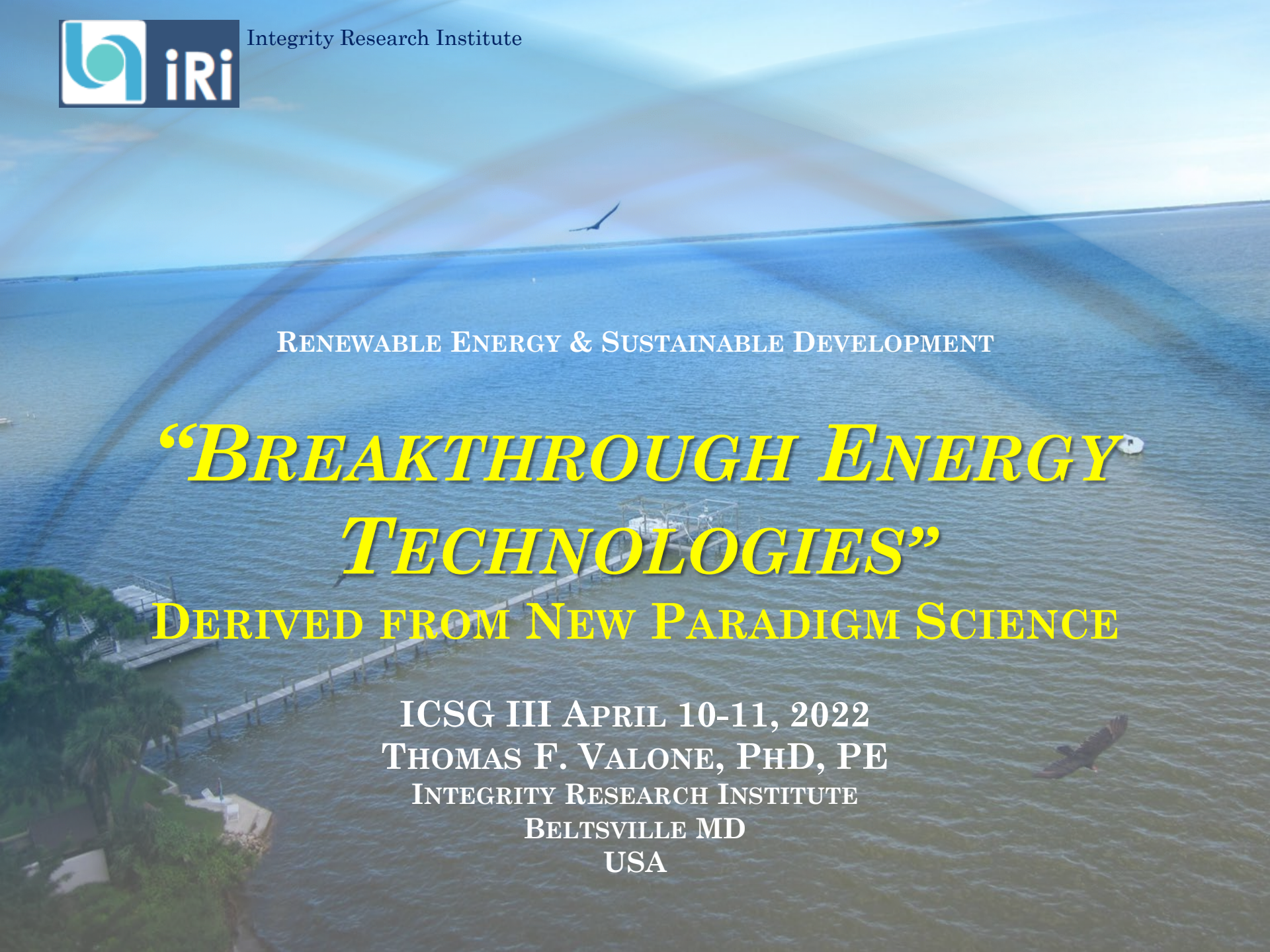


Integrity Research Institute

RENEWABLE ENERGY & SUSTAINABLE DEVELOPMENT

"BREAKTHROUGH ENERGY TECHNOLOGIES"

DERIVED FROM NEW PARADIGM SCIENCE

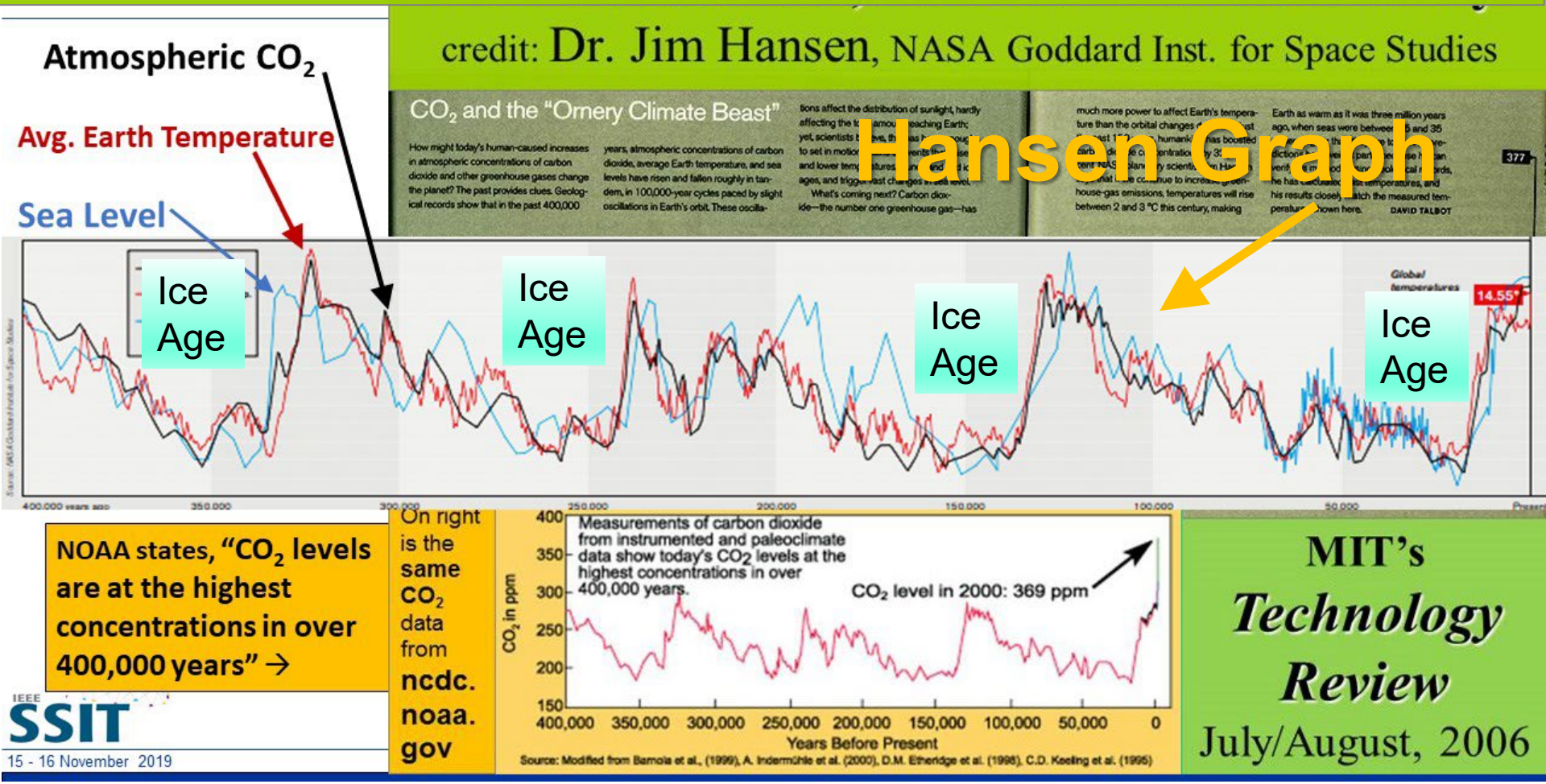
ICSG III APRIL 10-11, 2022

THOMAS F. VALONE, PHD, PE
INTEGRITY RESEARCH INSTITUTE
BELTSVILLE MD
USA

New Paradigm Science for Energy

- **Motivation** for researching new energy: global warming adding 1°C every 20 years due to CO_2 buildup in the air which **traps heat** (See **TinyURL.com/CO2HEAT**)
- **Resources** for food and drink – **11 billion** people expected by 2100?
- **Since 1950, Population** has tripled (**3x**)
- **Carbon** Emissions have quadrupled (**4x**)
- **Energy Demand** or Consumption has quintupled (**5x**)
- **We need new energy developments to save humanity**

Earth's 400,000 Year Paleoclimatology



Thomas Valone - Integrity Research Institute

Composite of the past 400,000 year earth history proves **CO_2, world temp, and sea level** are inextricably correlatively linked starting from early 20th century at 290 ppm

Global CO_2 Level in 2022

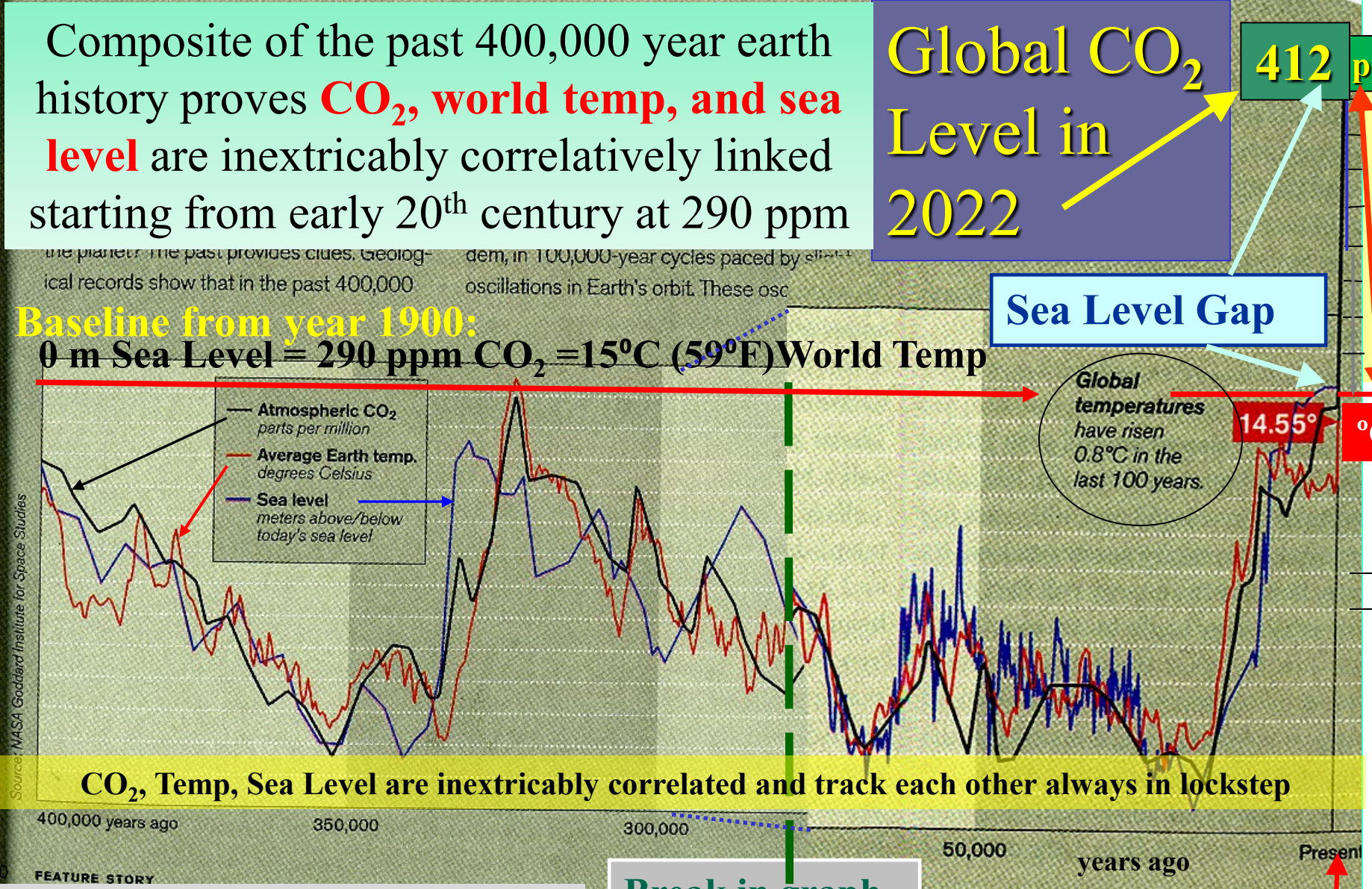
412 ppm

Temp Gap: 6°C (9°F)

Sea Level Gap

Baseline from year 1900:

0 m Sea Level = 290 ppm CO_2 =15°C (59°F)World Temp



CO_2, Temp, Sea Level are inextricably correlated and track each other always in lockstep

Break in graph

Technology Review, July/August 2006

Present time

KEY to graph: 20 ppm = +/-1°C = +/-20m sea level

6°C forces 70 meters sea level rise (max.)

Is Dr. Hansen's Graph Valid?

Jim Hansen's Table of Vostok data points for 400,000 years

Carbon dioxide p.p.m.	Average Earth temp. °C	Sea level meters
300	15.5	10
290	15.0	0
280	14.5	−10
270	14.0	−20
260	13.5	−30
250	13.0	−40
240	12.5	−50
230	12.0	−60
220	11.5	−70
210	11.0	−80
200	10.5	−90
190	10.0	−100
180	9.5	−110
170	9.0	−120

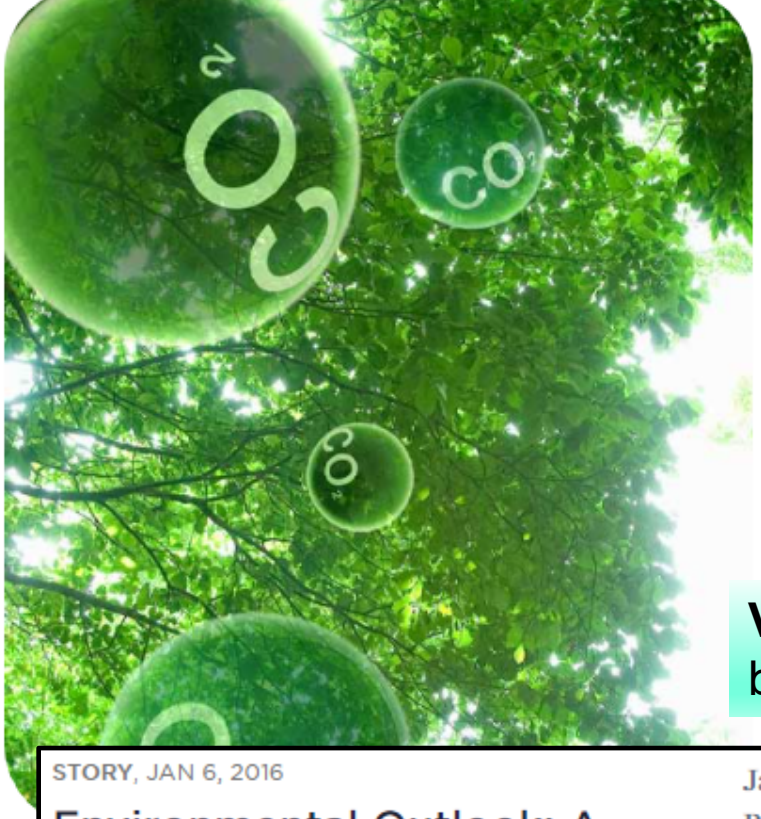
1. His accompanying Table here is surprisingly linear.

2. This linearity implies an easy to find relationship or equation for the three variables.

It yields a simple KEY to graph:
+/- 20 ppm = +/- 1°C = +/- 20m sea level

More and more climatologists are now in agreement with its predictions over 15 years later.

Most importantly, it shows reversibility!



Scaling to Billions of Tons of Carbon Capture & Management Infrastructure

Effective decarbonization requires that carbon capture, management and disposition infrastructure and systems be planned and implemented at "**GT scale**" (Giga Tonne scale), and not through a piecemeal project-based

Enabling GT scale carbon

common, scalable and seamless carbon disposition infrastructure:

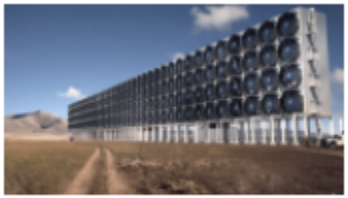
Gigaton CO2 Capture will remove 800 GT

Vesta and **Carbon Engineering** offer the hope for billion-ton "GT" carbon capture from atmosphere

STORY, JAN 6, 2016

Environmental Outlook: A New Push For Carbon Removal

Jan 6, 2016 ... Environmental Outlook: A New Push For **Carbon Removal** ... this range from the low **tech** – plant more trees – to the very high **tech** – suck the ...



STORY: NPR, FEB 8, 2021

Elon Musk Funds $100 Million XPrize For Pursuit Of New Carbon Removal Ideas

Feb 8, 2021 ... **Carbon capture** is a longstanding idea that's seen as easing costs and other ... The new XPrize aims to close the **technology** gap by spurring ...

What Clean Energy Breakthroughs are ready to come online?

Vertical Farming, Bacteria-Biomass Electricity, Triboelectricity, Solar Lights, Water Evaporation Power, Osmotic Power, Hydrokinetic Power, Energy Harvesting, Undersea Turbines, Magma Geothermal, Graphene Fluctuating Circuits, Wireless Electricity, Zero Point and Vacuum Energy

Vertical Farming – Aero Farms

https://www.aerofarms.com/

- World's largest
- 2 million pounds/year leafy green vegetables
- No soil, No pesticides
- 390x productivity
- **95% less water**

Video is online at https://tinyurl.com/AeroFarmTour or click on arrow

Breatharians Live on Light Pranic God Energy

- Thousands are now living without food worldwide
- I have taken the 21-day training
- Go from fasting to Pranic Living
- See **"In the Beginning There was Light"** video
- Many have been tested for a week in clinical setting
- $E = mc^2$ may be the only science to explain the biotransmutations that occur
- **Free book** from **← Ray Maor**

https://raymaor.com/ebookyearwithoutfood/

SOLAR ENERGY MODULES

Solar Illuminations lamp
8 hours light with solar

NOKERO SOLAR

Select Language

NO KEROSENE="NOKERO"

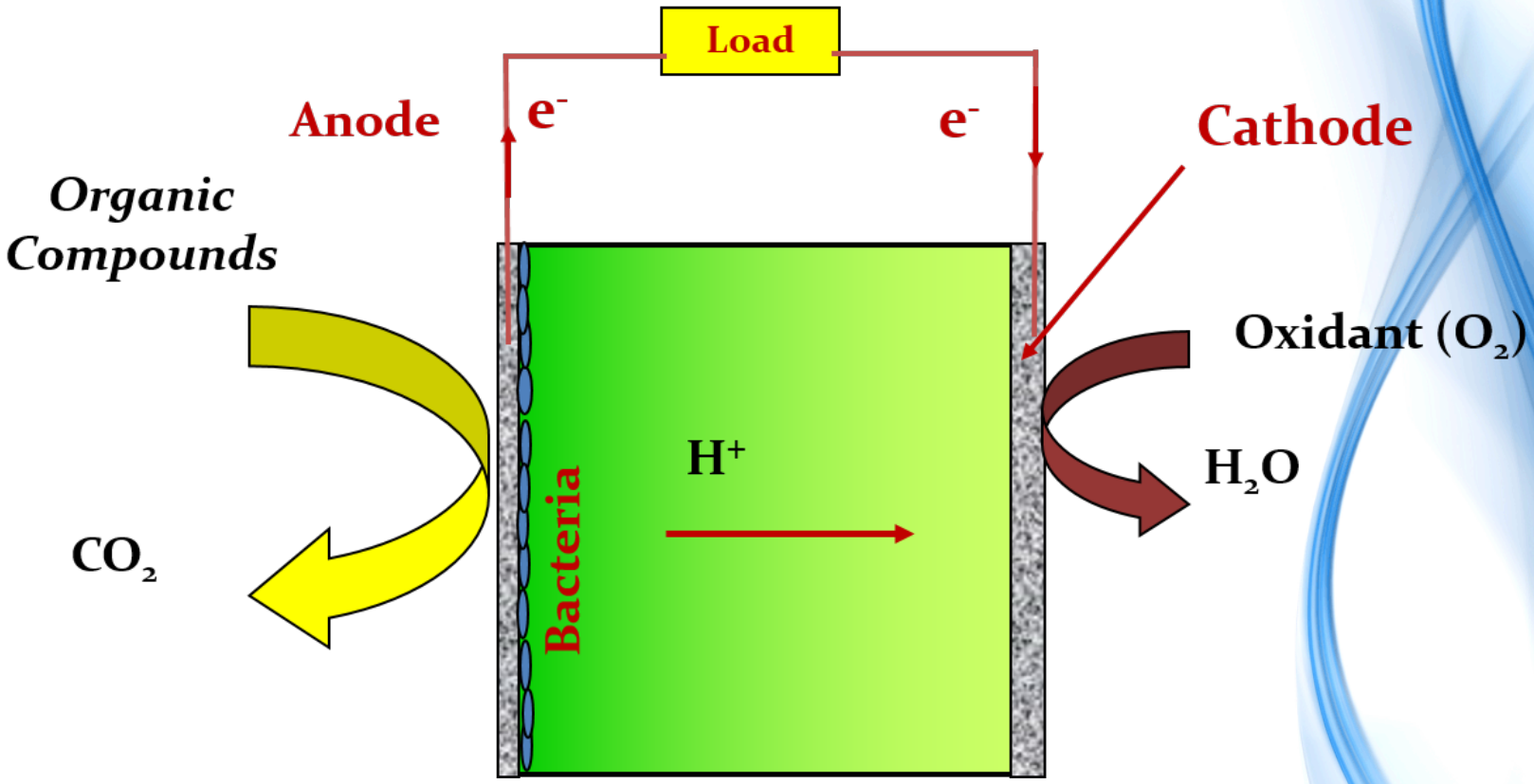
Inflatable Solar Light:
$15 from MPOWERD.COM

MpowerD also donates these lights to Africa →

Distributed electricity that is failure-proof:

- solar lanterns
- networked solar rooftops

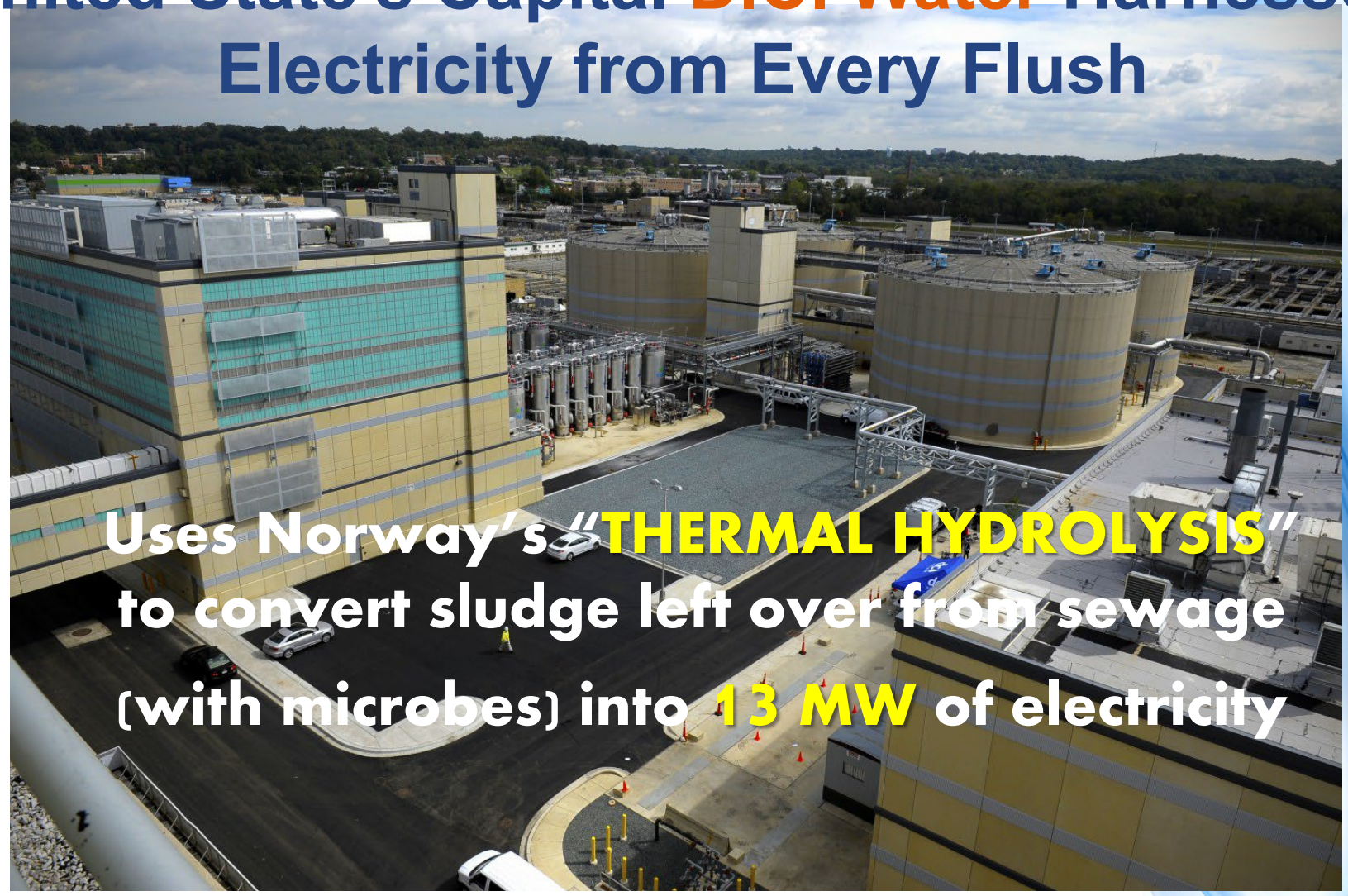
Bacteria Generate Electricity and Purify Waste Water



Craig Venter Institute testing 600 liters/day pig waste at local farm in Escondido CA and Penn State University both of whom

generate kilowatts from human waste

United State's Capital D.C. Water Harnesses Electricity from Every Flush



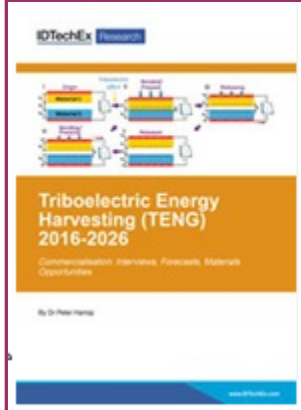
Energy Harvesting = $7B Market

Energy Harvesting: Off-Grid Microwatt to Megawatt 2017-2027

Applications, technologies, forecasts including regeneration

By Dr Peter Harrop and Dr Harry Zervos

Reports Published by **IDtechEx.com**



Triboelectric Energy Harvesting (TENG) 2017-2027

Commercialisation: Interviews, Forecasts, Materials Opportunities

Brand new for August 2016

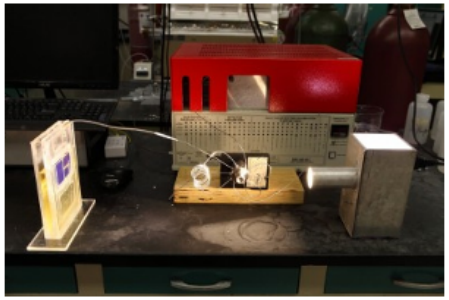
By Dr Peter Harrop

Harvests electrostatic energy with polymers for self-powered systems

> Triboelectric energy harvesting transducers will be a $400 million market in 2027

Posted on August 10, 2016

Solar cell captures CO2 and sunlight, produces burnable fuel



ENERGY HARVESTING JOURNAL

Researchers at the University of Illinois at Chicago have engineered a potentially game-changing solar cell that cheaply and efficiently converts atmospheric carbon

gyharvestingjournal.com/articles/9812/solar-cell-captures-co2-and-sunlight-...

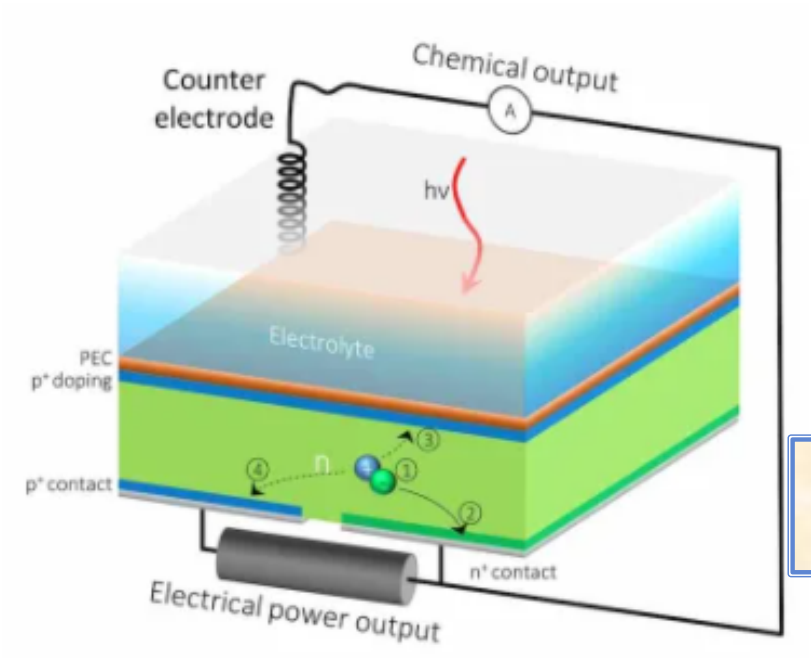
Thomas Valone - Integrity Research Institute

HPEV Solar Cell: Energy & Fuel

NOVEMBER 7, 2018 | PHOTONICS/OPTICS | ENERGY | IMAGING

Solar Cell Does Double Duty for Renewable Energy

Photonics & Imaging Technology INSIDER



The HPEV cell's extra back outlet would allow the current to be split into two, so that one part of the current contributes to solar fuels generation, and the rest can be extracted as electrical power. (Credit: Berkeley Lab, JCAP) **www.LBL.gov**

NASA Tech Briefs, Nov. 2018
https://www.techbriefs.com/

Hybrid PhotoElectrochemical and Voltaic (HPEV) cell

Turns sunlight and water into not just one, but two types of energy: hydrogen fuel and electricity

Lawrence Berkley National Lab
Joint Center for Artificial Photosynthesis

7% efficiency: solar hydrogen fuel
13% efficient: electricity generation
20% total efficiency

physicsworld | Magazine | Latest

environment and energy

ENVIRONMENT AND ENERGY | RESEARCH UPDATE

Solar-powered harvesters could produce clean water for one billion people

13 Nov 2021

Human right: this boy in Nepal has access to safely mana
country and beyond do not. (Courtesy: Australian Departn
3.0 AU)

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Atmospheric Water Harvesting: A Review of Designs

Xingyi Zhou, Hengyi Lu, Fei Zhao*, and Guihua Yu*

Cite this: *ACS Materials Lett.* 2020, 2, 7, 671−684
Publication Date: May 7, 2020
https://doi.org/10.1021/acsmaterialslett.0c00130

Article Views 27547 | Altmetric 8

OCTOBER 27, 2021

Harvesting water from the air

Sharing Project H2E's findings on improving access to clean drinking water

nature

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nature > articles > article

OPEN ACCESS

Article | Open Access | Published: 27 October 2021

Global potential for harvesting drinking water from air using solar energy

AQUANTIS BUILDING UNDERSEA TURBINES

AquantisTech.com

Potential of world's oceans is **5 TW** (5,000 GW)

Hydrokinetic (MHK) energy operates 24/7

- Undersea Turbines **distributed to Wales and the Isle of Wight**
- **200 MW field** of **marine turbines** are in the **Gulf Stream**
- **Large ocean circulation currents are marine energy sources**

Surface entry to all systems; high power-to-weight ratio; low cost deployment; ease of operation and maintenance; stable spar buoy vessel anchored to seabed

Energy Harvested from Evaporation Could Power Much of U.S., Says Study

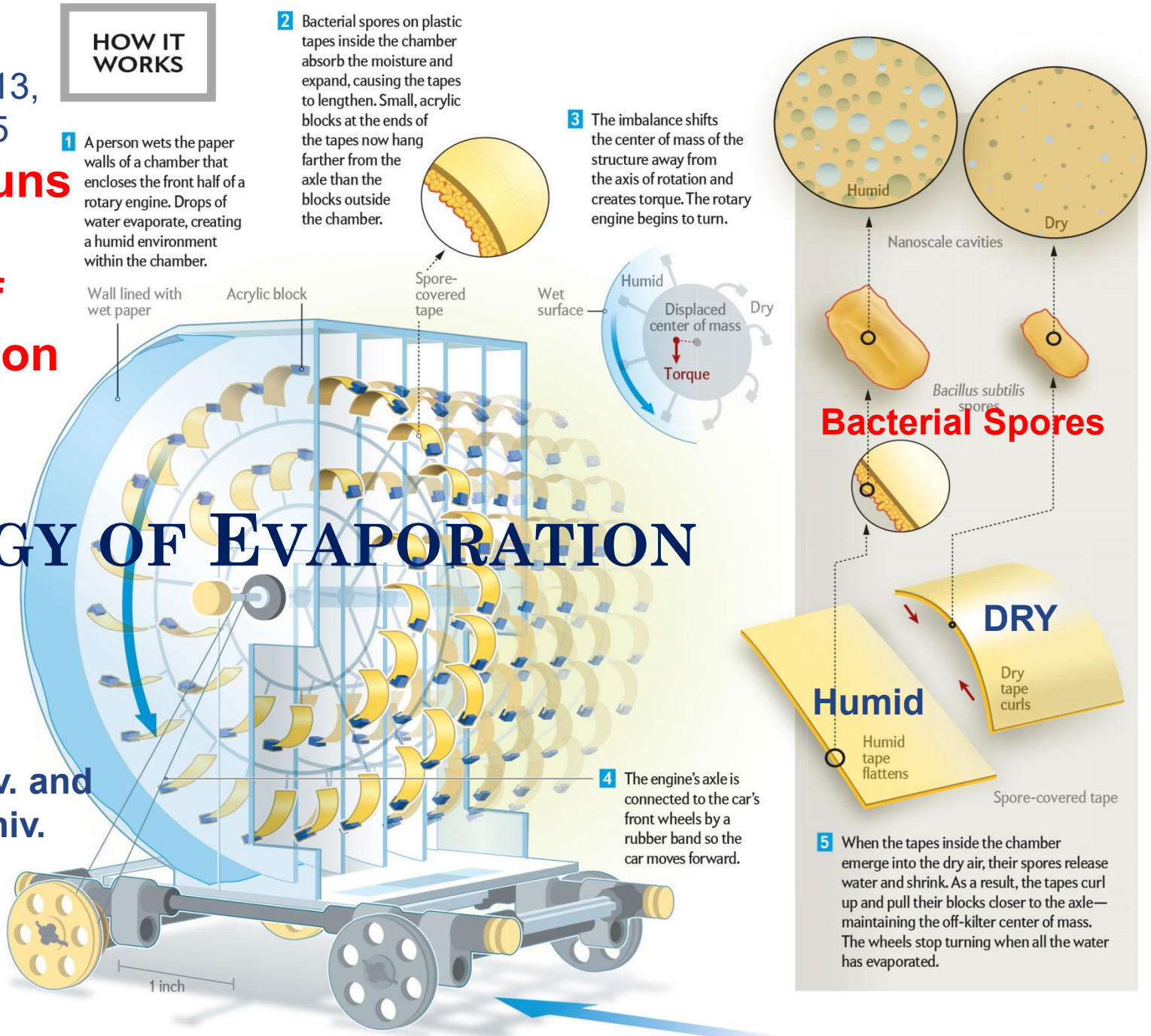
September 26, 2017

Sci. Amer. 313, 26, Aug. 2015

Toy car runs on the energy of evaporation

ENERGY OF EVAPORATION

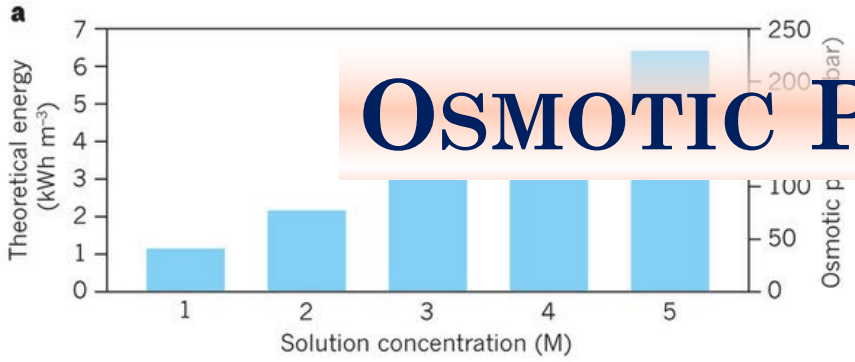
Harvard Univ. and Columbia Univ.

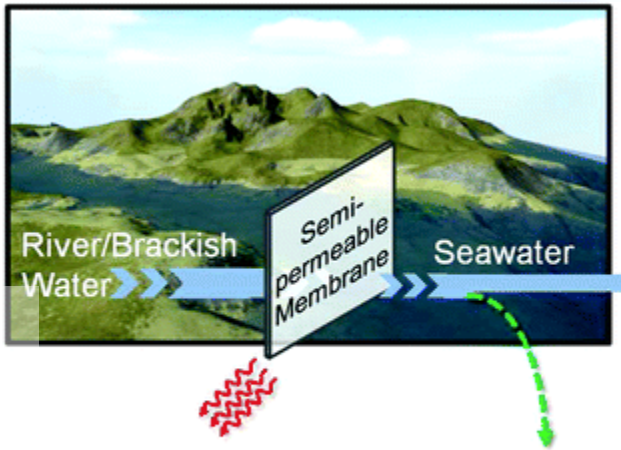


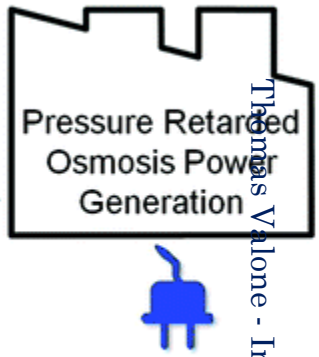
WATER-EVAPORATION CAR – COLUMBIA UNIV.

https://vimeo.com/235801232 Video link or click on arrow

Osmotic Power Generation

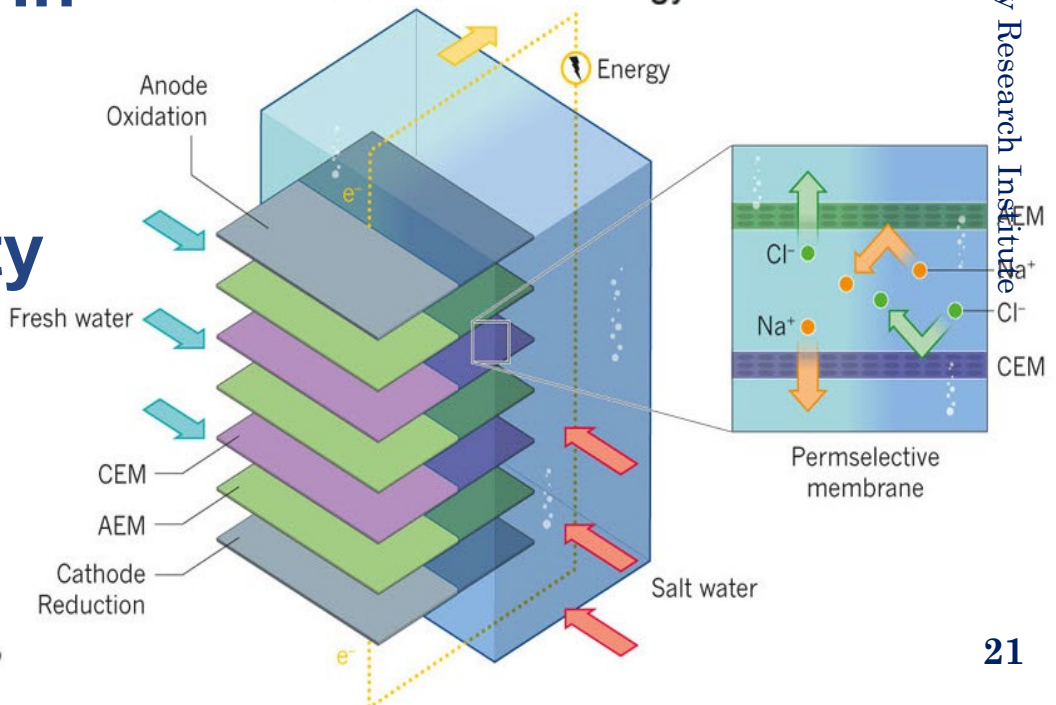


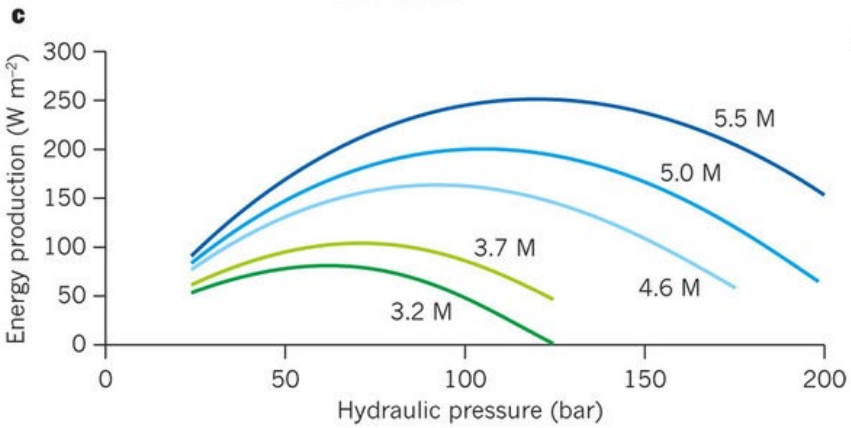




Norway's Statkraft opened world's first osmotic power plant in 2009 to produce emission-free kilowatts of electricity

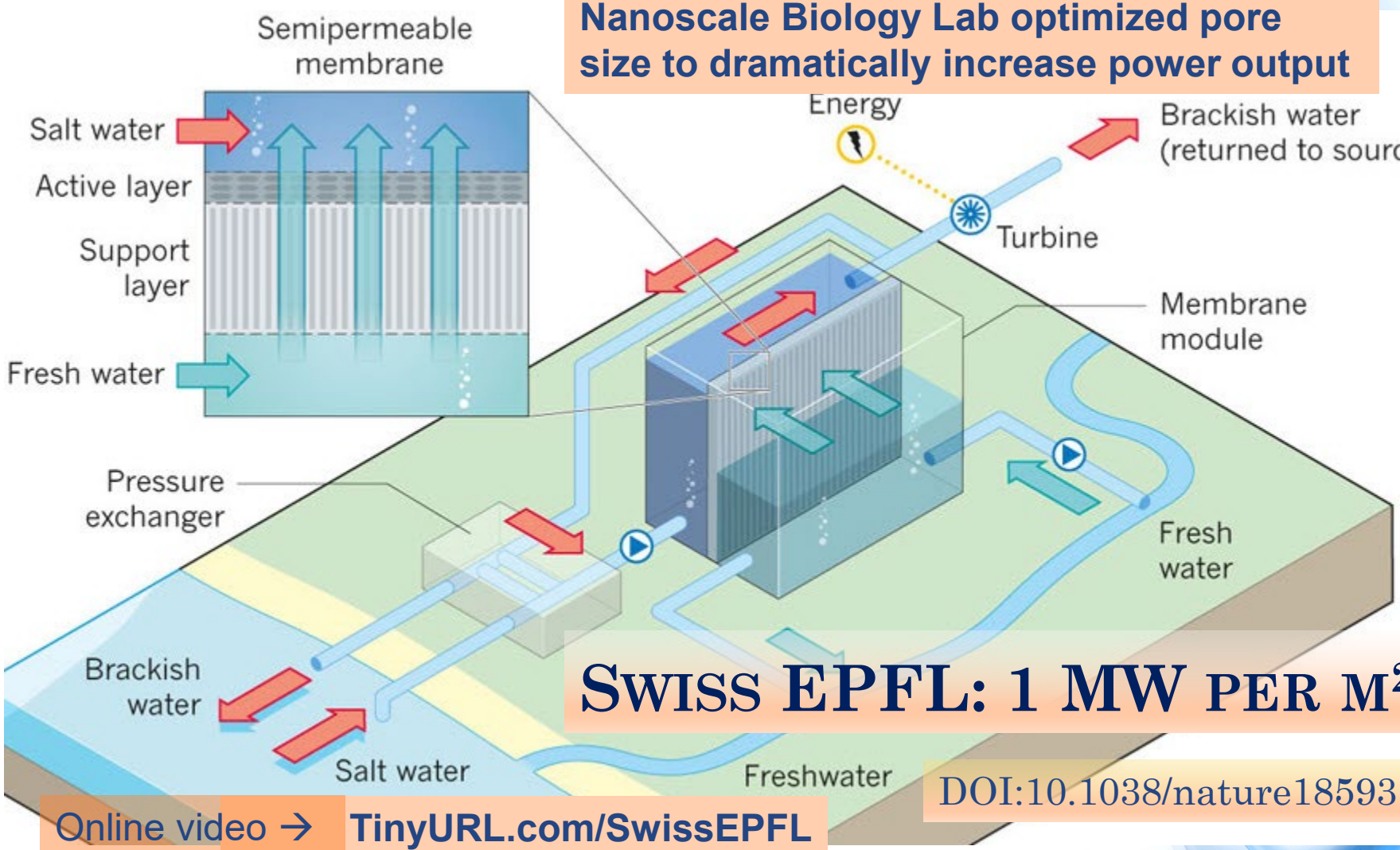
$$\Delta G_{mix} = \text{Frictional Losses} + \text{Unutilized Energy} + \text{Extractable Work}$$





"Osmotically induced current"–*Nature*, July,2016

Nanoscale Biology Lab optimized pore size to dramatically increase power output



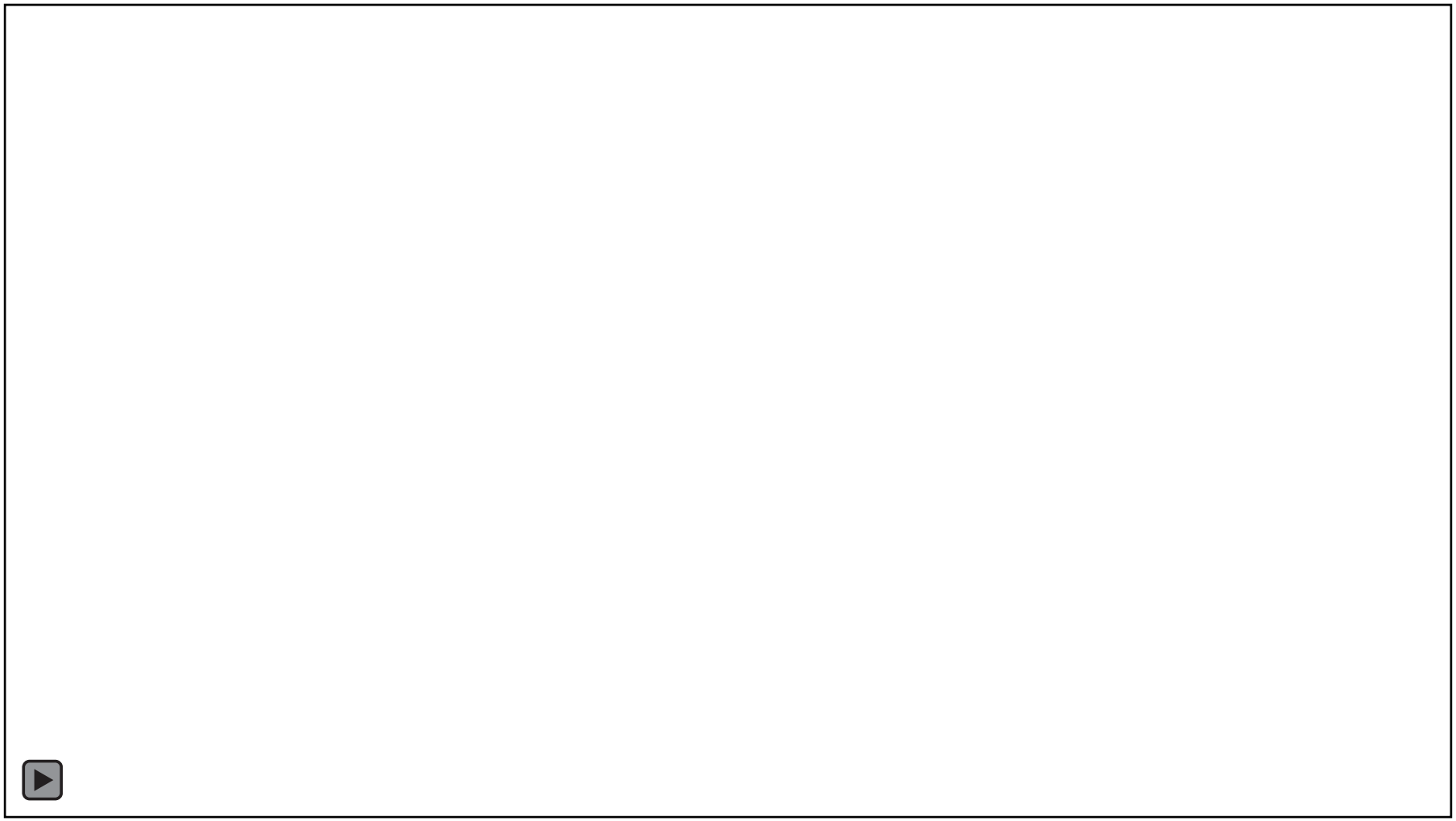
SWISS EPFL: 1 MW PER M^2

DOI:10.1038/nature18593

Online video → **TinyURL.com/SwissEPFL**

Swiss EPFL Osmotic Power

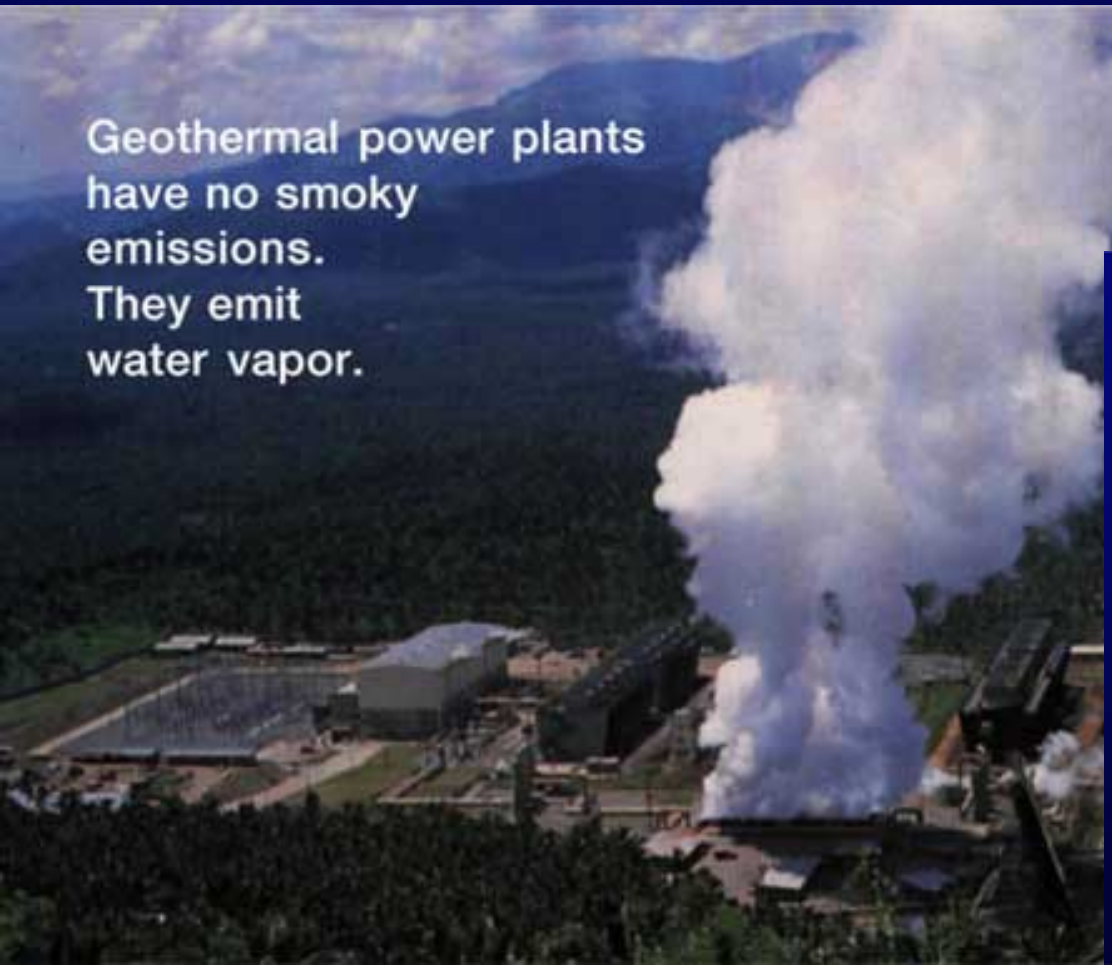
Ecole Polytechnique Federale de Lausanne – **4 min. video --** **TinyURL.com/SwissEPFL**



Thomas Valone – Click on arrow if available or copy tinyurl, to view video

U.S. Geothermal Power

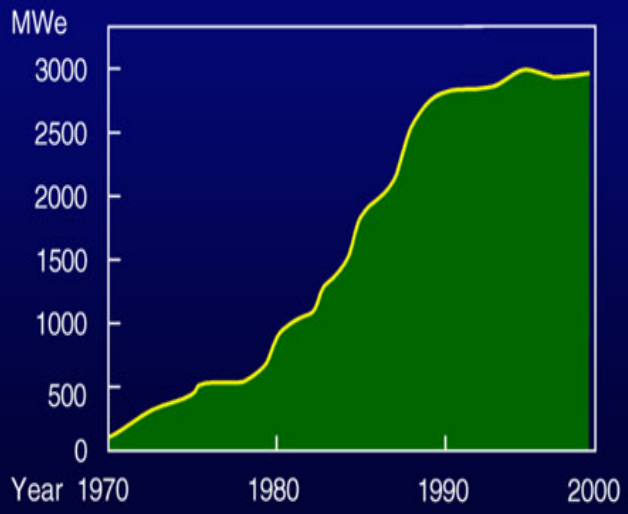
Over 2,800 megawatts of electricity from geothermal power plants are supplying about 4 million people in the U.S.



Jan. 22, 2007

MIT Panel Backs Geothermal as a KEY US Energy Source – report: mit.edu

Growth in U.S. Geothermal Power



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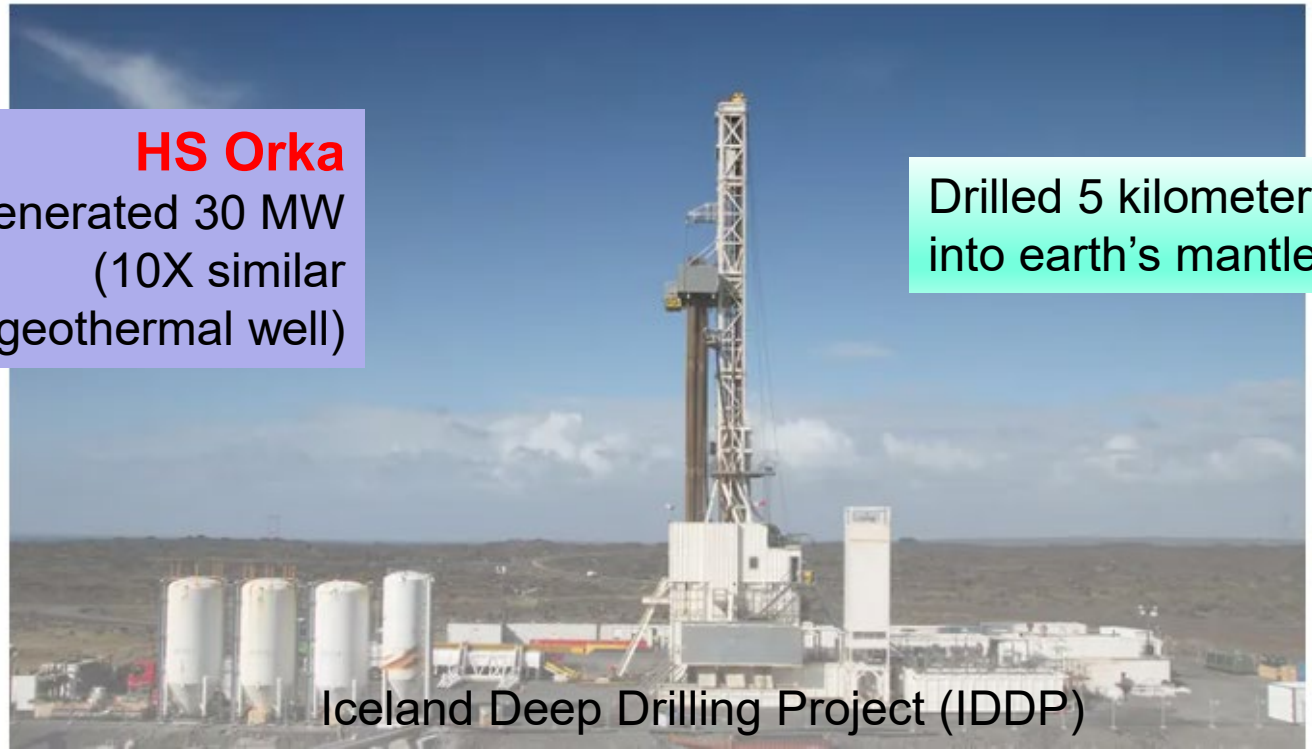
Iceland drills hottest hole to tap into energy of molten magma

EARTH 21 October 2016

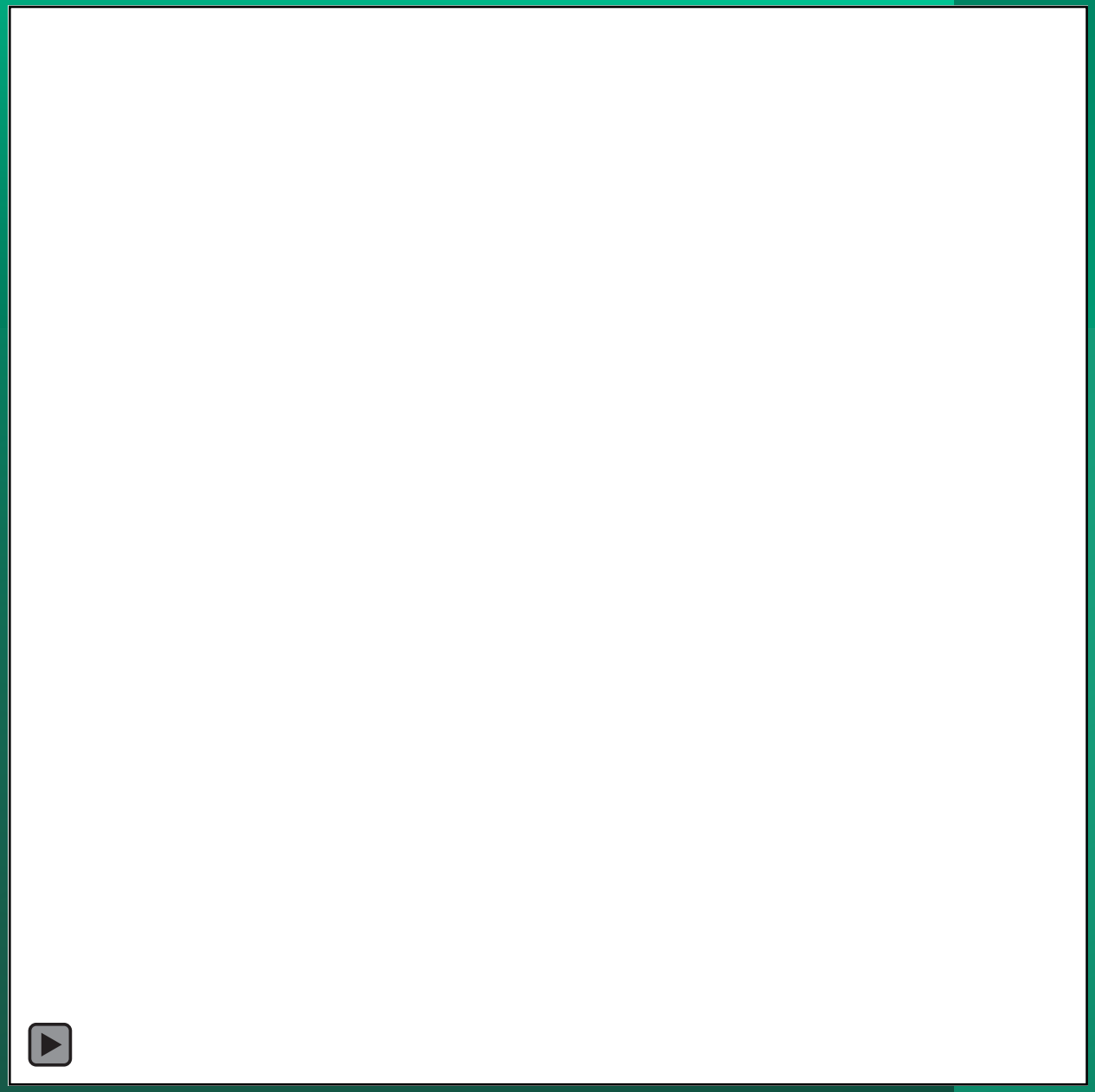
By Fred Pearce



HS Orka
Generated 30 MW
(10X similar
geothermal well)

Drilled 5 kilometers down into earth's mantle

Iceland Deep Drilling Project (IDDP)



Magma Fueled Energy – click on arrow or see this one minute video online at https://tinyurl.com/MagmaEnergy

GRAPHENE ENERGY HARVESTING (GEH)

University of Arkansas NEWS

Thursday, December 30, 2021

SEARCH NEWS

May be the first commercial **Free Energy** device on the market!

Thermal (and non-thermal) perpetual motion: graphene nanolayers now in a GEH chip to be released this year by **NTSinnovations.com**

Physicists Build Circuit That Generates Clean, Limitless Power From Graphene

Oct. 02, 2020

FAYETTEVILLE, Ark. – A team of University of Arkansas physicists has successfully developed a circuit capable of capturing graphene's thermal motion and converting it into an electrical current.

"An energy-harvesting circuit based on graphene could be incorporated into a chip to provide clean, limitless, low-voltage power for small devices or sensors," said Paul Thibado, professor of physics and lead researcher in the discovery.

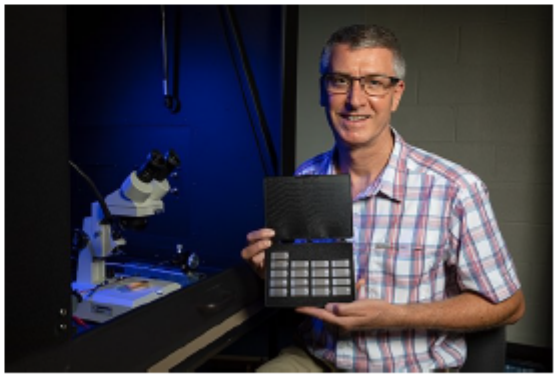


Photo by Russell Cothren

Paul Thibado, professor of physics, with sample energy-harvesting chips under development.

PHYSICAL REVIEW E

covering statistical, nonlinear, biological, and soft r

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Fluctuation-induced current from freestanding graphene

P. M. Thibado, P. Kumar, Surendra Singh, M. Ruiz-Garcia, A. Lasanta, and L. L. Bonilla
Phys. Rev. E **102**, 042101 – Published 2 October 2020

Zero-Point Energy Technology

Tinyurl.com/Moddel-ZPE
Best lecture by Garret ☺

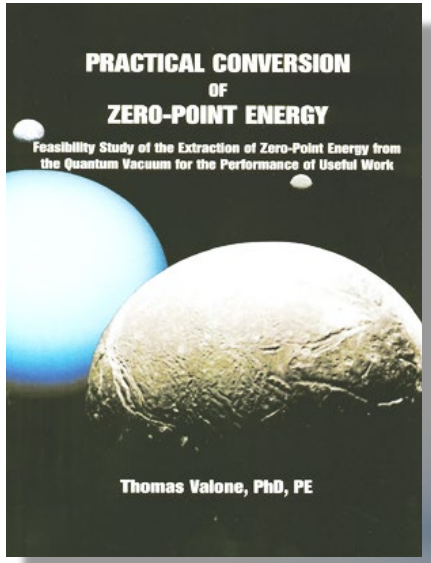
Casimir-cavity devices for zero-point-energy harvesting

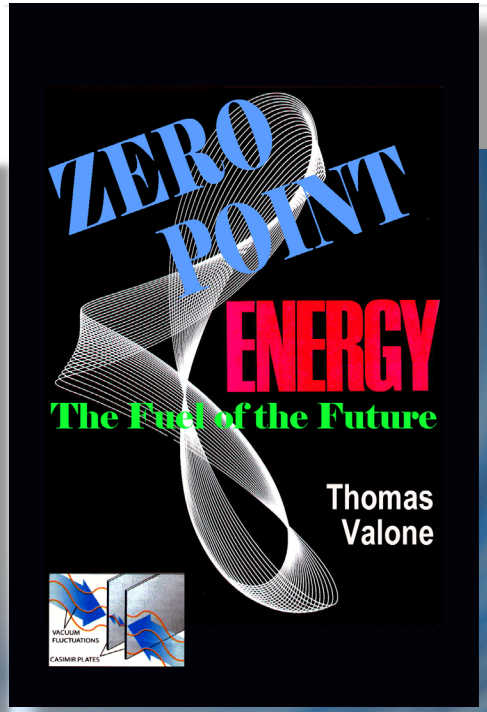
*Lab Publications

- "Casimir-cavity-induced conductance changes," G. Moddel, A. Weerakkody, D. Doroski, D. Bartusiak, Physical Review Research, 3, L022007 (2021); DOI: 10.1103/PhysRevResearch.3.L022007.
- **"Optical-Cavity-Induced Current." G. Moddel, A. Weerakkody, D. Doroski and D. Bartusiak, Symmetry, 13(3), 517; doi.org/10.3390/sym13030517 (2021).**
- "Extraction of Zero-Point Energy from the Vacuum: Assessment of Stochastic Electrodynamics-Based Approach as Compared to Other Methods," Garret Moddel and Olga Dmitriyeva, Atoms, 7 (51), 18 pages, (2019); DOI:10.3390/atoms7020051.

Presented at COFE5 held at U of Maryland by IRI

Further information – **Valone books** →





University of Colorado **Boulder**

Garret Moddel
COLLEGE OF ENGINEERING AND APPLIED SCIENCE

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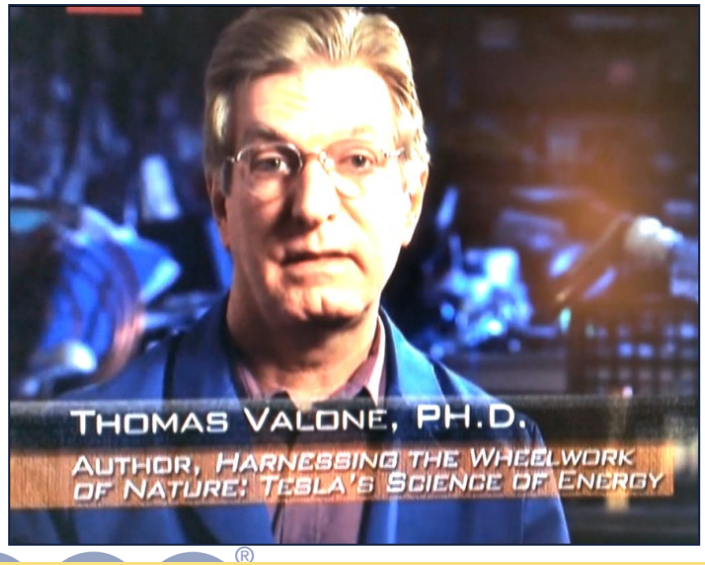
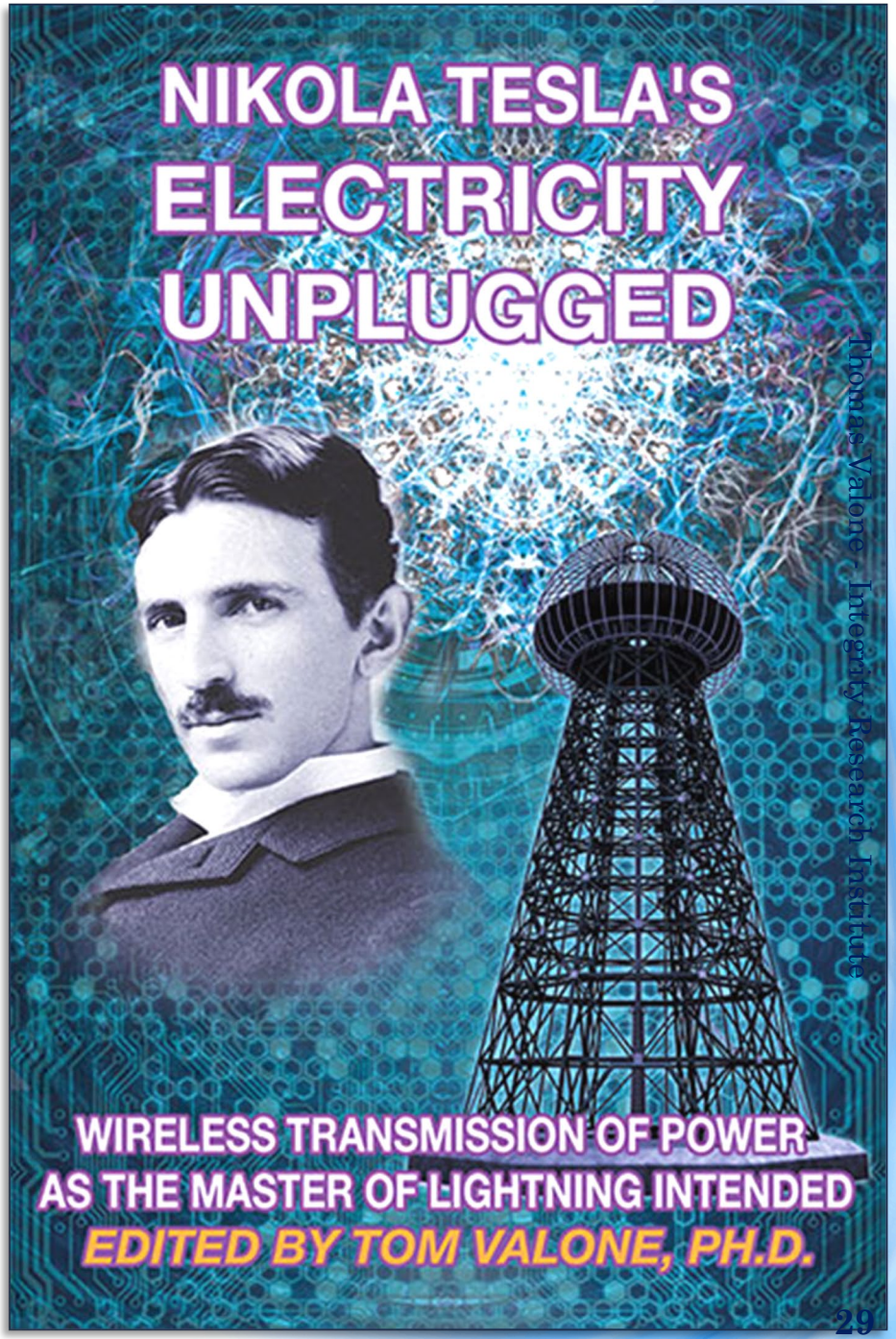
Wireless Power Being Developed

From short range to long range, the latest wireless solutions are in a 450-page illustrated book → Long range wireless power transmission uses Zenneck Surface Waves, being demonstrated by Texzon Technologies (Texzont.com)

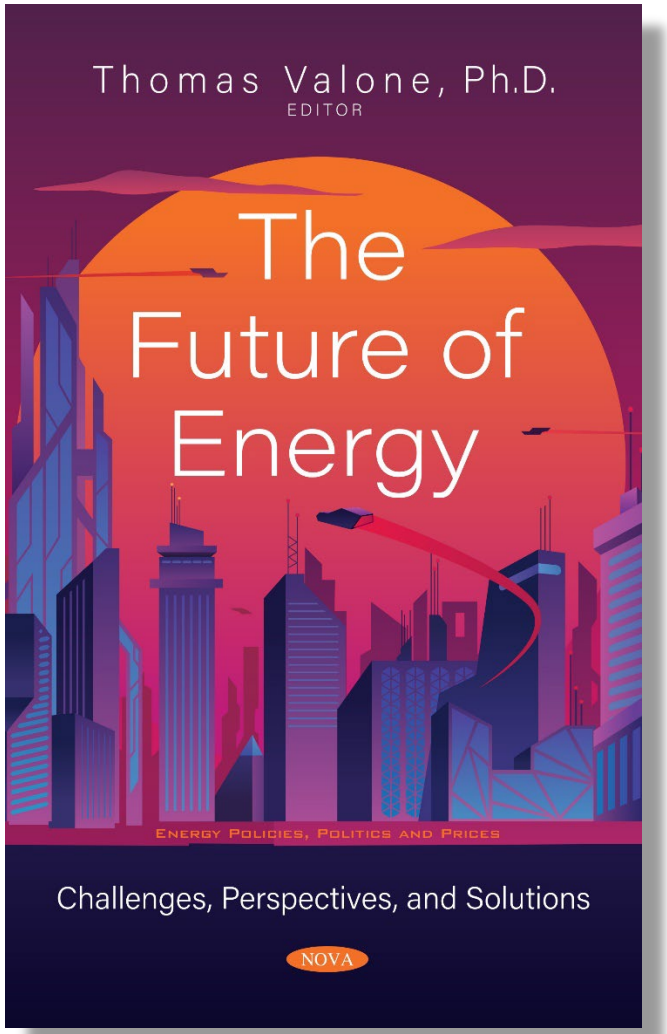


Featured on the History Channel



The Future of Energy

Nova Science Publishers



Fusion-Fission, LENR, Manelas Car

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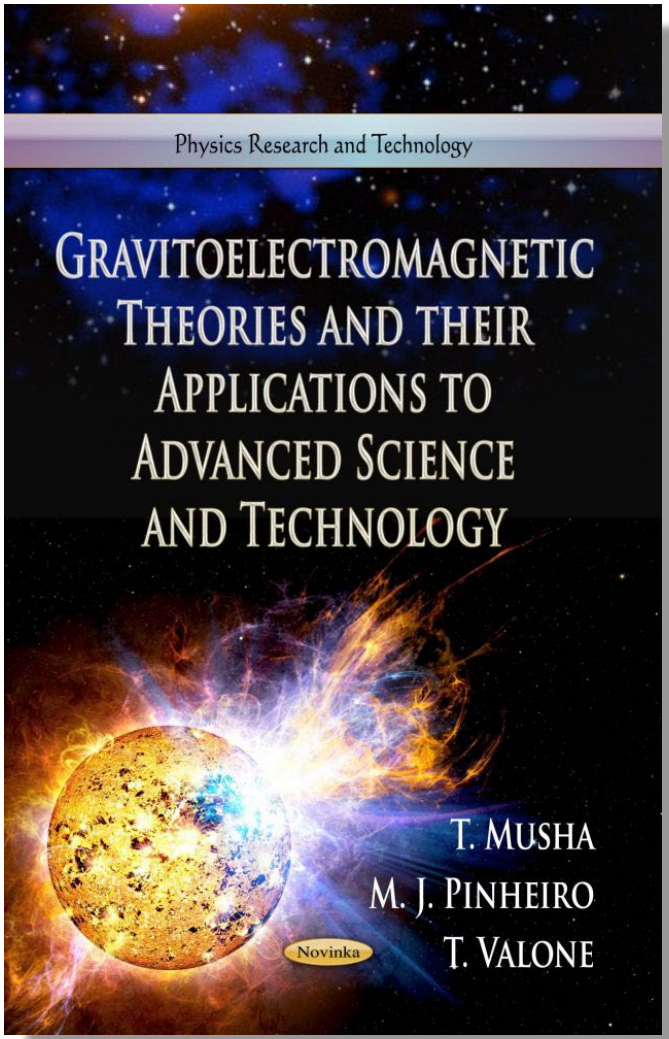
GravitoElectroMagnetics

Nova Science Publishers



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