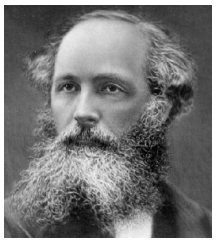
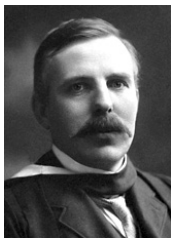
Fame and Shame

Science Is As Flawed As Scientists Who Do It

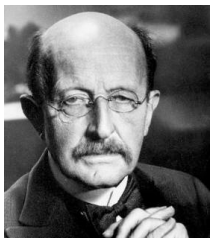
Atoms



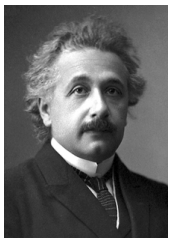
J. C. Maxwell



E. Rutherford



M. Planck



A. Einstein

L. De Broglie

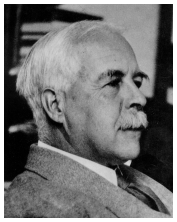
N. Bohr

W. Heisenberg

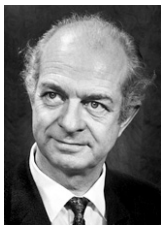
P. Dirac

E. Schrondinger

Molecules



G. N. Lewis



L. Pauling

E. Huckel

R. S. Mulliken

R. Hoffman

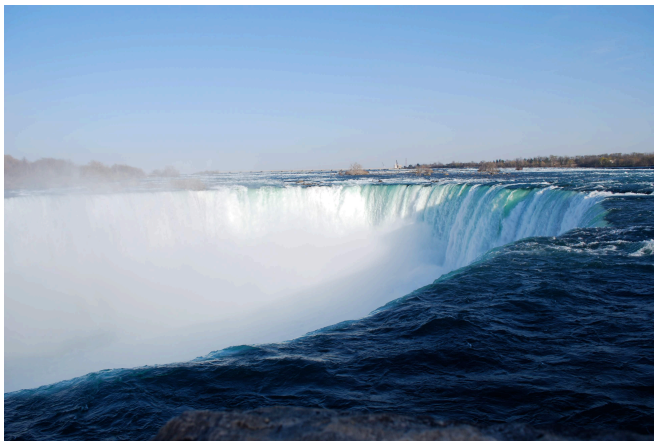
K. Fukui

R. B. Woodward

E. J. Corey

Polywater

Ordinary water polymerizes into a new form of water upon contact with glass surfaces.



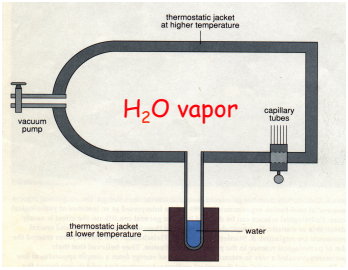
It is possible to imagine life without gasoline, but it would be impossible to imagine life without water.

Polywater $[H_2O]_n$

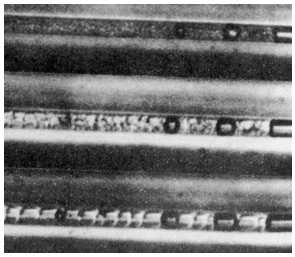
A new form of water, polywater is prepared by placing freshly drawn glass capillary tubes in an atmosphere that is nearly saturated with water. The vapor pressure of the water surrounding the capillary is held slightly below saturation to deter normal condensation of water in the tube. After a few days, a condensate forms inside the capillary tube. Normal water is removed from the condensate through evaporation, leaving only the thick polywater in the tube. Polywater freezes at –50°C and boils at 300°C.

B. V. Derjaguin and N. N. Fedyakin,
Proc. Acad. Sc. USSR, Phys. Chem., 147, 808, (1962)

How is it made?



How does it look?



A Sample of Polywater
In a Thin Capillary Tube

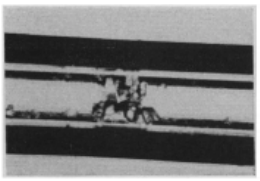


Fig. 1. Vaseline-like polywater sample after removal of normal water. The capillary inside diameter is about 200 μm.

Properties of Polywater

- Freezing "Interval" ~ 243 K to 213 K
- Boiling Point ~ 523 K to 573 K
- Density 1.4 g/cm^3
- Thermal expansion coefficient ~ 1.5 times normal water

J.D. Barnal

In my opinion this is the most important physical chemical discovery of this century

B.V. Deryagin

I am very glad to hear you say this ---- as you are the principal specialist on the physics and chemistry of water

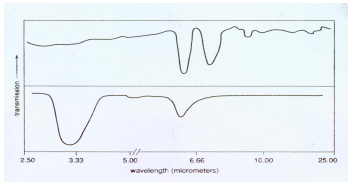
IR spectrum

The Infrared and Raman Spectra of Polywater!

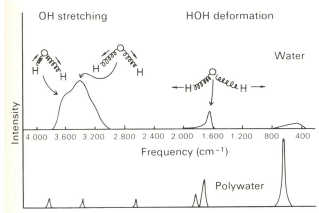
Polywater

E. R. Lippincott et. al., *Science*, *164*, 1482, **1969**

"Several structures are proposed which are consistent with the spectral data and the remarkable properties and stability of the material. ***It is concluded that the material is a true polymer of water, and, therefore, is named polywater."***



Raman Spectra



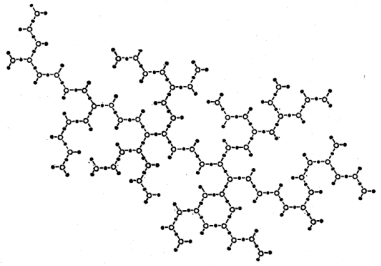


Fig. 3. A proposed structure for polywater consisting of highly branched polymer chains.

A theoretical explanation of polywater!

A Theory of Anomalous Water

L. C. Allen and Peter A. Kollman

Science, *167*, 1443, **1970**

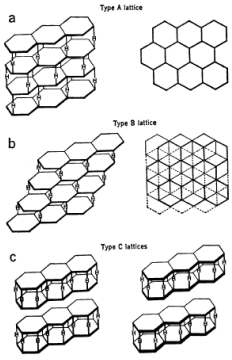


Fig. 1. The three types of anomalous water lattices. (a) Type A lattice; (b) type B lattice; (c) type C lattice.

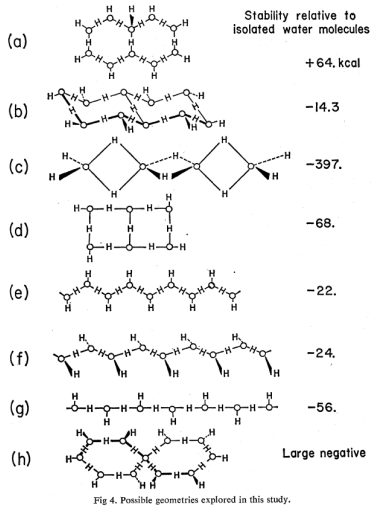


Fig 4. Possible geometries explored in this study.

"Anomalous" Water

F. J. Donahoe, *Nature*, 224, 198 (1969)

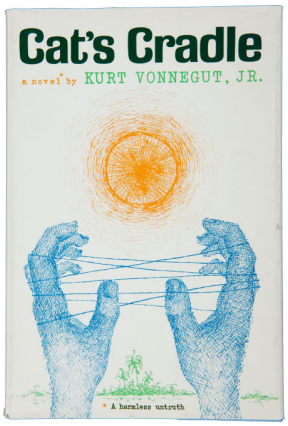
I need not spell out in detail the consequences if the polymer phase can grow at the expense of normal water under any conditions found in the environment. --- **The polymerization of Earth's water would turn her into a reasonable facsimile of Venus**.

After being convinced of the existence of polywater, I am not easily persuaded that it is not dangerous. ---- **I regard the polymer as the most dangerous material on earth**.

Every effort must be made to establish the absolute safety of the material before it is commercially produced. **Once the polymer nuclei become dispersed in the soil it will be too late to do anything**.

Scientists everywhere must be alerted to the need for extreme caution in the disposal of polywater. Treat it as the most deadly virus until its safety is established.

Polywater poses a threat to homeland security!



Published 1963

"There are several ways in which water can freeze so that its atoms can stack and lock in an orderly, rigid way. Suppose this kind of ice, let's call that sort ice-1, is only one of several types of ice that can exist. Suppose water on earth always froze as ice-1 because it never had seeds to teach it how to form other forms of ice, you know, ice-2, ice-3, ice-4, and so on. Now suppose there was one special form of ice, let's call it ice-9, exists somewhere and that ice-9 is hard as a diamond and suppose that someday a tiny seed of ice-9 was somehow got into one of the oceans.…."

Paraphrased from Kurt Vonnegut, *Cat's Cradle*

Polywater in the National News

American chemists have confirmed that there is a form of water with properties quite different from that of the fluid everyone takes for granted.

New York Times, Sep 22, 1969

Good news. The U.S. has apparently closed the polywater gap and the Pentagon is bankrolling efforts to push this country's polywater technology ahead of the …

Wall Street Journal, June 30, 1969

An American scholar---suggests that polywater, if once let out of the laboratory will go on a wild rampage across the globe, transforming the cool clear liquid that we drink into polywater, thereby destroying all earthly life.

Guardian, 1969

The Miami Herald

July 30, 1969

Miami Scientific Team Creates Mysterious New Form of Water

- If water is ever found on moon it would be polywater
- It might chemically convert ordinary water into polywater
- It would not dry up the ocean but might decrease its volume by 40%
- At this stage who knows what the future holds for this stuff

Is it real?

Challenged by critics to let impartial scientists analyze his polywater, Deryagin had turned over 25 tiny samples of the substance to investigators. The results showed that Deryagin's polywater was badly contaminated by organic compounds, including lipids and phospholipids, which are ingredients of human perspiration.

Time Magazine, October 19, 1970

Scientist says mystery of polywater has been solved: Russian' s test samples contained sweat.

New York Times, September 27, 1970

Polywater drains away.

Nature, March 5, 1971

The extraordinary claim is withdrawn.

Our investigations led to the discovery in 1962 of what we claimed to be an anomalous new, stable form of water with a density almost one and a half times that of ordinary water and which possessed a molecular structure that could only be described as polymeric.

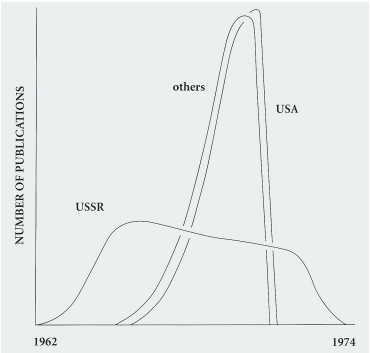
- **We have now established that there are no samples, both free of impurity atoms and simultaneously exhibiting anomalous properties.**
- **Consequently, the claimed properties should be attributed to impurities in ordinary water rather than to the existence of polymeric water molecules..."**

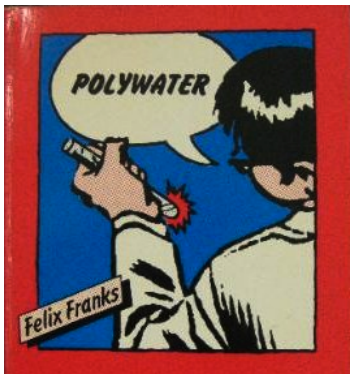
B. Derjaguin and N. Churaev, "Nature of Anomalous Water", *Nature*, 244, 430, 1973.

Obituary: Polywater 1962-73

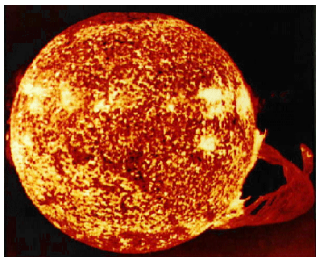
Recently Academician Deryagin himself has announced that his latest reserachers have shown that **doubters were right and he was wrong**. Now if only politicians behaved with the candor science requires of all true scientists.

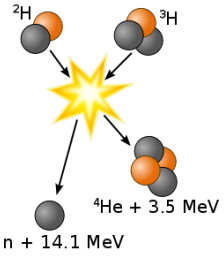
New York Times, July 28, 1973

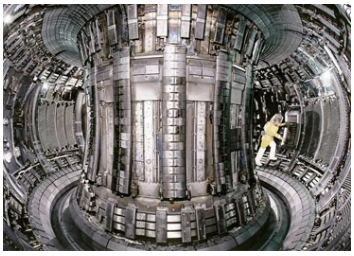




Fusion



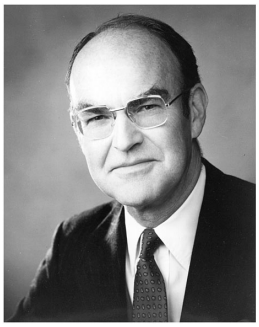




International Thermonuclear Experimental Reactor

The Announcement

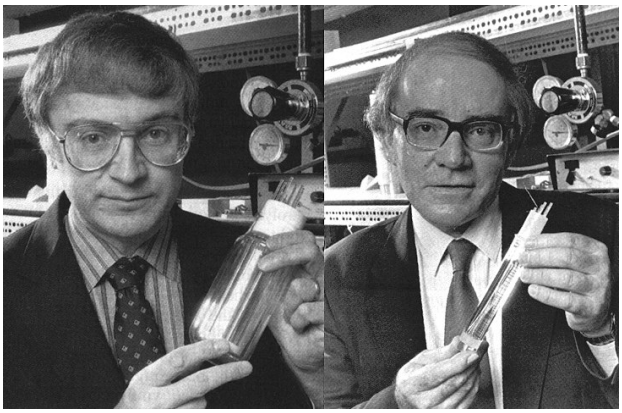
University of Utah N-Fusion Press Conference
March 23, 1989, Salt Lake City, Utah



Chase Petersen
President, University of Utah

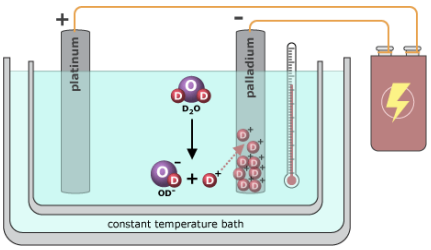
- "Two scientists have successfully created a sustained nuclear fusion reaction at room temperature in a chemistry laboratory at the University of Utah."
- "The greatest invention since the discovery of fire."
- "There are billions of dollars at stake and Nobels in the offing."

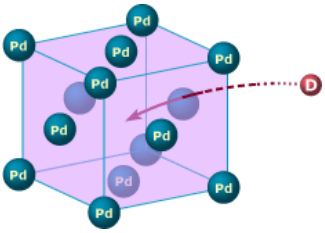
Pons and Fleischmann



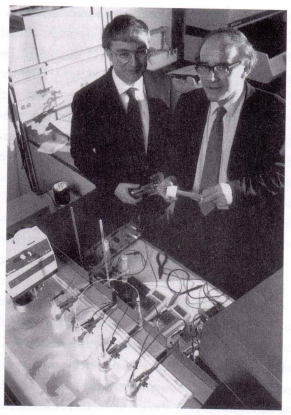
An Extraordinary Claim: Atoms can undergo nuclear fusion at room temperature in a jam jar. A new paradigm of COLD FUSION!

Cold Fusion Machine





Pons and Fleischmann declares they have a solution to energy crisis

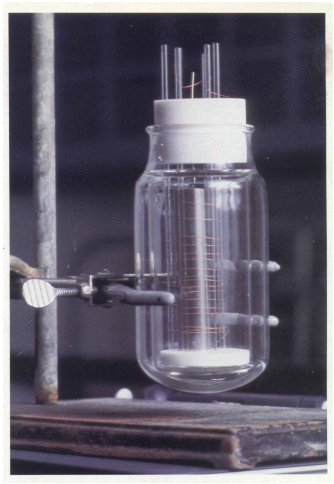


Stanley Pons (left) and Martin Fleischmann in the laboratory.

"Basically, *we have established a sustained nuclear fusion reaction by means which are considerable simpler than conventional means.* Deuterium, which is a component of heavy water, is driven into a metal rod-exactly like the one that I have in my hand-to such an extent that fusion between these components, these deuterons in heavy water, are fused to form a single new atom. And with his process there is a considerable release of energy: and we've demonstrated that this can be sustained on its own. *In other words, much more energy is coming out than we are putting in*."

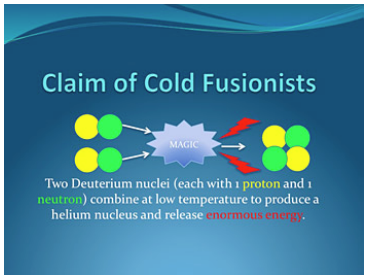
University of Utah Press Conference
March 23, 1989, Salt Lake City, Utah

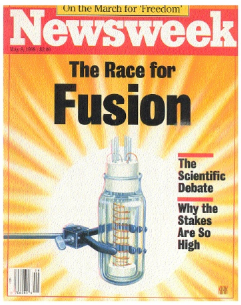
Physicist's Paradigm for Fusion: Princeton Tokomak Reactor. A billion dollar operation.

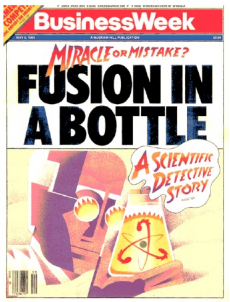


Chemist's Paradigm for Cold Fusion: Utah Tokomak. Energy straight from the faucet.

Science hijacked





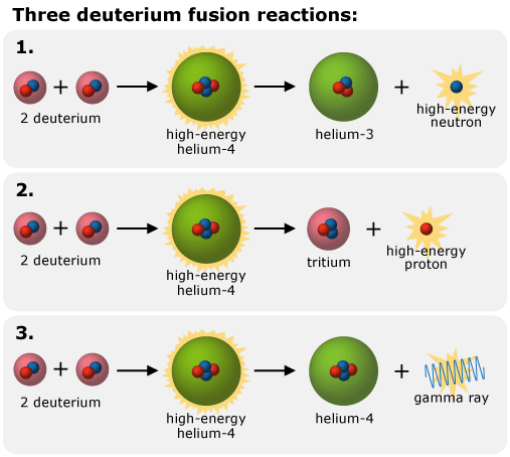


Hot fusion: The Physics Paradigm.

The fusion of two nuclei of deuterium together to form helium releases an enormous amount of energy. The paradigm requires that a huge input of energy is required to overcome the strong repulsion between positive charges as the nuclei approach and attempt to fuse and lower the energy. ***Fusion is performed within the paradigm under the condition of "high energy physics", i.e., 100 million degrees Celsius (10,000 times hotter than the surface of the sun).*** *Cold fusion was reported to perform the fusion of deuterium at room temperature through the use of a simple electrochemical cell* made of palladium, long known to adsorb deuterium. In effect, the electrochemical cell "catalyzed" fusion of the deuterium atoms.

Hot fusion: A physicist's paradigm.

- In nuclear fusion two light nuclei are combined into a heavier nucleus, releasing energy.
- Deuterium, ^{2}H, can be used in D-D fusion to release approximately 4.00 MeV per fusion.



Fusion Phenomenon Confirmed within a Month - 1989

- **Excess Heat** (Texas A & M; April 10, Wall Street Journal "Cold Fusion Expriments Duplicated")
- **Neutrons** (Georgia Tech; April 10, Press Conference)
- **Tritium** (Uni. Washington, Seattle: April 14, Press Conference)
- **^{4}He** (Uni. Utah; April 17)

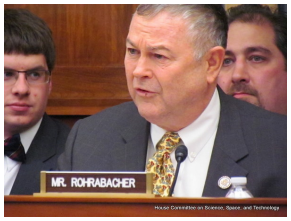
To Glenn Seaborg,
With best wishes,

Prof. Seaborg to President Bush: I am sceptical, but that I believe that the phenomenon had to be investigated and I am recommending that a special panel be created to look into it.

Utah Governor Bangerter signs $ 5 million bill for fusion research

U. Utah President requests Federal Government for $25 million

Congressional hearing



RECENT DEVELOPMENTS IN FUSION ENERGY RESEARCH

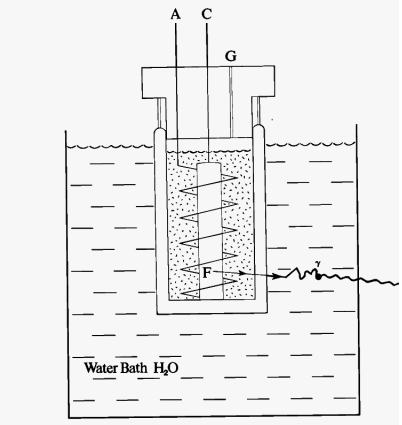
HEARING
BEFORE THE
U.S. CONGRESS, HOUSE COMMITTEE ON
SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
ONE HUNDRED FIRST CONGRESS
FIRST SESSION
APRIL 26, 1989
[No. 46]
Printed for the use of the
Committee on Science, Space, and Technology

DEPOSITORY
NOV 14 1989

Retractions

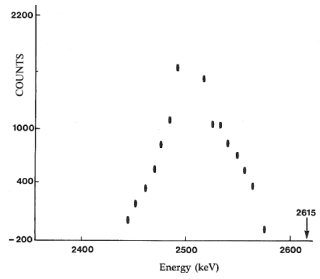
- **Excess Heat** (Texas A & M)
  Electronic thermometer problem
- **Neutrons** (Georgia Tech)
  Background; no proper control
- **Tritium** (Uni. Washington, Seattle)
  Mass spec calibration problem
- **^{4}He** (Uni. Utah; April 17, C. Walling)
  Air leak; never ran the mass spec to check for N_2 and O_2 along with He.

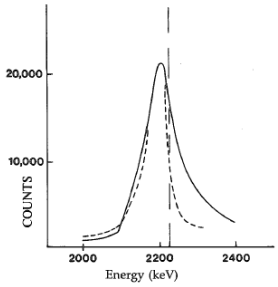
Neutrons and Gammas

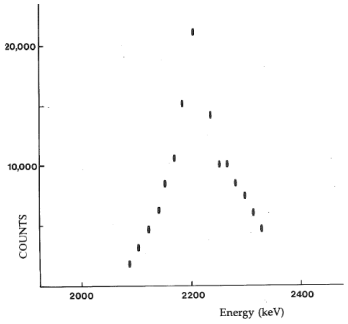


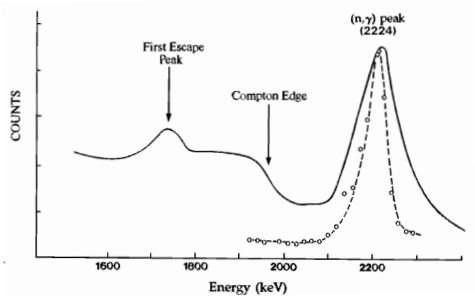
- Some neutrons would be absorbed by the H nuclei in the water releasing a 2.2 MeV gamma- ray.
- Pons & Fletchmann looked for these gammas.

Problems with Gamma-Rays' Peak



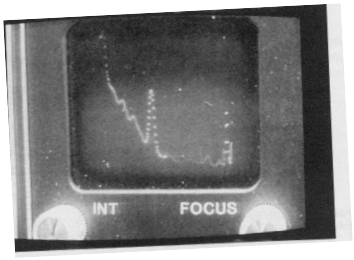


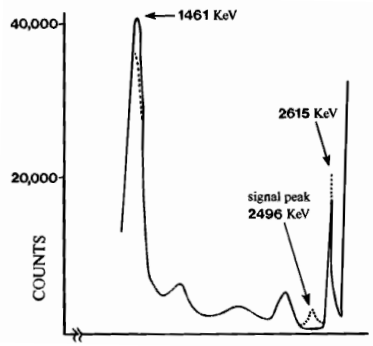


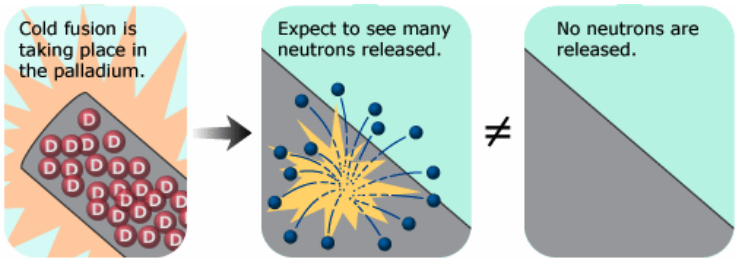


Is it real?

Richard Petrasso
MIT







Britons Abandon 'Cold' Quest

New York Times, June 20, 1989

- **Harwell Laboratory**, one of the British Government's top science centers, announced that it was ending attempts to duplicate the disputed experiment after three months of repeated failures.

- The Harwell scientists tried eight different types of palladium metal, in which the fusion was said to occur. They searched, to no avail, for fusion by products with a bevy of sensitive detectors. They failed to find neutrons and excess heat.

Cold fusion has problems in America too!

N. S. Lewis, Caltech

"It is a simple chemical reaction that has nothing to do with fusion."

Caltech chemists failed to find any symptoms of fusion. The scientists found no emitted neutrons, gamma rays, tritium or helium, although the Utah group reported all these emissions at high levels.

Scientists at M. I. T., Lawrence Berkeley Laboratory, the University of Rochester, a joint research group of Brookhaven National Laboratory and Yale University failed to find evidence of the existence of cold fusion.

Steven Jones, BYU

How did it get started?

- Pons proposal comes to Jones for review in 1988.
- Recommends rejection.
- The Program Officer encourages collaboration between Pons and Jones
- To avoid priority Pons and Jones agree to submit independent manuscripts at the same time.
- However, Utah President announces the results in a press conference one day before the agreed date.

"Look, I don't mean to be rude, but we have been looking at this process for years now, and it is just not an energy producer. If you could ever get enough energy to light a flashlight, I would be extremely surprised."

Chapter Ends

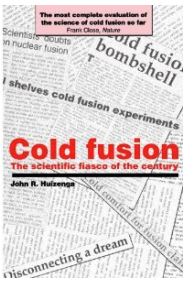
Dr. Fleischmann ultimately acknowledged that his data was slippery and his secrecy counterproductive. Dr. Fleischmann died at age 85 on Aug. 3, 2012 at his home in Tisbury, England.

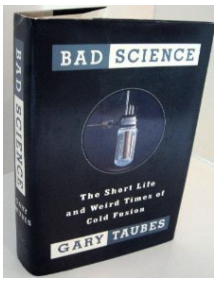
Dr. Pons resigned from the University in 1991 and moved to France in 1992, along with Fleischmann, to work at a Toyota-sponsored laboratory that closed in 1998. He gave up his US citizenship and became a French citizen.

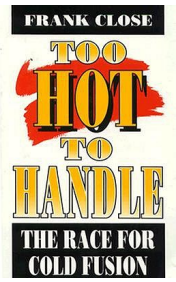
Dr. Peterson: Cold fusion funding fuss leads to the resignation of University of Utah President (June, 1990).

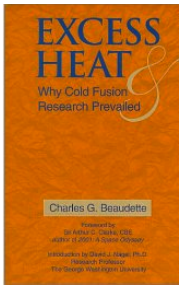
Dr. Jones, who suggested President Bush and his men, planned and orchestrated 911 and used the hijacked planes as a diversion resigned from BYU, six weeks after the school placed him on leave.

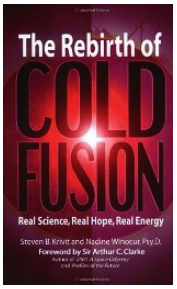
True believers persist

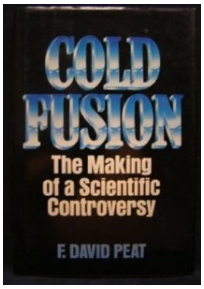


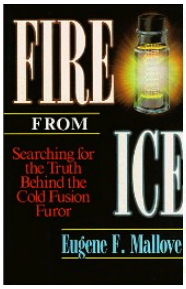


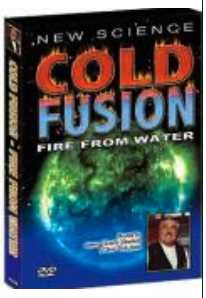




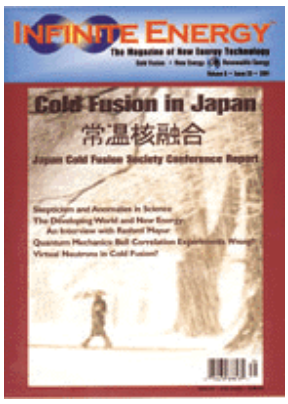








INFINITE ENERGY
Cold Fusion and New Energy Technology
Including Conventional and Renewable Energy



40