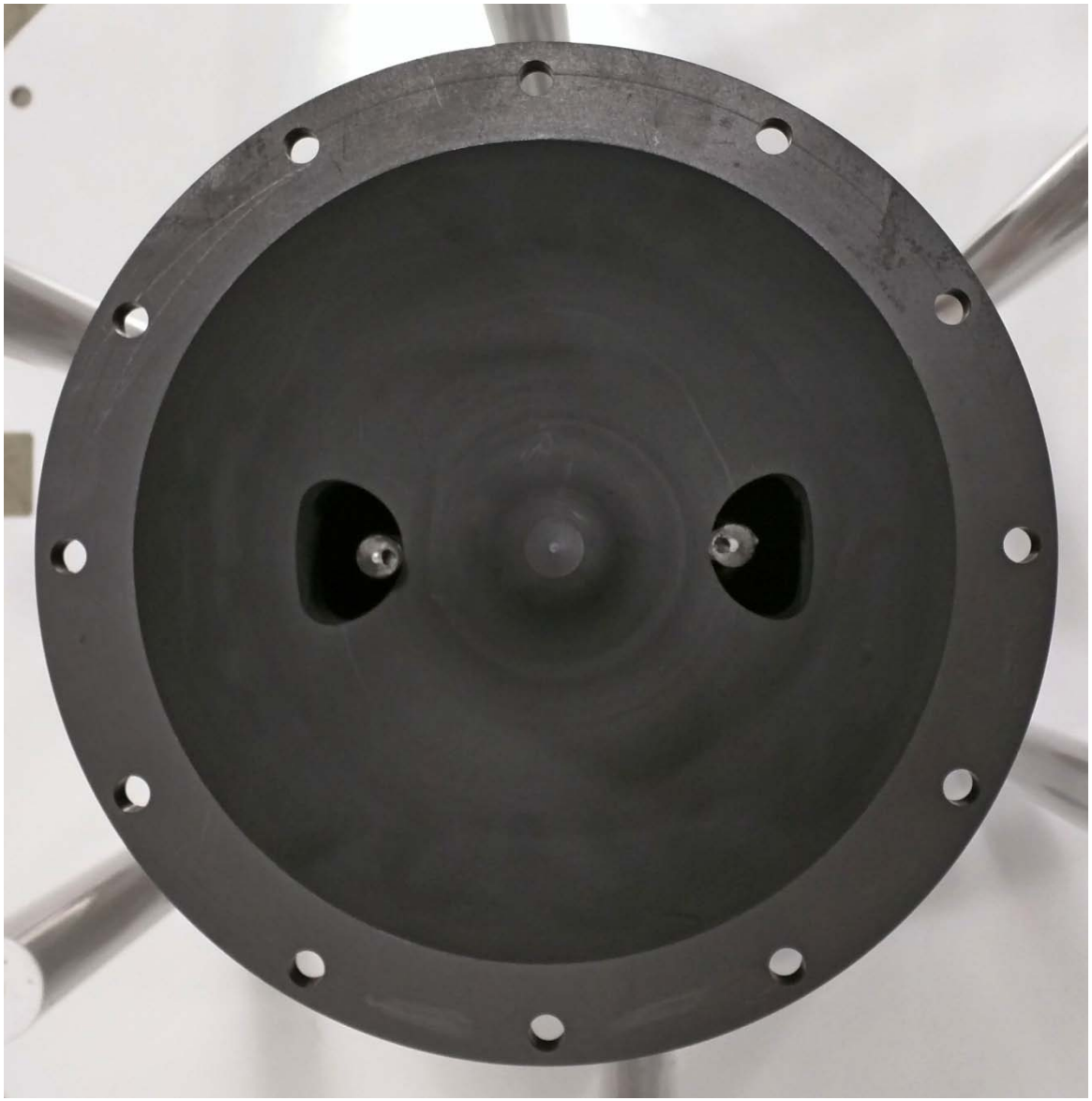


Click the above image to view on YouTube:
https://www.youtube.com/watch?v=1G07iVwthno

Vaporizing tungsten electrodes



Key invention – Liquid electrode injectors

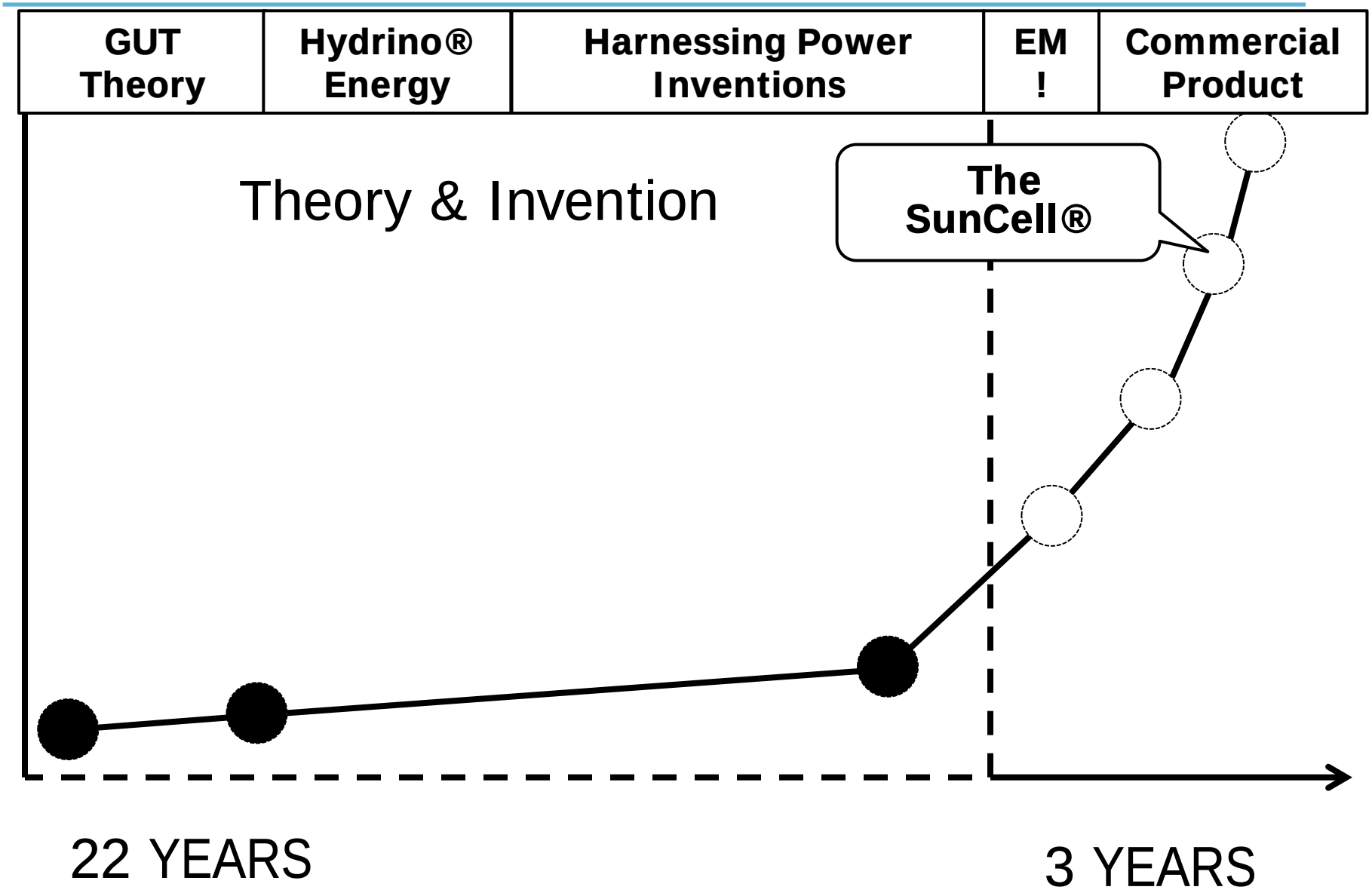


The SunCell® Commercial Design

Unveiled on October 25th at the Brilliant Light Power's Industry Day

"This design fixes all of the outstanding engineering challenges required to manufacture the commercial product"
John DeCarlo, CTO of Columbia Tech, BrLP's engineering partner

2014-2016


GUT Theory
Hydrino® Energy
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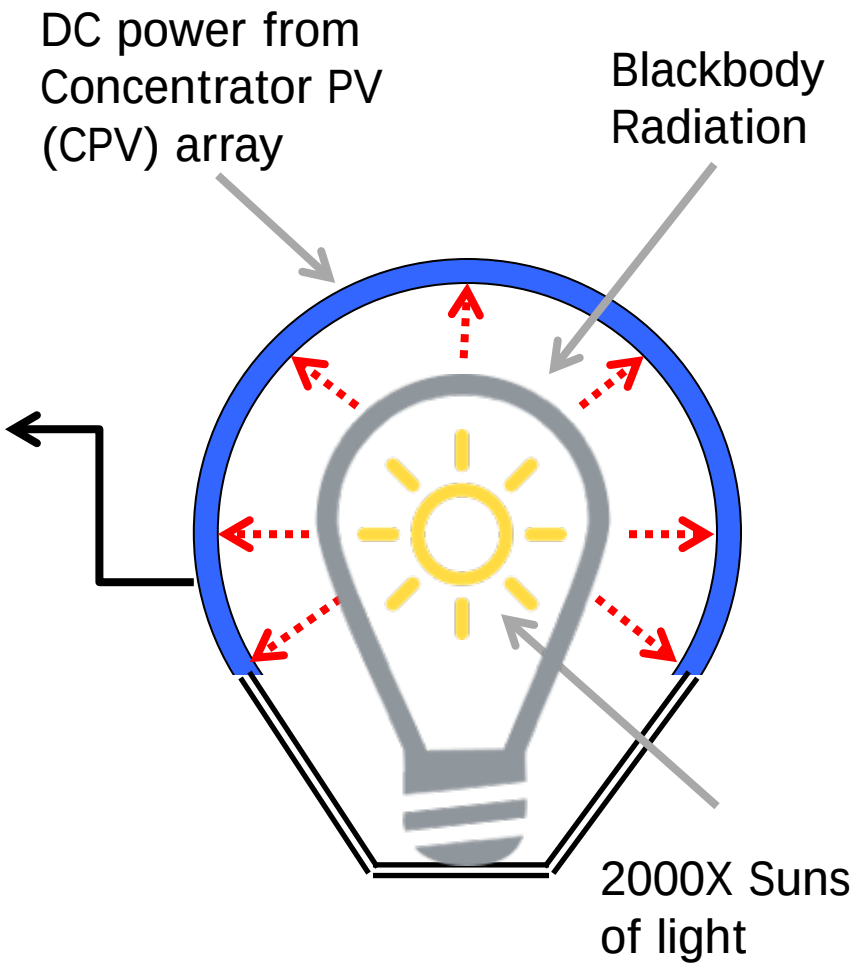
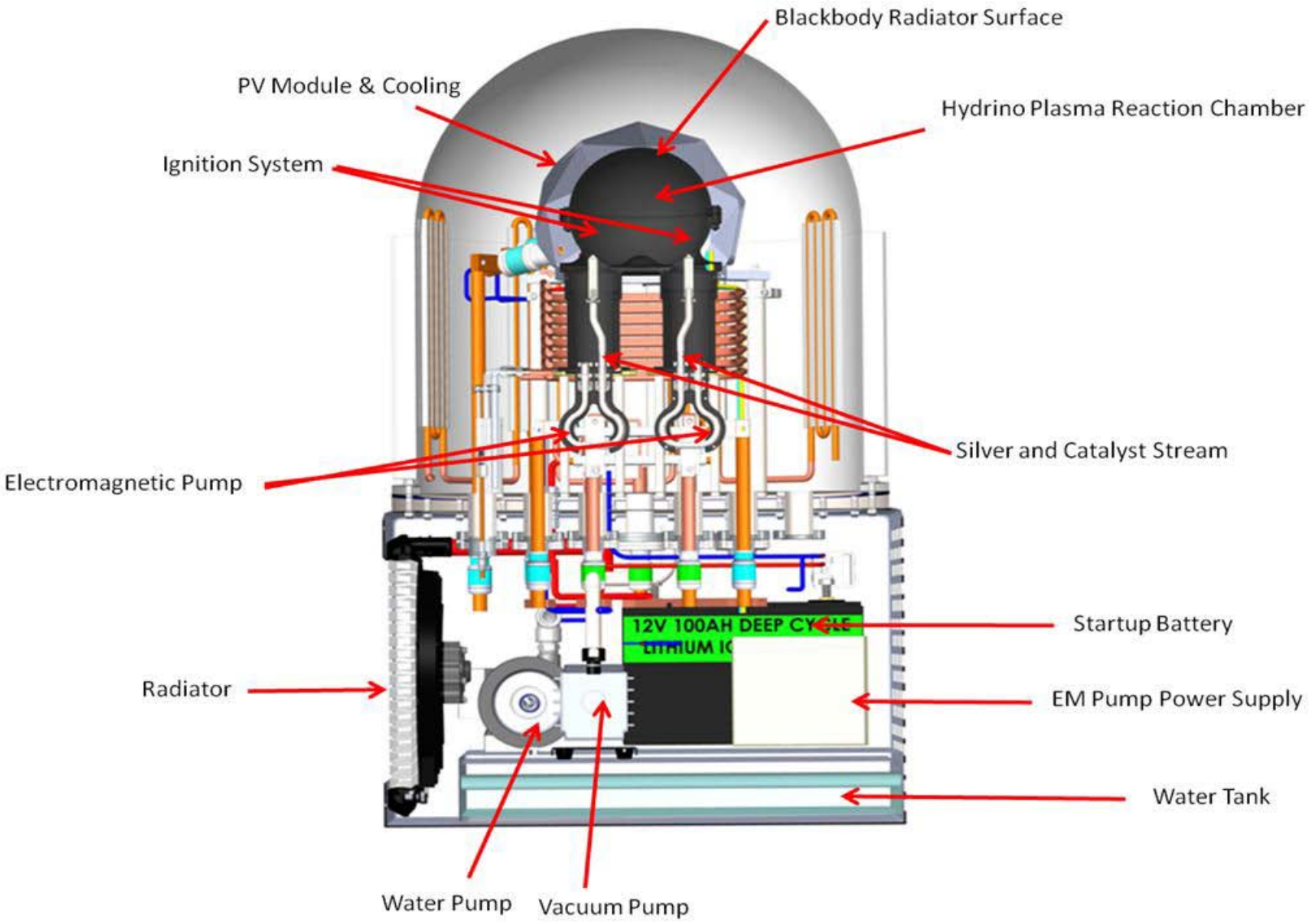
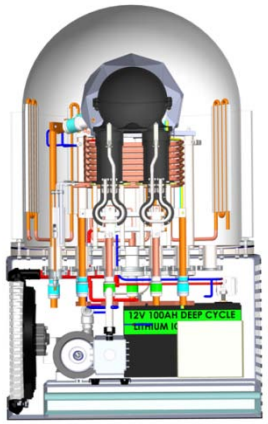
Commercial Product
Theory & Invention
The SunCell®
22 YEARS
3 YEARS

How the SunCell® Works

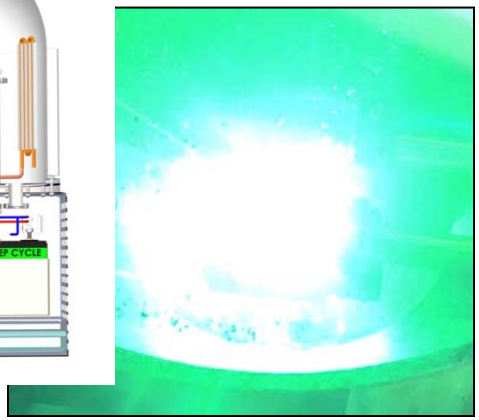



Blackbody Radiator Surface
PV Module & Cooling
Hydrino Plasma Reaction Chamber
Ignition System
Silver and Catalyst Stream
Electromagnetic Pump
Startup Battery
Radiator
EM Pump Power Supply
Water Tank
Water Pump
Vacuum Pump

Spectral Emission in the High Energy Region Only

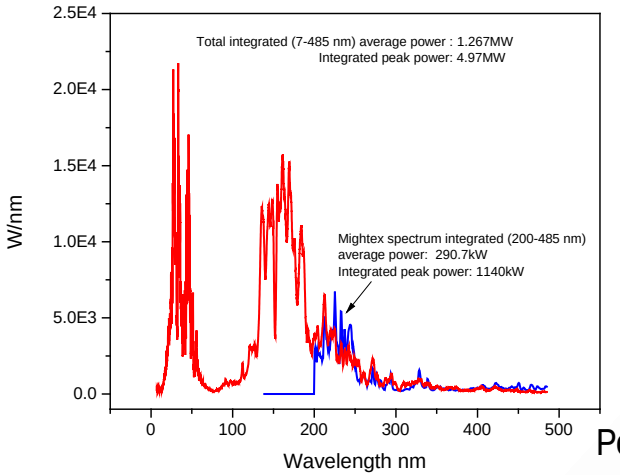


Plasma Ignition



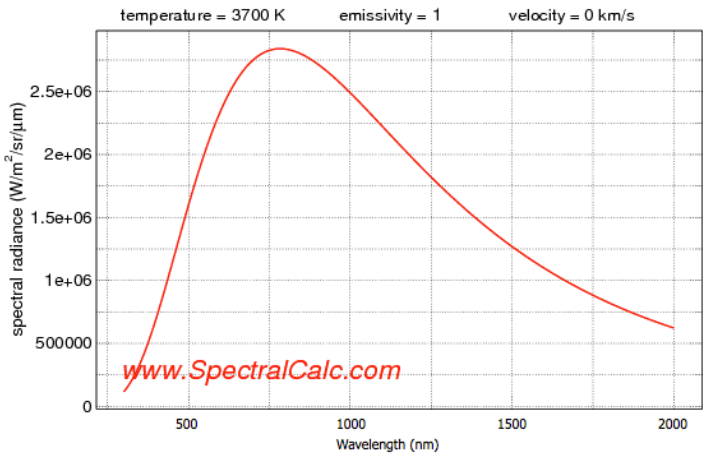
Measurement

Plasma Emission
(Power Calibrated Spectrum)



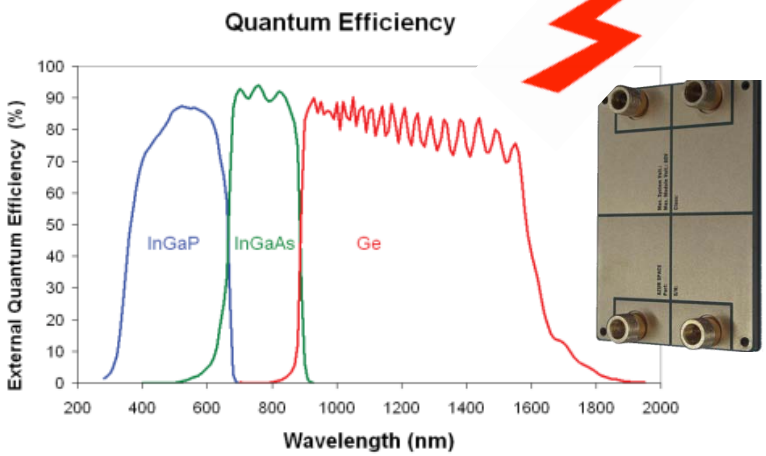
DC Power

Absorb to BB



SunCell Blackbody Radiator

Re-emit to CPV



Concentrator PV
Power Conversion Spectrum

Standard or Concentrated PV Uses the Same Massive Footprint

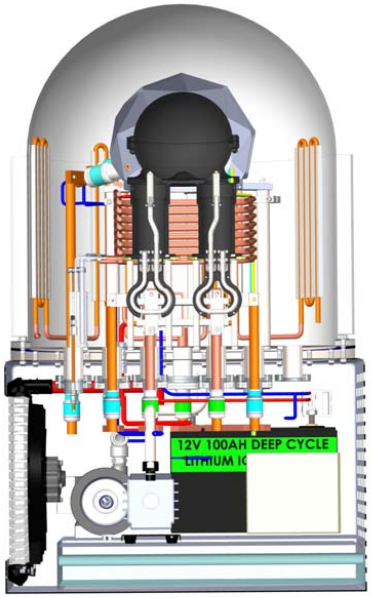
Due to the same low incident light concentration from the Sun, the typical scale is 100 MW on 250 acres (about 1 million m^2)

SunCell® vs Solar PV

An autonomous SunCell operating at up to 10,000 Suns requires 75,000 times less area and complexity than a matched conventional solar power station.

SunCell

11 MW

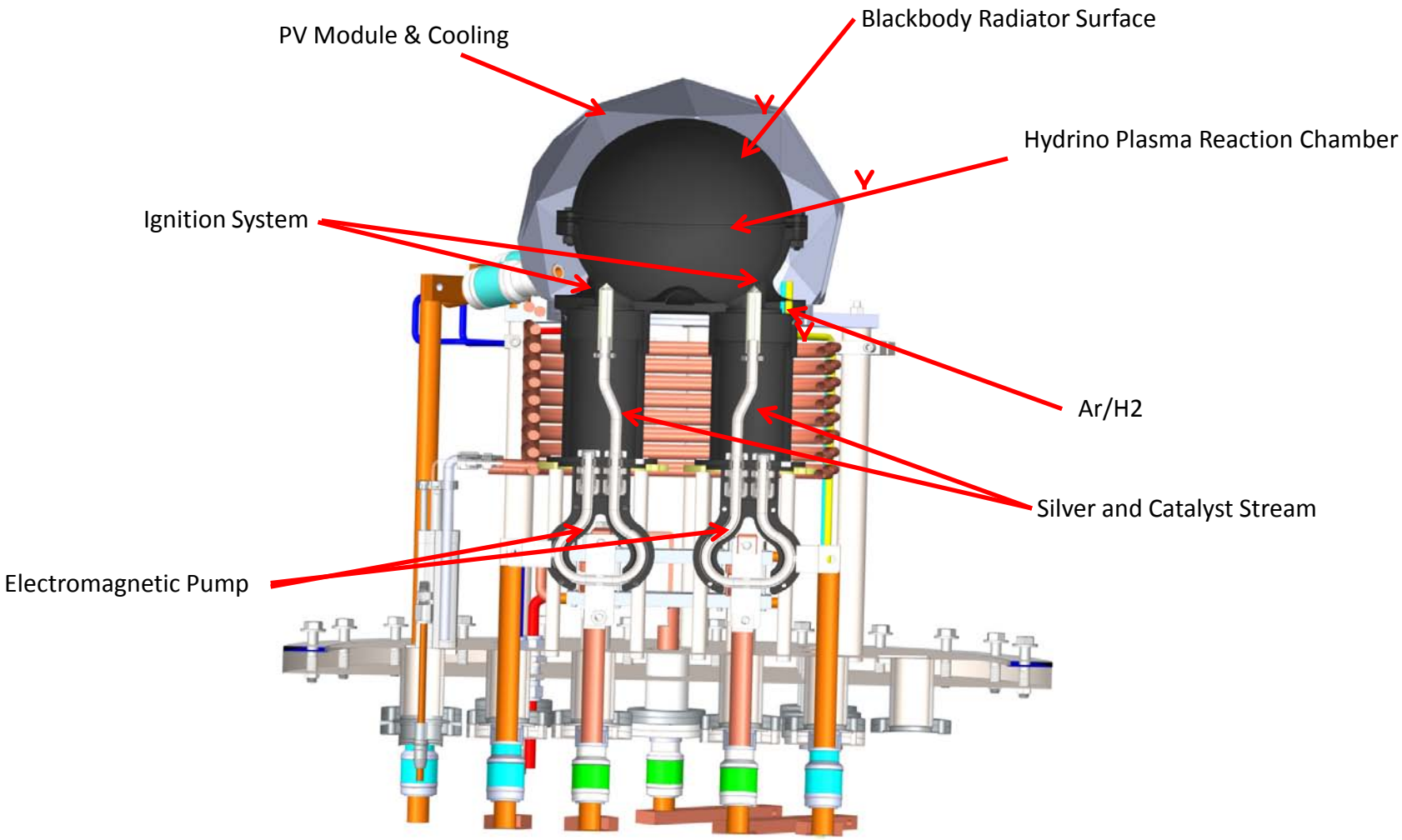


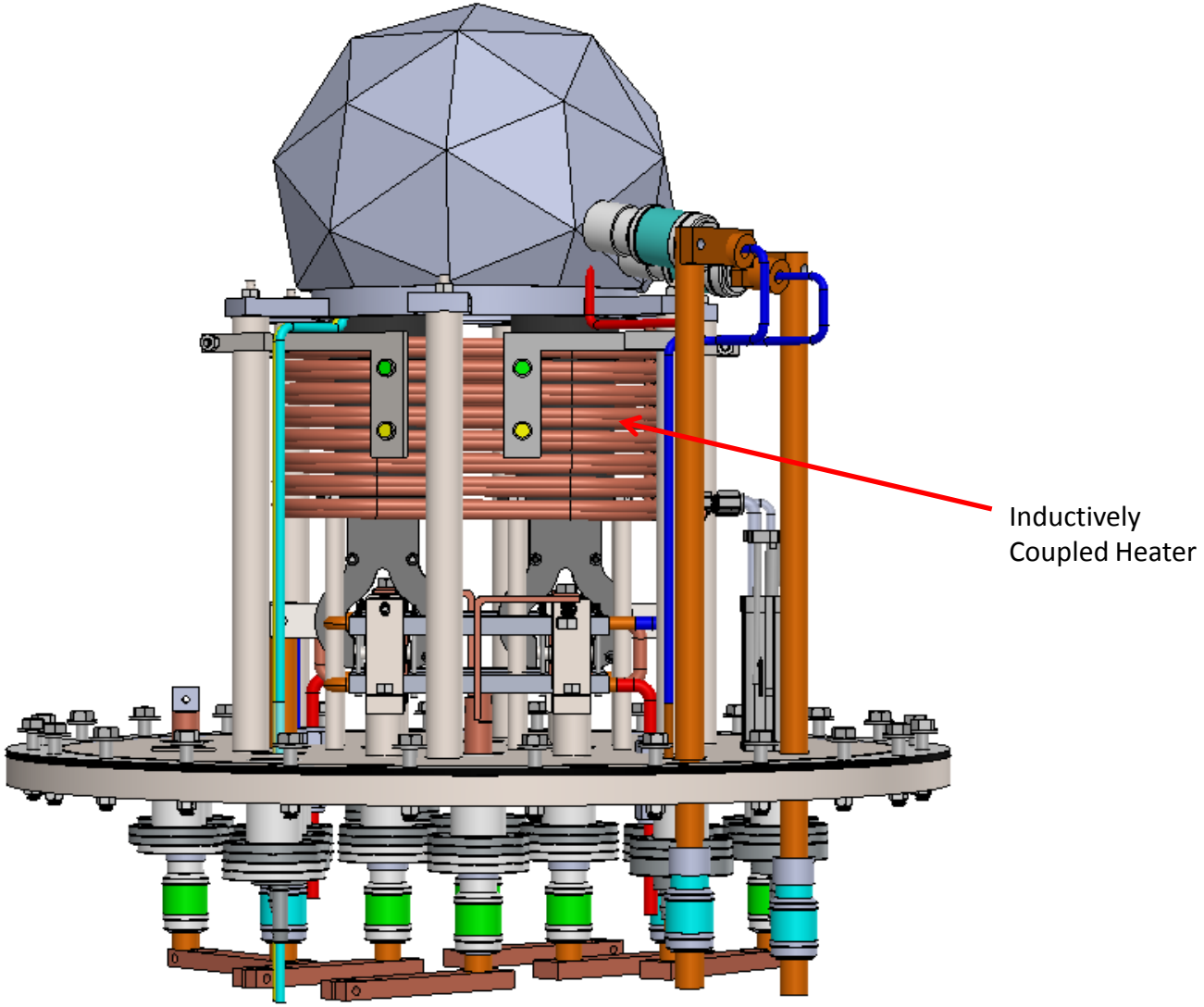
1 m^2

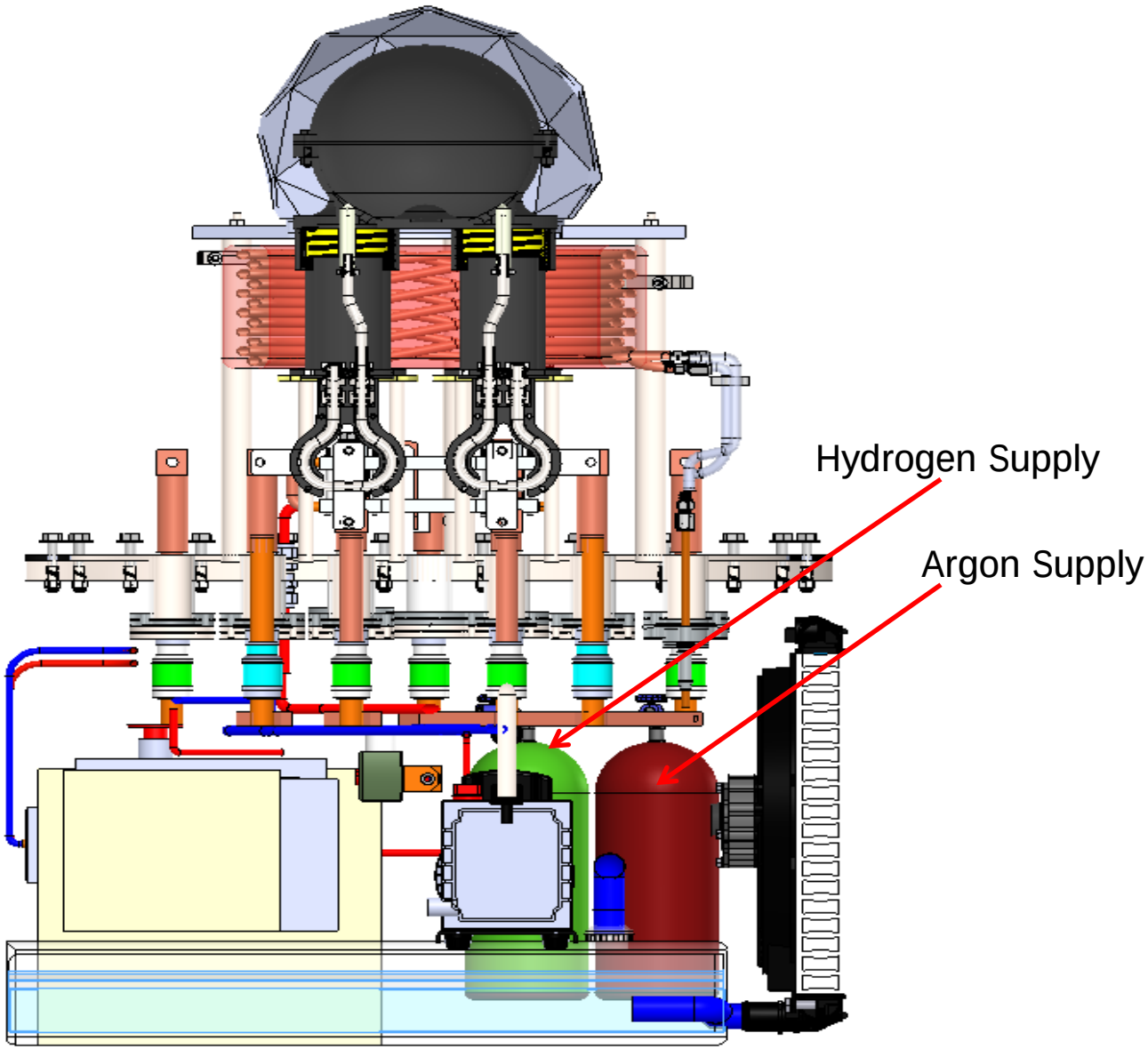
Planta Solar 10, Sevilla, Spain

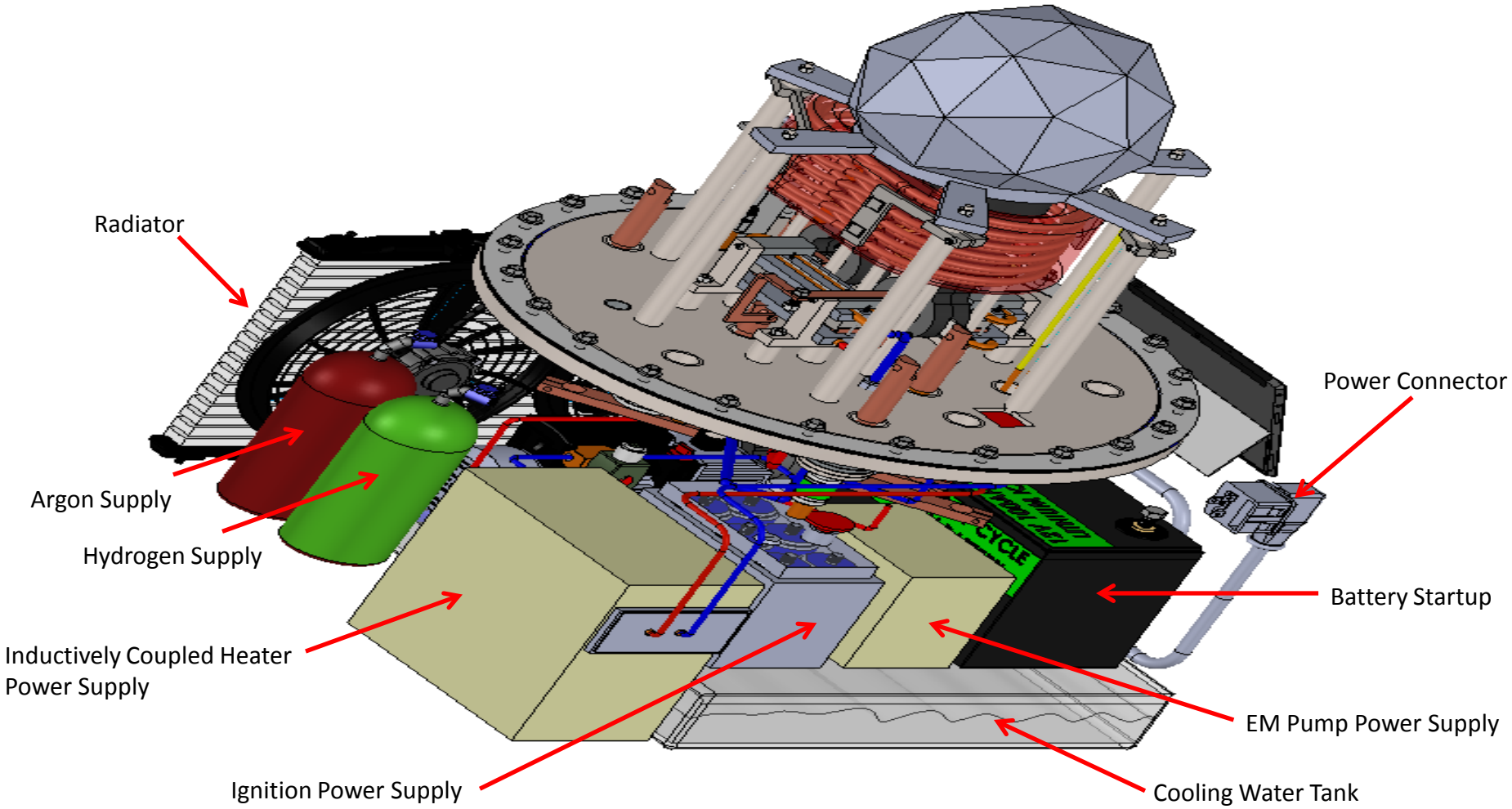
11 MW

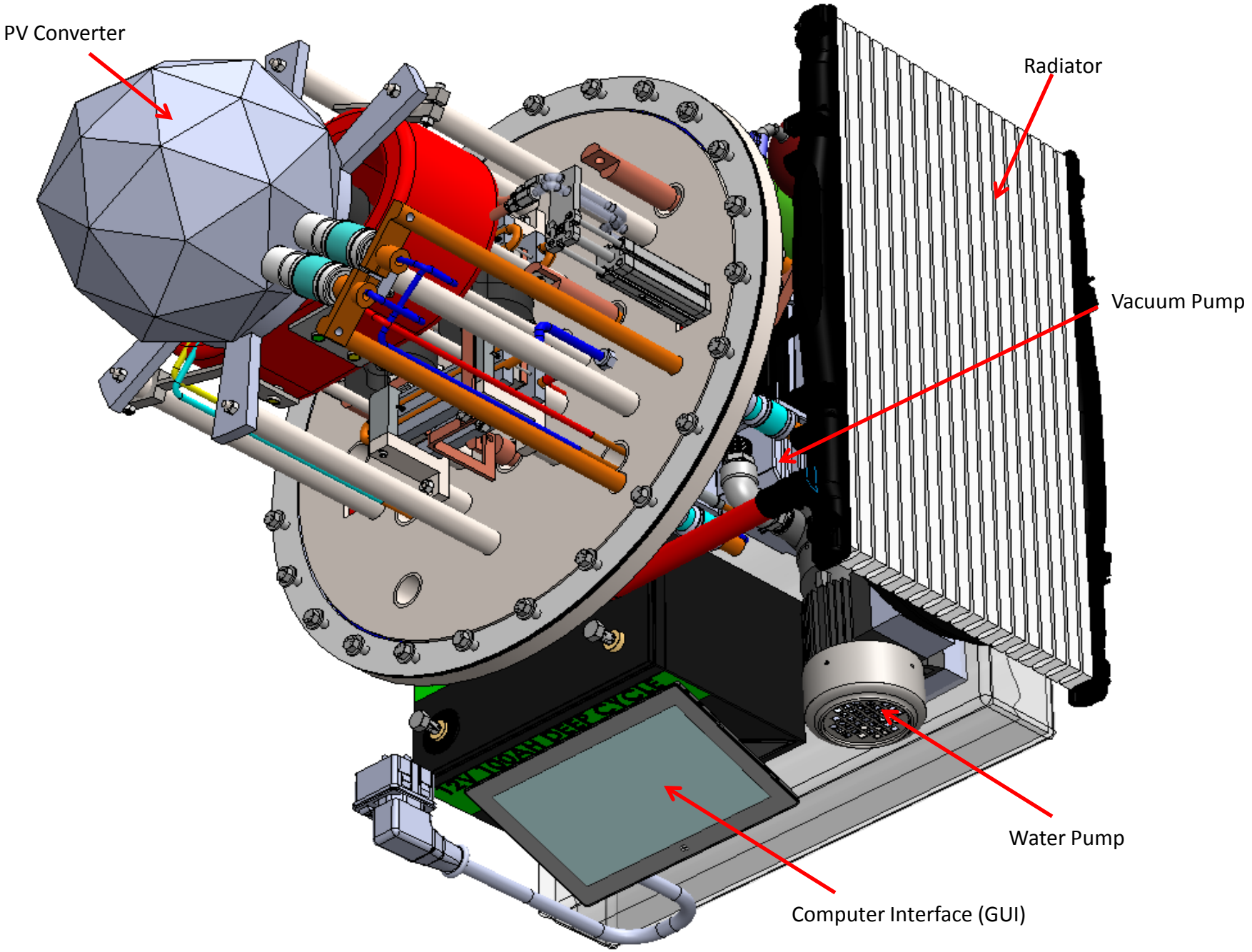
75,000 m^2 (nrel.gov)

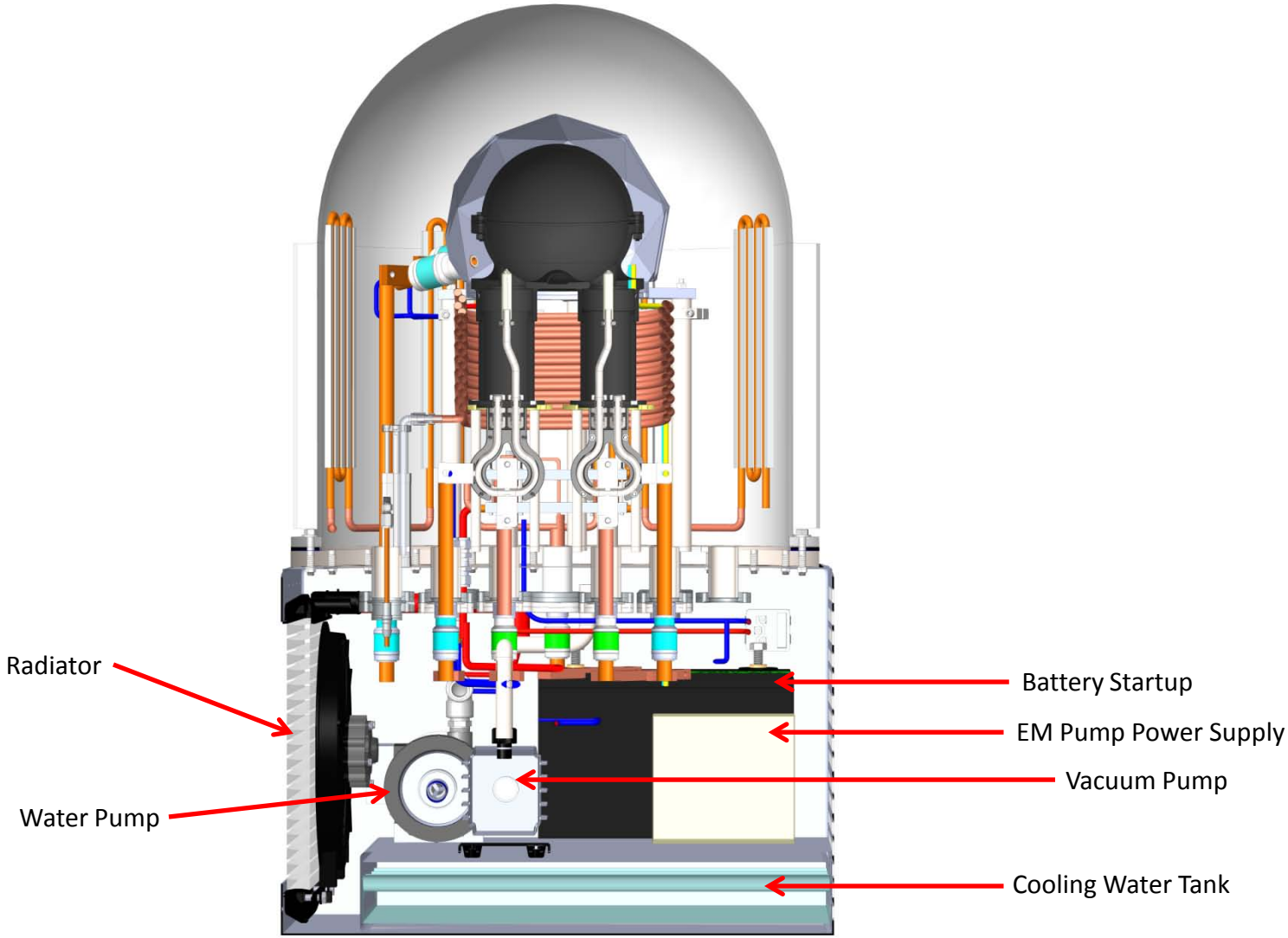

PV Module & Cooling
Blackbody Radiator Surface
Hydrino Plasma Reaction Chamber
Ignition System
Ar/H2
Silver and Catalyst Stream
Electromagnetic Pump

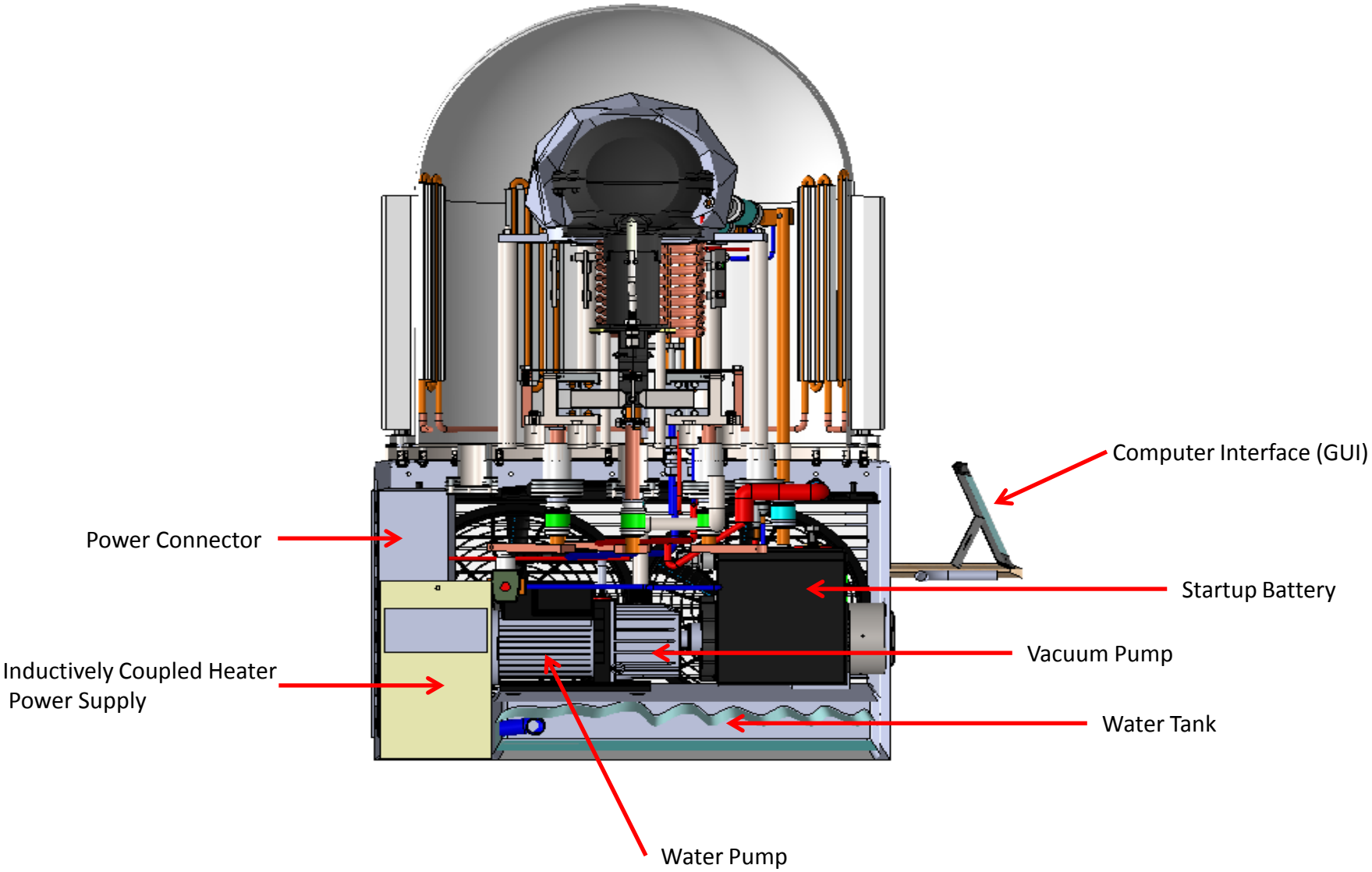

Inductively
Coupled Heater


Hydrogen Supply
Argon Supply


Radiator
Argon Supply
Hydrogen Supply
Inductively Coupled Heater Power Supply
Ignition Power Supply
Power Connector
Battery Startup
EM Pump Power Supply
Cooling Water Tank


PV Converter
Radiator
Vacuum Pump
Water Pump
Computer Interface (GUI)


Radiator
Water Pump
Battery Startup
EM Pump Power Supply
Vacuum Pump
Cooling Water Tank


Computer Interface (GUI)
Power Connector
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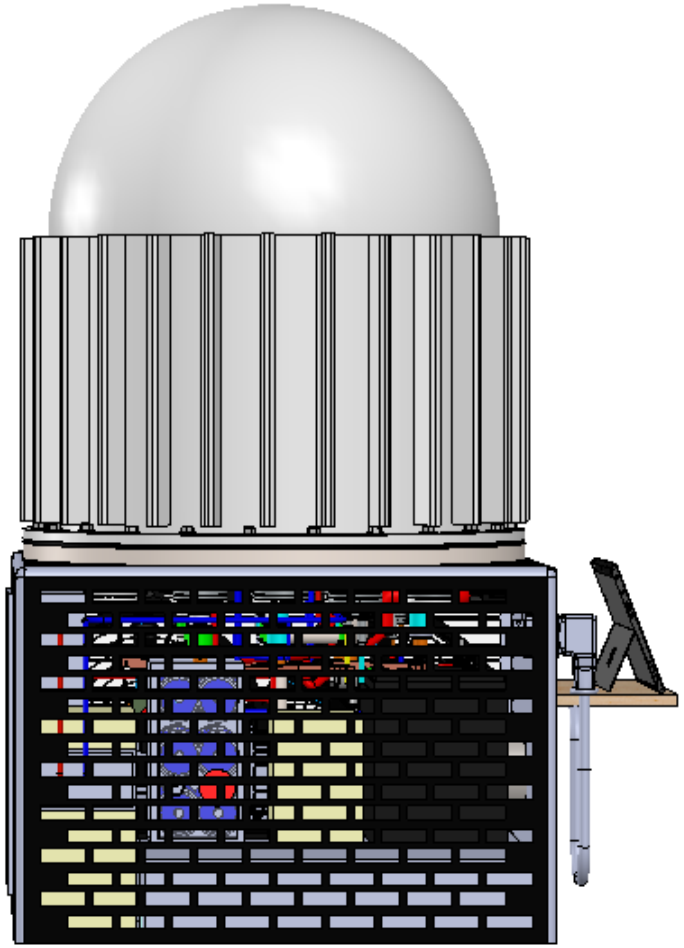
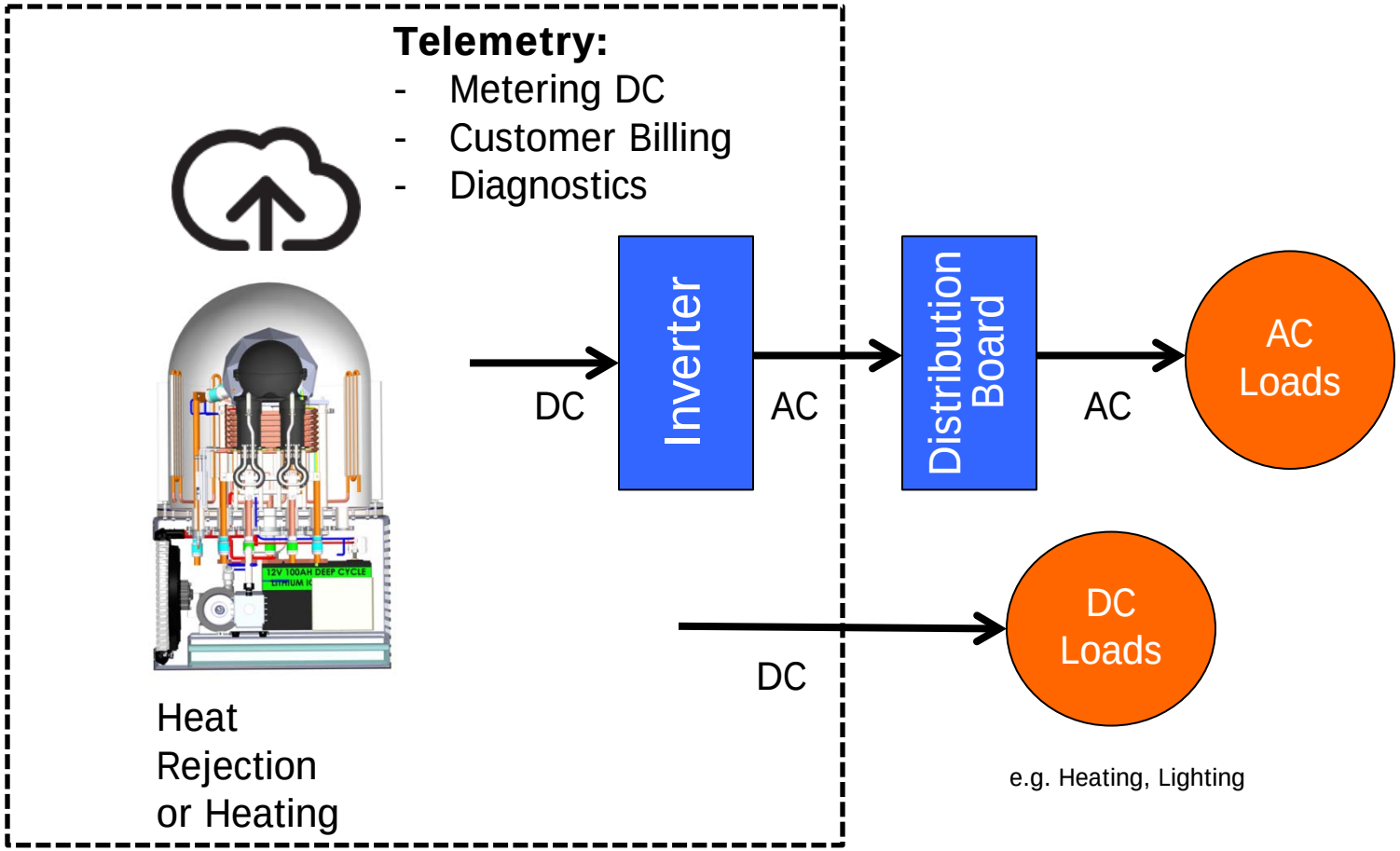
Power Supply
Water Tank
Water Pump



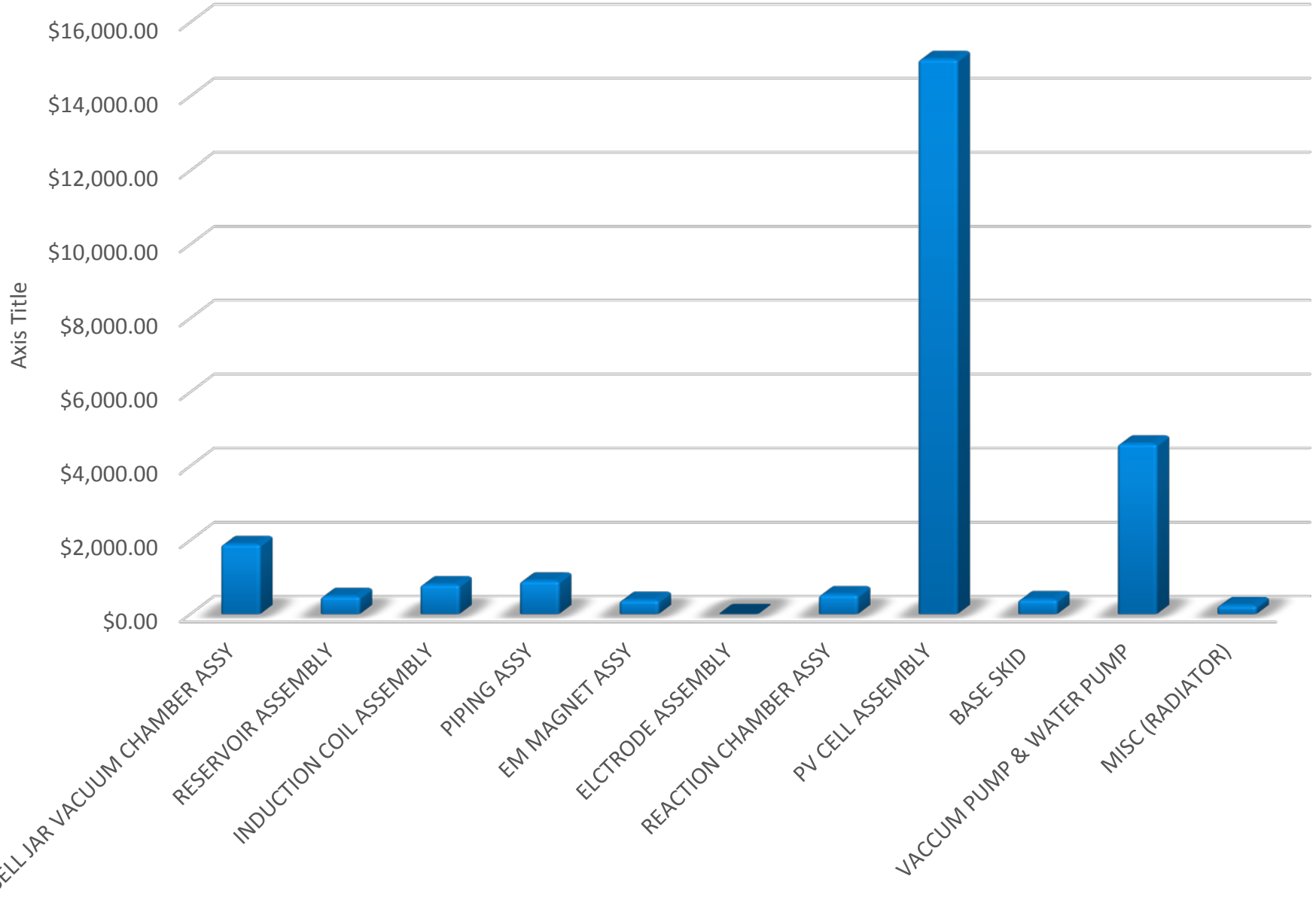
SunCell Turnkey System (Basic)



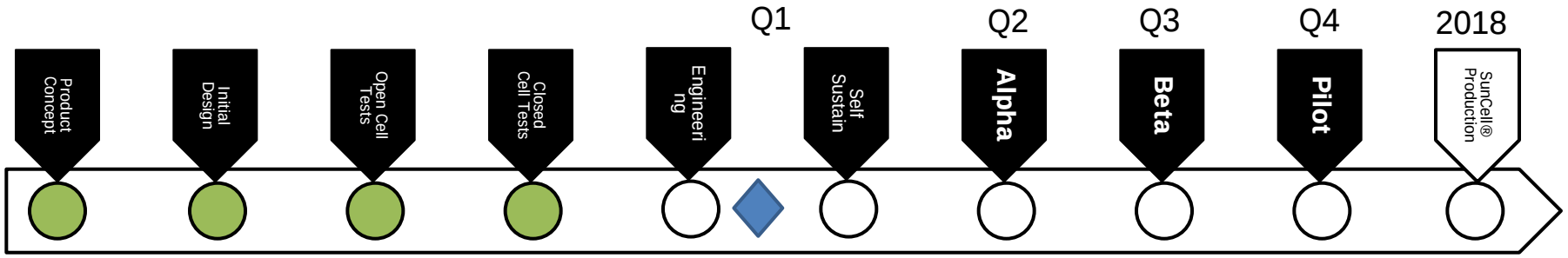
Commercially available parts

250KW SUN CELL COST ANALYSIS	
DESCRIPTION	**TOTAL COST AT SUB ASSY LEVEL**
BELL JAR VACUUM CHAMBER ASSY	$1,891.47
RESERVOIR ASSEMBLY	$484.17
INDUCTION COIL ASSEMBLY	$800.00
PIPING ASSY	$900.00
EM MAGNET ASSY	$380.00
ELCTRODE ASSEMBLY	$0.00
REACTION CHAMBER ASSY	$530.00
PV CELL ASSEMBLY	$15,000.00
BASE SKID	$400.00
VACCUM PUMP & WATER PUMP	$4,600.00
MISC (RADIATOR)	$236.00
DESCRIPTION	TOTAL COST 250KW
TOTAL COST	**$25,221.64**

TOTAL COST 250KW SUN CELL AT SUB ASSEMBLY LEVEL



SunCell® Road to Commercial Launch



Engineering & Self Sustaining Prototype

a) Engineering prototype demonstrating continuous operation of SunCell® without catalyst & hydrogen

b) Self sustaining prototype demonstrating self sustained continuous operation with catalyst & hydrogen

Alpha: Operational Prototype

a) Enclosed cell with automatic computer control of the reaction.

b) Operates continuously for hours.

c) Restart capability

d) Integrated CPV with heat transfer/cooling

e) Generates ~30 kW DC net electricity

f) Operated by BrLP and/or CT personnel only, does not need to have an overall enclosure or easy user interface/software

g) Includes sensors and data capture to monitor key reaction parameters, inputs and outputs

Beta: Field Test Unit

a) Operates continuously for days

b) Generates ~60 kW of DC electricity

c) Can be connected to AC conversion and/or battery storage units

d) Has a product-like enclosure and safety features

e) Operated by trained personnel only, user interface not optimized.

f) Has ability to capture and send data from locations outside BrLP/CT.

Pilot Production Unit

a) Meet final product specs for power, reliability, cost, etc

b) Generates ~100 kW of DC electricity

c) Built using production-like parts and processes

d) Final enclosure and software, including user interface and connectivity

e) Meets safety and other regulations

f) Can be easily serviced

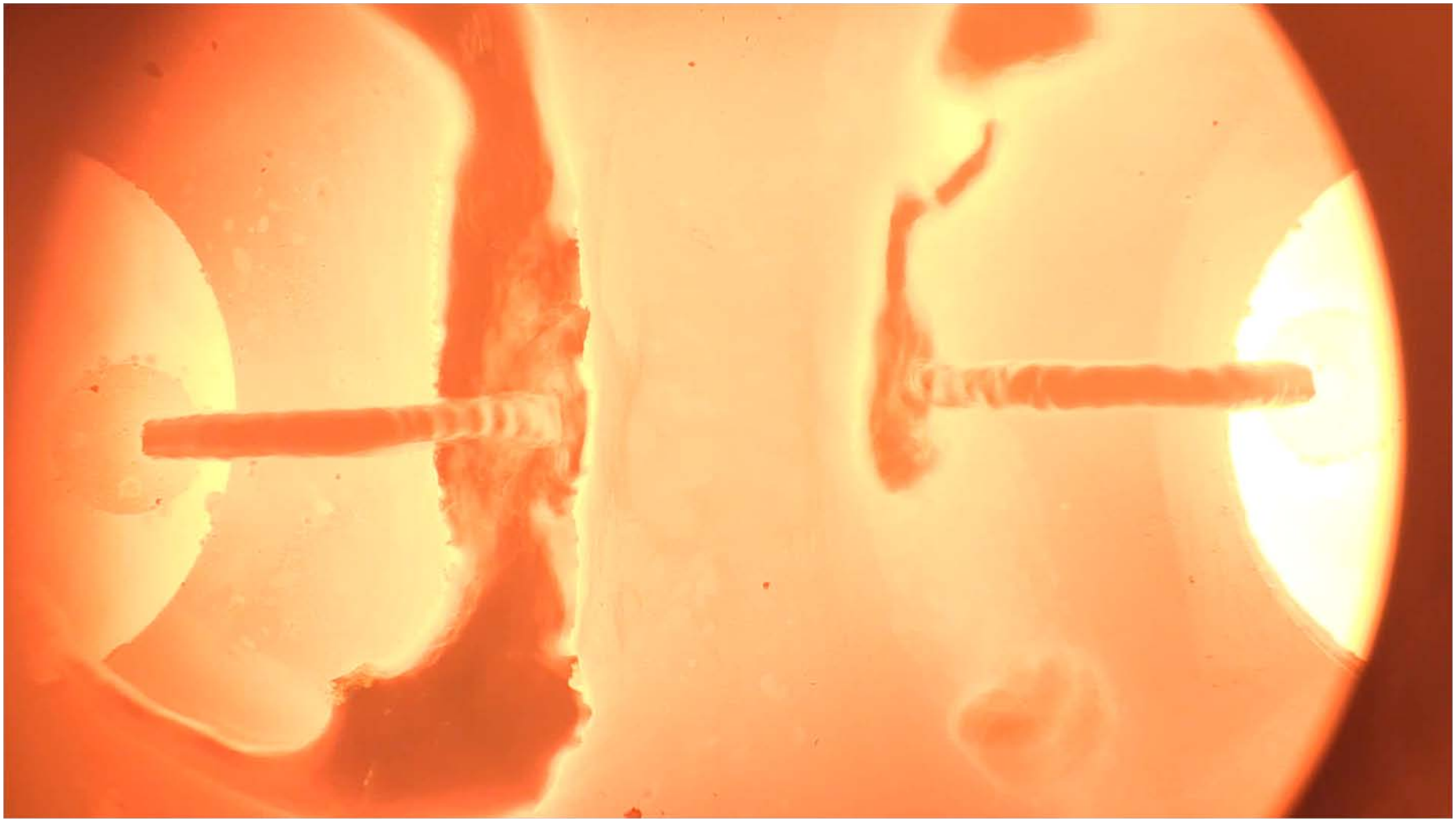
g) Capable of being interfaced with an inverter to produce AC power

h) Capable of running at constant electrical power and rejecting excess power into a resistive load

Global Established Accessible Market with Expansion Opportunities

- Reinvent electrification as autonomous, completely off grid, mass produced personal power.
- Flat per diem lease charge with no metering.
- Using cell redundancy being off grid is much cheaper than any grid connection and avoids all related utility regulatory leverage.
- Behind the meter during a short temporary learn out phase in the United States, then global push.

SunCell® in operation



Click the above image to view the video on YouTube:
https://www.youtube.com/watch?v=jUBheBH9eio


brilliant
LIGHT POWER