

# FUSION facts

A Monthly Newsletter Providing Factual Reports On Cold Fusion Developments

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## A. IMPLICATIONS OF THE BOCKRIS-MINEVSKI & MIZUNO, ET AL. PAPERS

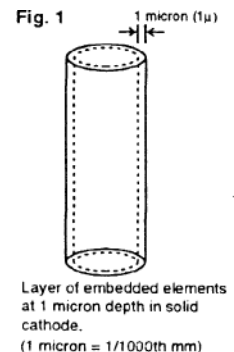
By Hal Fox

The recent paper by Bockris and Minevski [1] reports on finding a thin-layer of "impurities" at a depth of one micron below the surface of a palladium cathode. (See this issue, page 10) See Fig. 1. Although called **impurities**, it is obvious that these elements are the result of nuclear reactions.

The recent paper by Mizuno, Ohmori, & Enyo [2] reports similar results. These authors report, "...but the element concentrations at 1 micron below the electrode surface were almost the same as at the surface."

The authors [1] have reported the factual results of an experiment that, as replicated by other electrochemists, **must have profound results in changing our concepts of permitted nuclear reactions at low-energy levels!** The data shows that in this thin layer, one micron below the surface of the palladium cathode, there is developed a thin cylindrical shell of elements, many of which were not present at the start of the experiment.

The authors [2] have reported similar results but have added other factors that were not provided in [1]. For example, Mizuno, et al., state in their summary, "It was confirmed by several analytic methods that reaction products with atomic numbers ranging from **20 to 28, 46 to 54, and 72 to 82** are produced in palladium cathodes..." Assuming the data is correct, palladium under electrolysis can produce groups of elements that would clearly be expected to be fission products



*Fusion Information Center*  
Also Publishes the  
**JOURNAL of NEW ENERGY**

We are pleased to announce that this peer-reviewed journal has been accepted by Chemical Abstracts for abstracting and indexing. See page 26 for subscription information.

(daughter products) in two groups: calcium to nickel and silver to xenon. In addition, **and worthy of serious attention by theorists**, the palladium under electrolysis produces lesser amounts of what appears to be fusion reactions that range through hafnium, rhenium, iridium, platinum, mercury, and even lead!

The following are the measurements of various **impurities** at about 1 micron depth in the palladium cathode after three weeks of electrolysis as found by Bockris and Minevski [1]:

Element	Mg	Si	Cl	K	Ca	Ti
Atomic No.	12	14	17	19	20	22
Percent	6.7	10.2	3.0	1.1	19.9	1.6

Element	Fe	Cu	Zn	Pd	Ag	Pt
Atomic No.	26	29	30	46	47	78
Percent	10.5	1.9	4.2	31.9	1.9	7.1

Note: All percent accuracy is +/- 1.0 percent. Palladium, in this thin layer has been reduced from 99.8 to 31.9 atomic percent!

Mizuno, et al. [2] performed their elemental analysis by energy dispersive X-ray spectroscopy (EDX), Auger electron spectroscopy (AES), secondary ion mass spectroscopy (SIMS), and electron probe microanalyzer (EPMA). With EDX they found chromium, iron, copper, and platinum. With EDX and SIMS the presence of calcium (20), titanium (22), chromium (24), manganese (25), iron (26), cobalt (27), copper (29), zinc (30), cadmium (48), tin (50), platinum (78), and lead (82) were determined. The SIMS analysis showed these additional elements: gallium (31), arsenic (33), bromine (35), antimony (51), tellurium (52), iodine (53), xenon (54), hafnium (72), rhenium (75), and iridium (77). The SIMS counts ranged from  $10^3$  to  $10^6$  where background was about 10.

Dr. Xian Jin, when reading the Bockris paper [1] wrote, "This could lead to applications in reducing radioactivity." Dr. Robert W. Bass, in a telephone call, suggested that these results are strong evidence for resonance. A 0.8 eV deuteron could have a Schrödinger wave length of about one micron. The thought occurs as to whether this one micron effect could be the result of the "comb filter" resonance transmission as suggested by Leaf Turner [3] and further developed by Bass [4] and Bush [5]. Mizuno, et al. [2], made the following observation: "AES and SIMS measurements were also made after bombardment by  $Ar^+$  or  $O_2^-$  ions, thus removing surface layers, **but the element concentrations at 1 micron below the electrode surface were almost the same as at the surface.**"

One would suggest that some of the elements might be created by the accretion of neutrons. Bockris [1] does not report neutron measurements. Mizuno, et al., reported, "Neutron intensity and energy measurements were carried out simultaneously, in parallel. The neutron evolution rate as

sporadic and weak...with levels of about 0.4 counts per second."

Those who suggest that protons or deuterons might easily penetrate the Coulomb barrier of high-mass palladium, should note that **experts in the field can marshal significant experimental evidence to show that the probability of such charged particle penetration of nuclei having high proton count is many orders of magnitude less probable than a p+d fusion.**

It is noted that the highly-successful thermal-energy producing **Patterson Power Cell™** uses a nickel-palladium-nickel plated spheres where the outer plating thicknesses are about one micron. It is certain that further experiments will be devised to determine the significance of this "about one micron" parameter. The following experiment is suggested: plate a single rod-shaped silver cathode with palladium by incrementally withdrawing it from a palladium electro-plating solution so that a series of 0.5 micron layers are successively plated to provide areas of palladium thicknesses ranging from 0.5 micron to 5 micron. After prolonged electrolysis, using the protocols observed in Bockris and Minevski's work [1], or in Mizuno's work [2] it would be fruitful to determine both depths and intensities of any layers of nuclear transformations.

It would also be of interest to determine if there is any significant post-run radioactivity developed in the various layers of thin palladium plating. A simple self-radiography test would be of interest. Neither Bockris [1] nor Mizuno [2] report measurements of beta emission nor of X-ray emission.

We commend Bockris and Minevski & Mizuno, Ohmori, and Enyo on their experimental work and for reporting these remarkable discoveries.

## IMPLICATIONS OF THESE EXPERIMENTS

This editor has elsewhere reported on experiments that appear to produce protons and electrons from the aether (*Fusion Facts*, April 1996, page 10). The suggestion is made that this would be an explanation of how to avoid the Coulomb barrier. Universal agreement of this explanation is not expected. However, we must admit that there is nothing in any present theory or model of atomic nuclei and/or metal crystal lattices that would explain the highly unusual anomaly provided by these experiments.

Assume that a plausible explanation is found for palladium nuclei to be fused with protons or deuterons. The idea of a nucleus becoming unstable with the addition of one or more protons or deuterons and fissioning into two small elements such as iron and calcium may be an acceptable model. **The most anomalous experimental discovery is that the**

**palladium can create elements with atomic numbers ranging from 72 to 82.**

According to experimental results reported by Mizuno, et al. [2], the number of elements in the range of atomic numbers from 72 to 82 is less than 5% of the total number of elements produced in this **element-creating** palladium lattice. A possible model is the following: A palladium atom combines with one or more protons or deuterons producing an instability that causes fission of the palladium into iron and calcium. The iron nucleus has sufficient energy from this fission event to impact an adjacent palladium atom, resulting in fusion and the creation of an atom of reasonably higher atomic mass. To obtain sufficient energy for this hypothetical case, the mass defect (sum of the isotopic masses of the fusion products minus the isotopic masses of the fission products) must exist, be turned into energy (using  $e = mc^2$ ), and the energy be imparted to the fission products. By using a table of Nuclides and Isotopes, **and observing all of the conservation rules (conservation of baryon number, conservation of spin, conservation of neutron number, etc.)** a possible nuclear reaction could be proposed.

The next experimental step is to determine if those specific isotopes exist in the elements produced. A further step would be to perform experiments with isotopically pure palladium. Palladium has the following long-term stable isotopes (with indicated percentage as naturally occurring): Pd-102 (1.02); Pd-104 (11.14); Pd-105 (22.33); Pd-106 (27.33); Pd-108 (26.46); Pd-108 (26.46); and Pd-110 (11.72). The isotopic masses range from 101.90562 to 109.90616. To have the largest mass defect, one would try the heavier Pd isotopes fused with deuterons or protons (maybe even more than one) and fission into something like the isotopes of iron and calcium. According to the Bockris and Minevski data, iron and calcium are relatively abundant. However, the iron is less, suggesting that some of the iron nuclei may have fused with palladium to make hafnium (which was found in Mizuno's data). The occurrence of platinum is a little harder to explain but one could possibly consider zinc and palladium plus two protons or zinc and silver plus a proton. **These are number games to help guide the experimenter.** [We will try to have a paper treating this subject in the next issue of the *Journal of New Energy*.]

Depending on which isotopes of palladium are involved, on the number of protons and/or deuterons involved, and on which of the several daughter products are involved, a range of elements in the 72 to 82 atomic numbers could be produced. The fusing particles could feasibly be iron, copper, zinc, gallium, and arsenic. Of course, there is the possibility that these fused nuclei could also fuse with a proton and be increased in their atomic number.

With this type of scenario, we can suggest the following implications:

1. There will definitely be new models of nuclear reactions suggested.
2. The much ridiculed concept of cold nuclear fusion will become an accepted part of nuclear science.
3. The concept that high energy is required for atomic fusion or fission to occur will be considerably modified.
4. New applications will be found for a large range of discoveries, for example, the concept of stabilizing radioactive nuclei will not be dismissed as being without merit.
5. The concept of low-energy nuclear reactions will be adopted **and become one of the most explored subjects in nuclear physics.**
6. The creation of scarce materials from abundant materials will be successfully demonstrated for several elements.
7. The concept of an energetic aether will be adopted by new scientists (the old scientists will die off).
8. Most important, a variety of new methods of providing clean, abundant, and inexpensive energy will be achieved, commercialized, and improve the world.

#### REFERENCES

- [1] J.O'M. Bockris & Z. Minevski, "Two Zones of **Impurities** Observed After Prolonged Electrolysis of Deuterium on Palladium," *Infinite Energy*, vol 1, no 5&6, 1996, pp 67-69, 2 tables, 3 figs, 8 refs.
- [2] T. Mizuno, T. Ohmori & M. Enyo, "Anomalous Isotopic Distribution in Palladium Cathode after Electrolysis," INET# Document Id: UX00e.BUX0462455.
- [3] Leaf Turner, "Peregrinations on Cold Fusion," *Journal of Fusion Energy*, vol 9, no 4, 1990, pp 447-450, 4 refs, 2 figs.
- [4] Robert W. Bass, "Proof that Zero-Point Fluctuations of Bound Deuterons in a Supersaturated Palladium Lattice Provide Sufficient Line-Broadening to Permit Low-Energy Resonant Penetration of Coulomb 'Barrier' to Cold Aneutronic Fusion," presented at ICCF4, 16 pages, 8 refs, 3 figs. Copy available from Fusion Information Center.
- [5] Robert T. Bush, "A Unifying Model for Cold Fusion," *Fusion Technology*, vol 26, no 4T, Dec. 1994, pp 431-441, 9 figs, 37 refs.

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#### COMMENTS FROM JOHN O'M. BOCKRIS

I would like to make the following comment: There is suggestive evidence that new nuclei occur in occupied sites

within the palladium and that these sites are "damage areas" consisting of "holes" in the palladium. Similar observations were made by Nate Hoffman when he analyzed our palladium samples in March 1992, where he found Helium-4. Russ George and Stringham have also reported within their sono-luminescence work (sono-fusion), the new nuclei turned up always at the point of damage.

Now damage in metals which absorb hydrogen is an old phenomenon redolent with >1,000 publications. In fact, Minevski's thesis contains an account of the damage in terms of the high H<sub>2</sub> fugacity concepts. But another speculation might be that the so-called holes are made by local melting of the metal lattice due to local nuclear reactions forming new materials.

## B. EDITORIAL

### INVESTING IN NEW ENERGY

By Hal Fox, M.B.A.

The state and federal securities laws are developed and administered to help protect the individual investor from fraudulent practices. The general requirements of such laws are for **full disclosure** of all pertinent investment factors, especially those involved in **risk of losing invested funds** by the individual. Exemptions from security laws are usually provided for **the sophisticated investor**.

Laws regulating investments by corporations have little to do with protecting the investing corporation against fraudulent behavior by another corporation seeking investment funds. Full disclosure is expected by the funding corporation and the officers will usually insist on **due diligence** to determine the facts. In general it is assumed that if one is sophisticated enough to found and manage a corporation, the corporation can be considered as a sophisticated investor and, therefore, **security laws are not directed to the protection of corporate investors**.

Because of the high costs of legal and accounting services for complying with the various state and federal security laws, the start-up company can usually not afford to offer its shares to the public. The first echelon of investors for the start-up company is usually family, friends, and (perhaps) one or two wealthy contacts, often medical doctors and dentists.

If a start-up company can survive the first few months or years **and demonstrate that the company has a viable product, a business plan, and reduced risk, then, the next step is to seek venture capital**.

A venture capital company typically reviews 20 to 100 proposals for every proposal that they choose to fund. Even after such winnowing down to the **best bets**, the success rate is less than 100%. However, a well-managed, venture-capital company expects to have at least a 50% success rate and an occasional **huge success**. The expectation of a venture capital company is that the winners will return 500% to 1000% over a two- to three-year period.

The next step is for the venture capital company to take the successful company public, by paying for and preparing the papers for an IPO (initial public offering). The venture capital company will have associated broker/dealers and their account representatives who will **make a market** for the new stock offering. As soon as legally permissible, the venture capital company sells off their sizable investment and recycles their funds into a new venture. **At this stage, the founders and early investors may have made 10 to 100 times their investment**.

### THE RULES FOR SUCCESS

A famous wag expressed the sure way to make money in the stock market, "Buy low. Sell high." In a similar manner: **If you want to make the most of your investment, follow this simple rule: Become a founder or an early investor in that company which will be a success AND WILL GO PUBLIC**. Paper profits are nice, but at some stage you will want **liquidity** by being able to sell your shares on the stock market.

**What can the small investor do to get in on the ground floor?** We are often asked that question. No one can tell you, for sure, which start-up company will become another IBM, XEROX, or 3M. However, we can suggest what to look for, as follows:

- ◆ Look for good management. By good we mean persons of demonstrated integrity, trained in business management, experienced in the technology (or a related technology), and (if possible) having a successful track record. (Successful managers are often too expensive for a start-up company to hire, **however, such managers are often the founders of new companies**.)
- ◆ Determine if sufficient funding is available. Most small businesses fail either because of poor management or because of lack of funds.
- ◆ Ensure that the managers have developed and will follow a detailed business plan. Get and read the business plan.
- ◆ Try to ensure that there is a product that can be developed and commercialized.
- ◆ Avoid both the persons **with nothing but a great IDEA**, or the persons whose major thrust seems to be only to tap the \$5 trillion annual energy market. Look for skilled persons **who have proven that their idea**

**works**, where a trusted professional has verified their experimental proof, and where the inventor has engaged the services of a competent business manager.

After nearly seven years of being involved in seeking and publishing about cold fusion and other new energy devices, the staff of this publication have been **highly complimented by the trust shown by many inventors**. The end result is that FIC has been offered many new inventions and/or developments for commercialization. **FIC has accepted twelve projects for funding and commercialization**. These projects have been carefully selected from the three major areas of **new-energy technologies**: cold fusion, solid-state devices, and super motors. In addition, FIC has been promised funding for these projects.

#### **Ground-Floor Opportunities - an Innovation.**

Just as there can be innovation in science and technology, there can also be innovation in business. Because of the complexities of securities laws in various states plus the federal laws, no single "how to invest" article can be written that will cover all states. **Therefore**, it is suggested that if you or your friends desire to invest in new energy technologies, **set up a for-profit corporation in your own state, or in a state having favorable corporate laws (Nevada and Delaware are frequently used)**. **Pool your funds and hire an attorney to advise you!** Invest in such a corporation as **founders and/or as periodic subscribers to further shares in your local investing entity - your own corporation**.

**If you desire to use our advice and recommendations, and have the approval of your legal adviser, your corporation will be provided information about the founding of several new corporations that are planned**. Within the keeping of the spirit and the letter of all appropriate state and federal securities regulations, we suggest that this is a method by which you and your friends can pool your intellectual capability and your funds to invest in new-energy technologies.

Because the staff of Fusion Information Center has helped some scientists and inventors with information, funding sources, and some business suggestions, FIC has been offered and is accepting both exclusive and non-exclusive rights to some important technologies. FIC has prepared a **corporate confidential** list of its projects which is available by signed mailed or faxed request with the statement, "I(we) agree to use the unpublished confidential information obtained from the Fusion Information Center, Inc., solely for business considerations and will not publish nor divulge the information outside of our business entity." FIC welcomes requests from planned or existing groups who desire to manufacture and/or market new-energy products. Such groups must be able to provide their own financing.

[Contact Hal Fox, P.O. Box 58639, SLC, UT or fax 801/583-2963.]

### **C. NEWS FROM THE U.S.**

#### **IN "COLD FUSION" THIS MONTH**

Issue 16 [March 1996]

Wayne Green (Editor), "Dr. Patterson Wins BIG!" Editorial, "*Cold Fusion*," issue 16, 1996, pg 1-3.

On Feb. 27, 1996 the US Patent Office issued the first US patent for a cold fusion device that claims excess heat. The claim for 2000% excess heat has been granted in Patent 5,494,559. Dr. Patterson's previous patents did not claim excess heat, though some of the supporting figures showed it.

Now that the ice has been broken, perhaps some of the dozens to hundreds of other cold fusion oriented patent applications will begin to be acted upon.

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Hideo Kozima (Shizuoka Univ., Japan), "Neutron Bands and Neutron Cooper Pairs in Solids," "*Cold Fusion*," Issue 16, 1996, pg 4-9, 37 refs, 1 fig, 2 tables. To be published in the Proceedings of 3rd Russian Conference on Cold Fusion and Nuclear Transmutation, October 2-6, 1995, Sochi, Russia.

#### **AUTHOR'S ABSTRACT**

The quantum state of low-energy neutrons in solids is investigated in relation to cold fusion and nuclear transmutation. Neutrons in a crystal lattice interacting with nuclei on the lattice points have an energy spectrum with band structure. In the one-dimensional Kronig-Penny model with lattice parameter  $a$ , the lowest energy band has the minimum at wave number vector of  $\pm \pi/a$  with an energy  $E_{\pi/a}$ . A neutron Cooper pair with an energy lower than  $2E_{\pi/a}$  is formed from two neutrons in the lowest energy states with wave vectors  $k = \pm \pi/a$  and spins  $\pm 1/2$ .

Furthermore, the stability of a neutron in a crystal lattice is estimated in an approximation with the following assumption: The energy difference between a neutron and a decayed state of the neutron, i.e., a proton, an electron, and a neutrino, in a crystal lattice is equal to the averaged energy difference  $\langle \Delta e \rangle$  between the averages of neutron-in-nucleus and proton-in-nucleus states.

When the energy difference  $\langle \Delta e \rangle$  is negative, the neutron in the crystal is stable against beta decay and is free from the destiny of decay with a lifetime of 11 minutes in the free state.

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Shannon D. Smith (Inst. for Basic Research, Monteroduni, Italy and Palm Harbor, FL), "Hadronic Energy a New, Clean, 'Subnuclear' Source," *"Cold Fusion,"* Issue 16, 1996, pg 10-17, 8 refs, 3 figs, 3 diagrams.

A new source of energy has recently been identified at the Institute for Basic Research in Florida.

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Roman E. Sioda (Inst. of Indust. Org. Chem., Warszawa-Zeran, Poland), *"Cold Fusion,"* issue 16, 1996, pg 21-25, 40 refs.

#### AUTHOR'S ABSTRACT

A model of the cold fusion phenomenon is described, which is based on the "hot spot" hypothesis. This hypothesis is supported by several instances, reported in the literature, of observations of small holes ("bubbles," micropores), formed in palladium metal, after it was used in cold fusion experiments. The presented model contains a simple equation which relates the average radius of the micropores to the average temperature of deuteron plasma inside of a micropore.

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Bob Bass, Steve Jones quoted in "Surfing the Internet," *"Cold Fusion,"* issue 16, 1996, pg 26-30.

Wherein is continued Bob Bass' Internet exchange with Steve Jones from issue 15 [cited *FF*, Mar. 1996, p 11], plus a soliloquy (Dr. Bass on Moessbauer, QM/QED vs. SM/SED, Parmenter vs. Huizenga, Pauli, CF, Phonons, etc.) for physicists to enjoy, with responses from Bill Page and Harold Puthoff.

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Hideo Kozima, Katsuhiko Hiroe, Masahiro Nomura, Masayuki Ohta, (Dept. Phys., Facul. Sci., Shizuoka Univ., Japan), Elemental Transmutation in Biological and Chemical Systems," *"Cold Fusion,"* Issue 16, 1996, pg 30-32, 7 refs, 1 fig.

#### AUTHORS' ABSTRACT

Nuclear transmutation in biological and chemical systems are investigated with the use of a Trapped Neutron Catalyzed Fusion (TNCF) model. Using a knowledge of nuclear physics, it is possible to explain the experimental results consistently with conventional physics, without relying on any new principles outside of common sense in physics. The success of the explanation substantiates the reality of the TNCF model, in turn.

#### CALIFORNIA - ANOMALOUS EFFECTS IN D<sub>2</sub>

Melvin H. Miles and Kendall B. Johnson (Chem. & Matls. Branch, Res. & Technol. Div., Naval Air Warfare Ctr., Weapons Div., China Lake, CA), "Anomalous Effects in Deuterium Systems," preprint mss courtesy of Dr. Miles.

#### EXECUTIVE SUMMARY

Our results provide compelling evidence that the anomalous effects in deuterated systems are real. Nevertheless, we have not been able to solve the reproducibility problem. This research area will remain highly controversial until reproducibility can be demonstrated. The lack of reproducibility stems mainly from unknown and uncontrolled variables contained within the palladium stock. There is a remarkable correlation of excess power with the source of the palladium. The best reproducibility was obtained using Palladium-Boron materials supplied by the Naval Research Laboratory. Seven out of eight experiments that used Pd-B cathodes produced excess power. A high success ratio was also obtained using Johnson-Matthey materials. Seventeen out of twenty-eight experiments that used this palladium source produced excess heat. In contrast there were several palladium sources that never produced excess power in any experiment. Our calorimetric results, conclusions, and problems are practically identical to those reported by the SKI laboratory. They are also consistent with many other laboratories that have reported excess heat. Calorimeters that are capable of detecting excess power levels of 1 watt per cubic centimeter of palladium are essential for research in this field. The small volume of palladium in co-deposition experiments likely made it difficult to detect excess power effects.

Results from our laboratory indicate that helium-4 is the missing nuclear product. Thirty experiments have shown a correlation between either excess power and helium production or no excess power and no excess helium. Studies using both glass and metal flasks place the <sup>4</sup>He production rate at 10<sup>11</sup> to 10<sup>12</sup> atoms/s per watt of excess power. This is the correct magnitude for typical fusion reactions that yield helium as a product. It is highly unlikely that our heat and helium correlations could be due to random errors. The only valid experiments that showed significant excess power but no excess helium involved a Pd-Ce cathode.

Our best experiments produced up to 30% excess heat, 0.52 watts of excess power, and 1400 kJ of excess enthalpy. This amount of excess enthalpy is difficult to explain by any chemical reaction. We have demonstrated that any recombination of the D<sub>2</sub> and O<sub>2</sub> electrolysis gases in our experiments can be readily detected and easily corrected. There was never any measurable recombination when the

palladium cathodes were fully submerged in the D<sub>2</sub>O-LiOD electrolyte.

Anomalous radiation was detected in some experiments by the use of X-ray films, several different types of Geiger-Mueller counters, and by the use of sodium iodide detectors. Normal radiation counts were always observed when no electrolysis experiments were running. The appearance of anomalous radiation always correlated with the expected rate of loading of the palladium with deuterium. Nevertheless, the anomalous radiation effect was not reproducible.

There was never any significant production of tritium in any of our experiments. A few experiments, however, suggested low levels of tritium production.

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#### FLORIDA - NEW PATTERSON PATENT

US 5,494,559, "System for Electrolysis," James A. Patterson. 27 Feb. 1996, 8 Jun. 1995; 52 claims.

#### PATENT ABSTRACT

A system for electrolysis and heating of a liquid electrolyte comprising:

an electrolytic cell including a non-conductive housing and an inlet and an outlet; a first conductive foraminous grid positioned within said housing adjacent to said inlet; a second conductive foraminous grid positioned within said housing spaced from said first conductive grid and adjacent to said outlet; a plurality of conductive microspheres of substantially uniform size and density in electrical communication with said first conductive grid and electrically isolated from said second grid;

said plurality of microspheres each including:

a conductive metal flash coating of uniform thickness formed by chemical combination with a cation exchange surface of a spherical cross-linked polymer microbead from a metal cation which will chemically reduce with hydrazine; a nickel plating of uniform thickness formed atop said flash coating; a metallic hydride forming plating of uniform thickness formed atop said nickel plating, said metallic hydride plating being readily combinable with hydrogen or an isotope of hydrogen; a metallic support plating of uniform forming plating, said support plating having a relatively high hydrogen diffusion rate and a relatively low hydride formation ratio;

means for pumping said liquid electrolyte into said electrolytic cell through said inlet, said electrolyte having a conductive salt in solution with water, said electrolyte exiting from said electrolytic cell through said outlet; said pumping means maintaining said electrolytic cell substantially filled with said

electrolyte; an electric power source having terminals operably connected to said first and second grids.

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#### ILLINOIS - THEORY OF QUANTUM RADIATION

Claudia Eberlein (Dept. Phys., U. Illinois, Champaign-Urbana), "Theory of Quantum Radiation Observed as Sonoluminescence," from the Los Alamos Nat. Lab. Preprint Archives, *Infinite Energy*, vol 1, no 3, Jul-Aug. 1995, p 33.

#### AUTHOR'S ABSTRACT

Sonoluminescence is explained in terms of quantum radiation by moving interfaces between media of different polarizability. In a stationary dielectric, the zero-point fluctuations of the electromagnetic field excite virtual two-photon states which become real under perturbation due to motion of the dielectric.

The sonoluminescent bubble is modelled as an optically empty cavity in a homogeneous dielectric. The Problem of the photon emission by a cavity of time-dependent radius is handled in a Hamiltonian formalism which is dealt with perturbatively up to first order in the velocity of the bubble surface over the speed of light. A parameter-dependence of the zero-order Hamiltonian in addition to the first-order perturbation calls for a new perturbative method combining standard perturbation theory with an adiabatic approximation.

In this way the transition amplitude from the vacuum into a two-photon state is obtained, and expressions for the single-photon spectrum and the total energy radiated during one ash are given both in full and in the short-wave-lengths approximation when the bubble is larger than the wavelengths of the emitted light. A model profile is assumed for the time-dependence of the bubble during the collapse, and in this model the radiated energy and the spectrum are calculated numerically and in the short-wavelengths limit also analytically.

It is shown analytically that the spectral density has the same frequency-dependence as black-body radiation; this is purely an effect of correlated quantum fluctuations at zero temperature. The present theory clarifies a number of hitherto unsolved problems and suggests explanations for several more. Possible experiments that discriminate this from other theories of sonoluminescence are proposed.

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## MASSACHUSETTS - HIGH GRADE ELECTRICAL ENERGY GENERATION

Courtesy of Mitchell Swartz

### EDITOR'S SUMMARY

At 12:05 a.m., on 1-28-96, with hundred milliwatt levels of electricity, derived from the heat generated using light water generators, Jet Energy Technology achieved and launched its new phase of developing high-grade electrical power output systems by actually illuminating a small light source. Gary Verner and Mitchell Swartz conducted the experiment wherein a tiny LED light source, composed of gallium arsenide phosphide, was made to glow as approximately 0.5 watts was delivered entirely from the generator. [A picture was sent, but was not reproducible. -Ed.]

The input electrical power to the light water power generator was 9.8 watts (based on input electrical current and voltage). The generator relied on the thermal energy derived from a metal electrode, which had previously been calibrated to deliver excess heat output in the range of 300%. The high-grade electrical output was ~0.58 watts (~323 milliamperes). The Jet Energy Technology light water electric power generator drove the minute light source for a few minutes in each of the two initial runs. Although this demonstration was not "break-even," it does provide a new level of progress in this energy producing system. Jet Energy Technology is highly commended for their continued progressive development of this future possible energy source.

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## MARYLAND - X-RAY COMET

Staff (AP), "Experts Seek Clues to Comet X-Rays", *Deseret News*, April 6, 1996, pg A8.

### EDITOR'S SUMMARY

Michael J. Mumma (Goddard Space Flight CTR., Greenbelt, MD) said, "We had no clear expectation that comets shine in X-rays. Now we have our work cut out for us in explaining these data, **but that's the kind of problem we love to have.**" The observations that an image of the comet Hyakutake could be taken by X-rays was discovered by U.S. and German scientists using Germany's orbiting ROSAT satellite. During March 26 and 27, 1996, repeated scans were made and a computer used to make accurate images from the X-rays emitted by the comet. The amount of X-rays observed were about 100 times the amount that had been predicted.

[We are pleased that Michael Mumma likes anomalies. The study of anomalies is the precursor of discovery -- **the essence**

**of science.** The rejection of anomalies is the refuge of the dogmatists. Ed.]

Another Comet Comment....

Why Did the Comet Hyakutake Emit X-Rays as It Passed Earth?

By Dr. Xian Jin

One of the possibilities, I think, is the following. The Comet is essentially a mass of ice and debris. The temperature of the comet is very low when it is located outside of the solar system. When entering the solar system, the temperature will be raised, especially on the surface closest to the sun. The nearer the sun, the higher the temperature. The ice on the surface will be vaporized and a gas belt be gradually formed. Meanwhile, under the action of ultraviolet and high energy charged particles from the sun and cosmic rays, the gas will be ionized and a partially ionized plasma will be formed.

As is well known, a plasma can radiate various kinds of radiations. One of the most common is *bremstrahlung*. Its frequency ranges from ultraviolet to x-ray. The intensity of the radiation is proportional to the square of the electron density (**n**) and the square root of the electron temperature (**T**) [radiation intensity  $\propto n^2\sqrt{T}$ ]. When the Comet Hyakutake approaches quite near the sun, the **n** and **T** may be considerably higher and the strength of the x-rays could reach measurable intensity. Whatever the reason that makes the **n** and **T** higher, the intensity of emitted x-rays will be stronger.

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## MINNESOTA - POLITICS AND COLD FUSION

Courtesy of Dana Rotegard

Dana Rotegard writes in a letter to the editor of the *Star Tribune* about State Representative Phyllis Kahn. The following is an excerpt:

"In 1989 I attended the First International Astronautics Federation Conference on Space Power. ... The topic of the conference was new technology and the Greenhouse effect. About 200 scientists of several disciplines and nationalities were in attendance and cold fusion was still a hot topic of discussion. I was soon apparent to all assembled that American physicists were out to stamp out any talk of cold fusion before it threatened the funding of the 40-year old \$20 billion hot fusion research program. I, the editor of the proceedings, and the science director of CST London began tracking the issue [of anti-cold fusion]. ... By 1991, after reviewing the scores of positive lab reports published in credible journals, we had concluded that this was a valid breakthrough. The physics lobby, however was exerting all its power to keep the issue quiet."



Dana is a leader of the founders of the Minnesota Cold Fusion Alliance which has a goal of getting a fair hearing for funded research from government groups. Dana was particularly disturbed by Rep. Kahn's comments as quoted in the *Star Tribune* [1], "She has taken positions against university scientists on some issues, then championed scientific standards so the Legislature wouldn't end up funding something as silly as cold fusion, as the Utah Legislature did several years ago." Phyllis Kahn is a Yale-trained physicist.

[1] Jim Dawson, staff writer, "Science Friction -- Trained in logic, Kahn has survived politics by learning to compromise", *Star Tribune*, March 6, 1994, page 1B.

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### NEW JERSEY - CAVITATION DEVICE TESTING

Eugene Mallove (editor), "Excess Heat in Cavitation Devices: World-Wide Testing and Reports," *Infinite Energy*, vol 1, no 3, Jul-Aug. 1995, pp 16-32.

#### SUMMARY

A recap of the testing that has been done on the Yusmar "Thermogenerator," of Dr. Yuri Potapov, by Scott Little and Harold Puthoff (5 rounds of testing), Jeff Driscoll and Eugene Mallove (multiple tests), and those tests done at the Bobruisk Machine Manufacturing Plant in Belarus. Also discussed was the Schaefer Steam Generator.

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### NEW MEXICO - A COLD FUSION REVIEW

Courtesy of the author.

Edmund Storms, "Review of the 'Cold Fusion' Effect," accepted for publication in *Journal of Scientific Exploration*, 1996, 62 manuscript pages, 190 refs, 10 tables, 12 figs.

#### AUTHOR'S ABSTRACT

More than 190 studies reporting evidence for the "cold fusion" effect are evaluated. New work has answered criticisms by eliminating many of the suggested errors. Evidence for large and reproducible energy generation as well as various nuclear reactions, in addition to fusion, from a variety of environments and methods is accumulating. The field can no longer be dismissed by invoking obvious error or prosaic explanations.

#### AUTHOR'S LIST OF CONCLUSIONS

1. Excess energy is generated without producing significant chemical products. Several studies claim power densities near  $3\text{kW/cm}^3$  Pd, total energies in excess of 200 MJ and power amplification over 1,000 times. Evidence for local melting of

palladium has been observed. **Therefore**, energy can be produced at rates and in amounts well above the result of any conceivable chemical reaction or plausible error. This experience indicates that commercial application is highly probable.

2. Energy can be created by several methods, in at least nine different chemical environments. **Therefore**, the effect has a general nature and is not unique to palladium or to deuterium.

3. Significant helium ( $^4\text{He}$ ) is found after anomalous heat is produced in environments containing deuterium. **Therefore**, at least one heat-producing nuclear reaction is probably a complex and unusual form of d-d fusion. Evidence for other types of nuclear reaction has been obtained.

4. Neutrons and tritium are occasionally produced but in amounts too small to account for measurable energy.

**Therefore**, an explanation for excess energy must involve different products. In addition, commercial applications will not be handicapped by these hazardous products.

5. Largely absent are gamma-rays, X-rays, and radiation produced when energetic neutrons or tritons pass through matter. **Therefore**, the released nuclear energy is at least partially coupled by some strange process to many atoms rather than to individual reaction products.

6. Emission of high-energy charged-particles and 2.5 MeV neutrons show that regions exist in which the nuclear reaction energy is not coupled to individual particles. **Therefore**, nuclear products can leave the surface without coupling their energy to the atomic lattice.

7. The neutron, tritium, helium, charged-particle, gamma-ray, and high-Z elements are produced under different conditions largely independent of each other. **Therefore**, a variety of different environments can produce different nuclear reactions.

8. Presence of light water in the heavy water stops energy production without producing  $^3\text{He}$ . **Therefore**, heat is not produced by d-p fusion in this environment.

9. Heat generation using  $\text{D}_2\text{O}$  is independent of whether  $^6\text{Li}$  or  $^7\text{Li}$  is used and is sometimes independent of whether lithium is present at all.

10. Application of RF frequencies at certain values, but especially near 82 MHz, are said to enhance heat production in Pd- $\text{D}_2\text{O}$  cells. Application of micropulses of very high current are also very successful. **Therefore**, application of energy enhances the effect.

11. Tritium is produced in electrolyte and helium is produced in the gas during electrolysis of palladium. **Therefore**, both nuclear processes occur within the surface region of the metal, not within the bulk.

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### TENNESSEE - ANOTHER COLD FUSION HYPOTHESIS

Marshall Dudley, "Hypothesis for Cold Fusion of Hydrogen Isotopes within Metallic Matrices," *Infinite Energy*, vol 1, no 3, Jul-Aug. 1995, pp 45-46.

## INTRODUCTION

This hypothesis is put forth in an attempt to explain experiments in which excessive heat and He-4 (in the case of D<sub>2</sub>) are produced in a metal matrix which has a high saturation of hydrogen or deuterium.

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## TEXAS - TWO NUCLEAR REACTION ZONES

J. O'M. Bockris & Z. Minevski (Dept of Chem, Texas A&M), "Two Zone of 'Impurities' Observed After Prolonged Electrolysis of Deuterium on Palladium," *Infinite Energy*, vol 1, no 6, 1996, pp 67-69, 8 refs, 3 figs, 2 tables.

## AUTHORS' INTRODUCTION

In experiments carried out recently in which hydrogen was electrolyzed from water in contact with a palladium electrode, the concentration and depth of impurities were measured as a function of electrolysis time. It was found that after 3 weeks, two different sets of impurities could be observed, one set within 50 Angstroms of the surface and another set [of] different chemical species, about 1 micron inside the [palladium] metal.

## EDITOR'S COMMENTS

Using Energy Dispersive Spectroscopy (EDS), measurements were made of the atomic percent of various elements (so-called **impurities**) in virgin palladium used as a cathode in an electrochemical experiment. The anode to cathode voltage (overpotential) was more than 0.5 volts. The total impurities in the virgin palladium were less than 0.2 percent. For the results of various **impurities** after three weeks of electrolysis see the chart on page 2 of this issue.

**Note that at this depth of 1 micron, there could not have been diffusion of these elements in a three-week time period.** These findings are similar to reports by Kucherov, Karabut, & Savvatimova; Mizuno, Ohmori & Enyo; Dash et al.; Bush & Eagleton; and Notoya.

The authors suggest that these elements are formed by a process of "proton capture". Here is a possible process: In the loading of deuterium (derived from electrolysis of the heavy water electrolyte) into the palladium cathode there would be a gradual penetration of the deuterium ions into the palladium cathode with the diffusion rates accelerated by the overpotential. Due to some process, yet to be discovered, the deuterons at this depth apparently combine with the palladium nuclei (deuteron capture).

It is obvious that the Ag could be a product of Pd + p. The predominance of Ca, Fe, and Si suggests a fission process that would split Pd + p(d) → Ca + Fe with a further fission of Fe into Mg + Si. A continuation of **proton capture** could be used to explain the progression of Fe into Cu and Zn. Ti could be derived from Ca. **These are only suggestive concepts.** A more detailed analysis of possible fusion and fission possibilities requires a careful evaluation of possible nuclear reactions with due consideration given to a variety of conservative features such as spin, baryon number, etc. For further information about possible nuclear reactions see the lead article on page one of this issue.

Under current atomic models, it is viewed as extremely unlikely that a proton could bypass the Coulomb barrier and interact with the nucleus of the palladium with its 46 protons. Here is a **possible explanation:**

Paul E. Rowe (See *New Energy News*, "Sparks from Grinding and the Aether", vol 3, no 9, March, 1996, pg 17.) is a former munitions expert. In his work, new munitions were tested in a special room (bunker) that was first evacuated to a fairly low vacuum. When test quantities of new munitions were exploded, there would be little oxygen present. Thus, evaluation could be made of such events as underwater explosions (no free oxygen). Rowe noted that after every explosion there was a significant amount of excess hydrogen gas in the room. After leaving the munitions work, Rowe conducted many tests in a pressure vessel in his own laboratory. The results of continual production of hydrogen, under various test conditions, prompted Rowe to the following theory: **The aether consists of precursors of protons and electrons. In the presence of sufficient energy (such as an explosion) the aether produces pairs of electrons and protons. In an opposite fashion, factors that promote the disintegration of hydrogen (and deuterium?) would be exothermic.**

If it is assumed that a cold fusion reactor, generally in an electrochemical processing of deuterium with palladium (or hydrogen with nickel), establishes conditions in which deuterons (or protons) are caused to disintegrate, the resulting **explosive energy** could possibly also trigger the formation of additional protons and electrons. Similarly, any process that would provide an exothermic nuclear reactions could provide this "triggering energy". **Because the energetic aether is everywhere, protons (produced from the aether) would probably not have to penetrate a Coulomb barrier, rather the production of such protons could be produced close to nuclei and result in a variety of nuclear reactions.** It is suggested that the energy obtained from these initiating nuclear reactions and the subsequent production of a proton need not be equally energetic. It is conceptually admissible (until further understanding is achieved) to suggest that the energetic

aether does not require conservation of energy between the two events of a "trigger explosion" and the production of a proton/electron pair. Perhaps only a proper "tweaking" of the energetic aether will produce protons and some of the nuclear events in a cold fusion reactor could produce a cascade of protons. This may be a key for obtaining energy from the energetic aether.

[Note to the reader: If you find this conceptual exercise offensive to your current store of knowledge, please do not blame this hypothetical reaction on Professor Bockris nor on Minevsi. I take full blame for this hypothetical extravaganza. Hal Fox, Editor.]

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### TEXAS - FASTER THAN LIGHT

Courtesy of Harold E. Puthoff

H.E. Puthoff, "SETI, the Velocity-of-Light Limitation, and the Alcubierre Warp Drive: An Integrating Overview," *Physics Essays*, Vol 9, No 1, 1996, 10 refs.

#### AUTHOR'S ABSTRACT

In SETI (Search for Extraterrestrial Intelligence) conventional wisdom has it that the probability of direct contact by interstellar travel is vanishingly small due to the enormous distances involved, coupled with the velocity-of-light limitation. Alcubierre's recent "warp drive" analysis [*Class. Quantum Grav.*, vol 11, L73 (1994)] within the context of general relativistic dynamics, however, indicates the naiveté of this assumption. We show here that Alcubierre's result is a particular case of a broad, general approach that might loosely be called "metric engineering", the details of which provide yet further support for the concept that reduced-time interstellar travel, either by advanced extraterrestrial civilizations at present or by ourselves in the future, is not, as naive consideration might hold, fundamentally constrained by physical principles.

#### EDITOR'S COMMENTS

Puthoff informs us of a hidden assumption that is made when stating that it would take infinite energy to accelerate a mass to the speed of light. The assumption is that the value  $c$  is a fixed, immutable constant of nature. Then Puthoff uses the relationship of  $c = 1/(\mu_0 \epsilon_0)^{1/2}$ . In words, the speed of light is defined as proportional to one over the ratio of the magnetic permeability times the dielectric permittivity of the vacuum. **Therefore, it is implied that if either of these parameters were modified, the speed of light would change.** Puthoff also reminds us that in the Casimir effect  $c$  is increased. Puthoff suggests that clever engineering related to local changes in permeability or permittivity of the vacuum

(probably away from large masses) could be a means of faster-than-light travel.

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### WASHINGTON, D.C. - NEW FUSION PLAN

Courtesy of Dr. Samuel P. Faile

Andrew Lawler (Staff writer), "Fusion Plan Gathers Steam," *Science*, 22 Mar 1996, vol 271, no 5256, pg 1660.

#### EDITOR'S SUMMARY

"Stunned by a massive cut in the U.S. fusion budget," the academicians and workers in the hot-fusion community have joined in a massive public relations campaign to salvage the U.S.'s continuing role in the development of hot fusion. The new direction, that has met with inter-university agreement, is to set aside **five percent of the budget for basic research in a shift from large-scale to small- and medium-scale experiments.** Under this new direction, the group is lobbying for a minimum of \$250 million for 1997 (just \$6 million more than 1996 budget). This amount would "sustain the domestic program, step up the search for alternative technologies, and maintain a foothold in the planned International Thermonuclear Experimental Reactor."

"Forty years and \$14 billion!" was the comment by Representative Dana Rohrabacher (Republican from California), a member of the House Science Committee and chair of the Energy and Environment Panel. He also complained, "If we keep shoveling money out of the back of the truck, nobody is going to get more efficient."

#### EDITOR'S COMMENT

For about ten years, there has been very little money spent by DOE on alternative energy sources. There is enormous government literature on solar, wind, geothermal, biomass, and tidal projects, with no studies that demonstrate cost effectiveness of any of these alternative energy sources. **This newsletters humbly suggests that for \$10 million spent on a combination of cold fusion, solid-state systems, and super motors, we can demonstrate that a viable alternative energy industry can be commercialized!** More important, the community of caring professional scientists, inventors, and business managers **will do the job without the government's help!**

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### WISCONSIN - SUPERCONDUCTING MOTORS

Staff, "Large Superconduction Motors by 2000?," *Technology Transfer Week*, March 19, 1996, pg 4.

## EDITOR'S SUMMARY

Built under DOE's **Superconductivity Partnership Initiative**, Reliance Electric Co. (subsidiary of Rockwell) and American Superconductor Corp. have announced a 200-hp electric motor using superconductors. The original motor was rated at 125-hp. Motors as large as 2,000 to 5,000 hp are forecast for 2001. The payoff will be in lower power consumption due to higher efficiency. Electric power cost savings of \$100,000 per year for a 10,000 hp motor are forecast. Cost of superconductors was not cited. **DOE reports that about 58% of U.S. electrical energy is consumed by electric motors.**

**D. NEWS FROM ABROAD****INTERNATIONAL - VORTICES**

Courtesy of Dr. Samuel P. Faile

Staff, "Nota Bene: Vortices," *High  $T_c$  Update*, vol 10, no 6, March 15, 1996.

## EDITOR'S SUMMARY

V.V. Moshchalkov et al. (Leuven) report that the paramagnetic Meissner effect can be explained by the persistence of the giant vortex state which occurs in type-II superconducting cylinders. "Strong pinning is found to produce a few vortex channels that carry heavy traffic, while weak pinning produces a network of much broader vortex trails."

T. Giamarchi (Orsay) and P. Le Doussal (Ecole Normale Supérieure) report on a theoretical study of the motion of periodic lattices, including vortex lattices, driven by an external force in a random pinning potential.

S. Ryu and D. Stroud (Standard and Ohio State) studied flux lines which are modeled as flexible but unbroken stacks of Josephson-coupled pancake vortices.

A.V. Samokhvalov (Nizhny Novgorod) report on Gibbs free energy of an Abrikosov vortex loop near the surface of a type-II superconductor in a parallel magnetic field.

M. Friesen and P. Muzikar (Purdue) provide a theory which they use to estimate the pinning energy of a single vortex.

**AUSTRALIA - ZINC-BROMINE BATTERY**

Courtesy of Trevor Osborne

Staff, "New Battery Powers onto the Market", *Dept. of Commerce & Trade*, March 1996.

## EDITOR'S SUMMARY

ZBB, a Western Australia company, in conjunction with Murdoch University announces the development of the Mark V Generation zinc-bromide battery. This product is intended as a cost-effective replacement for current power station technology and is scheduled for manufacturing in Western Australia. ZBB has participated in the Cooperative Research Centre in Renewable Energy Technologies, an Australian government project which has been funded for \$450,000 over three years.

**AUSTRIA - LATEST DEUTSCHE PHYSIK**

Courtesy of Stefan Marinov, Editor

## FF EDITOR'S REVIEW

Stefan Marinov is a scientist with a purpose. The purpose is to correct many of the errors being taught by tradition-bound academia. Marinov is multi-lingual, therefore, you will find original articles published in both German and English with quotes in Italian, Russian, Greek, or whatever language is appropriate. For example, in this June 1996 issue, Marinov's editorial begins with quotes in German, Italian, Russian, and English. The translation of the Russian quote is: "*If you find no difficulties on your path through life, you have lost your way.*"

The contents for this vol 5, no. 18 include the following:

Editorial by Stefan Marinov lauding the international conference, "Descartes and Scientific Thought" to be held in Perugia, Italy, September 4-7, 1996. No mention is made of the language of the conference but probably will be Italian with English translation. Contact person for "Europe" is our friend Josef Hasslberger, Rampa Brancaleone 25, I-00165 Roma, Italy. Tel +396 637-4160, Fax 637-2196. Marinov notes: "...where the contemporary state of science is critically examined and where unlimited freedom is given for presenting falsifications of existing theories and for presenting new theories and experiments.

"Last experimental steps before running the double magnet SIBERIAN COLIU machine as a perpetuum mobile", by Stefan Marinov. This is Stefan's report on his latest perpetual motion device.

"Marinov vector and scalar magnetic intensities generated by an infinitely long ring SIBERIAN COLIU magnet", by Stefan Marinov. This article shows the calculations that have lead Marinov to be quite sure that a perpetual motion machine can be constructed.

"Easy experiment for establishing the existence of magnetic kind of energy in gravitation," by Stefan Marinov. Here is the abstract: "After presenting the fundamentals of my gravitational and electric theories based on the concepts of absolute space-time, I reconsider a previously proposed experiment. By making a more detailed technical analysis, I show that with the help of such an experiment one can easily establish the existence of a gravitational analogue to magnetic energy and measure the absolute velocity of the Earth." Marinov concludes this interesting concept with: "They [his proposed cosmic speedometers] will be used not only in cosmonautics but, if coupled with respective computers which will take into account Earth's absolute, orbital and axial motion, also as **reliable** speedometers on ships and planes giving the vehicle's velocity **with respect to the Earth's surface**."

"Has Osamu Ide observed a violation of the energy conservation law?" by Stefan Marinov. The abstract is: "After presenting shortly the recent electromagnetic motor of Osamu Ide, I show that it is a repetition of the historic Edwin Gray's pulsed capacitor discharge electric engine. Similarly as Gray, Ide has observed a violation of the energy conservation law, due to the appearance of induced forth electric tension. I show that forth electric tension is induced in every electromagnetic generator and motor when the phase difference between tension and current is near to 90 degrees, and I report on simple experiments where induced forth tensions lead to a patent violation of the energy conservation law." Marinov loves to discuss experiments that demonstrate violations of scientific laws.

The last several pages of this issue contain reprints of a series of letters between Marinov and several editors of scientific journals. **These letters demonstrate the obstinacy of many journal editors who refuse to publish articles contrary to accepted scientific dogma.**

Fed up with the refusal of peer-reviewed journals to publish his experimental and mathematical papers, Marinov purchased a two-page advertisement in *Nature*, the over-400-hundred-year-old English journal (whose editor abhors the concept of cold fusion). The following is a copy of Marinov's advertisement about the **Horrible Year of 1996** (much more prophetic than Marinov realizes!).

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This **advertisement** appeared in 28 March 1996 issue of *Nature*. Reprinted for *Fusion Facts* by request of Stefan Marinov.

## MARINOV: ANNUS HORRIBILIS

The year 1996 will be an earthquake year for conventional physics: many formulas in the textbooks will be changed, many century-old dogmas will be renounced and many saints will be de-sainted. This radical change had to begin tens of years ago but the lack of glasnost in physics all over the world has delayed it and instead of having evolutional, step-by-step reformations and several lighter earthquakes, now there will be a tremendous one., *Vours l'avez voulu, Georges Dandins!*

By my half-a-century experimental and theoretical work I showed the following (see references in my 16 books, 60 refereed papers, 8 paid advertisements and numerous papers and editor's comments in the journal *DEUTSCHE PHYSIK* edited by me):

1. *The principle of relativity is wrong.* Indeed, I measured three times optico-mechanically and once electromagnetically the Earth's absolute velocity. Its magnitude is  $350 \text{ km sec}^{-1}$  with equatorial coordinates of its apex  $\delta = -20^\circ$ .  $\alpha = 12''$  (approx.).

2. *The principle of equivalence is wrong.* Indeed, my interferometric "coupled mirrors" experiment which was carried out during a year showed that when the laboratory's acceleration was kinematic (acceleration with respect to distant stars), the laboratory's velocity changed, while when it was dynamic (gravitational attraction by the Earth) there was no change.

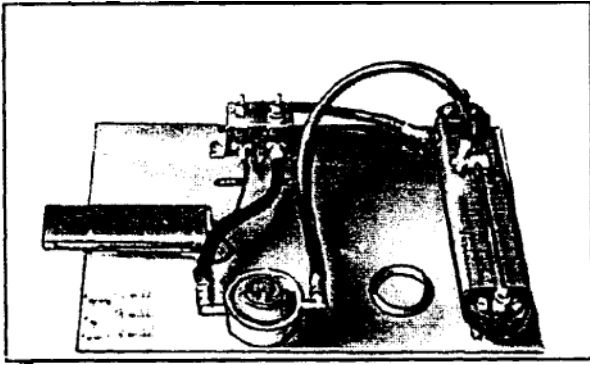
3. *The energy conservation law is wrong.* My machines MAMIN COLIU and VENETIN COLIU which work with zero, or near to zero, Lenz effect, and SIBERIAN COLIU which works with anti-Lenz effect violated this law. Only because of lack of money I could not close the energetic circle in the first two, but the third one was not expensive and I could run it as a *perpetuum mobile*. The day when I shall present this machine at a press-conference will be the start-day for the earthquake.

4. *The Lorentz equation is wrong.* If there are two electric charges  $q, q'$  moving with velocities  $\mathbf{v}, \mathbf{v}'$  and the vector-distance from  $q'$  to  $q$  is  $\mathbf{r}$ , according to the Lorentz equation the force with which  $q'$  acts on  $q$  is given by the following *Grassmann formula*

$$\mathbf{f}_G = (\mu_0 q q' / 4\pi r^3) \{(\mathbf{v} \cdot \mathbf{r})\mathbf{v}' - (\mathbf{v} \cdot \mathbf{v}')\mathbf{r}\}. \quad (1)$$

Numerous experiments done by other authors (Hering's experiments are from the beginning of the century!) and by me showed that the force acting on  $q$  can be not only transverse to its velocity, as required by (1), but also longitudinal. Any rational man when seeing at least one falsifying experiment rejects the respective formula (Popper). However, for thousands and thousands of *Betonköpfe* even a hundred

experiments were not enough. In the photograph there is one such falsifying experiment which (as well as the other) can be carried out by children: A cylindrical magnet is cut along one of its axial planes and the one half is turned up-down (the magnetic forces themselves do the rotation). Around this magnet, there is a trough filled with mercury in which the copper ring which can be seen at right swims (the children take salt solution and suspend the ring on threads). After sending a current of some tens of amperes from the battery at left, which is regulated by the rheostat, the ring begins to rotate. That's all!



The Siberian Coliu Machine

5. *The Lorentz-Marinov equation is the right one.* According to (1)  $\mathbf{f}'_G$  is not equal and oppositely directed to  $\mathbf{f}_G$ . I obtained Marinov formula by the *most simple and natural symmetrization* of (1) (take into account that  $\mathbf{r} = -\mathbf{r}'$ )

$$\mathbf{f}_m = (\mathbf{f}_G - \mathbf{f}'_G)/2 = (\mu_0 q q' / 8\pi r^3) \{(\mathbf{v}' \cdot \mathbf{r})\mathbf{v} + (\mathbf{v} \cdot \mathbf{r})\mathbf{v}' - 2(\mathbf{v} \cdot \mathbf{v}')\mathbf{r}\}. \quad (2)$$

Proceeding from (2), and assuming  $\Phi \neq 0$ ,  $\partial\mathbf{A}/\partial t \neq 0$ , I obtained by the *most simple calculations* that the force with which an electric system acts on a test charge  $q$  moving with velocity  $\mathbf{v}$  is

$$\mathbf{f}/q = -\text{grad}\Phi - \partial\mathbf{A}/\partial t + \mathbf{v} \times \mathbf{B} + \mathbf{vS} = \mathbf{E}_{\text{lor}} + \mathbf{v} \times \mathbf{B} + \mathbf{vS} \quad (3)$$

where  $\Phi$ ,  $\mathbf{A}$  are the electric and magnetic potentials generated by the system at the point of the charge's location,  $\mathbf{B}_{\text{lor}} = \text{rot}\mathbf{A}$  is the *Lorentz magnetic intensity*,  $S_{\text{whit}} = -\text{div}\mathbf{A}/2$  is the *Whittaker magnetic intensity* and

$$\begin{aligned} \mathbf{B}_{\text{mar}} &= -(\mu_0/8\pi) \int q' (\mathbf{v} \times \mathbf{v}') (\mathbf{r} \cdot \mathbf{v}) / v^2 r^3, \\ S_{\text{mar}} &= -(\mu_0/8\pi) \int q' (\mathbf{v} \cdot \mathbf{v}') (\mathbf{r} \cdot \mathbf{v}) / v^2 r^3 \end{aligned} \quad (4)$$

are the *Marinov vector* and *scalar magnetic intensities*.  $\mathbf{B} = \mathbf{B}_{\text{lor}} + \mathbf{B}_{\text{mar}}$  is called *vector magnetic intensity* and  $S = S_{\text{whit}} + S_{\text{mar}}$  is called *scalar magnetic intensity*. (3) is called the *Lorentz-Marinov equation*. If neglecting the last term and under  $\mathbf{B}$  we understand  $\mathbf{B}_{\text{lor}}$  we obtain the Lorentz equation

which I call the *Lorentz-Grassmann equation*. That's the *whole theory*!

6. *The angular momentum conservation law is wrong.* My Bul-Cub machine with interrupted current and rotating Ampere bridge with interrupted current rotated under the action of internal forces only. Marinov's formula allows violation of the angular momentum conservation law as the magnetic forces with which two charges interact are equal and oppositely directed but *may not lie on the line connecting them*.

7. *It is impossible to violate the momentum conservation law in electromagnetism.* Obvious conclusion from Marinov's formula.

8. *Displacement current does not exist.* For closed circuits both Grassmann and Marinov formulas do not allow violation of the momentum and angular momentum conservation laws as the first terms in (1) and (2) contain total differentials. As conventional physics believes in the displacement current of Maxwell, it accepts that all currents always are closed. I showed by numerous experiments that there is no displacement current (neither in vacuum nor in dielectrics) and one can interrupt the circuits by the help of condensers. At the age of 15, I understood that displacement current is a phantasmagoria and presented to my teacher in Sofia the following objection: "If the displacement current between the plates of a condenser acts with magnetic forces on other currents, then according to Newton's third law the other currents must act with magnetic forces on the displacement current and set it in motion. But how, comrade teacher, can vacuum be set in motion?" Teacher's answer was: "Shut up, child."

9. *The gauge transformations are illegitimate.* According to conventional physics not the potentials but the intensities determine the motion of the test charge (exactly the opposite is true), and thus any change of the potentials which leaves the intensities the same is allowable, i.e., one can "calibrate" the potentials. It is easy to see that the calibration  $\text{div}\mathbf{A} = 0$  is allowable. Thus conventional physics *believes* that a *really existing force*, the Whittaker force  $\mathbf{f}_w = -q\mathbf{v} \text{div}\mathbf{A}/2 = q\mathbf{v}S_{\text{whit}}$ , can be put equal to zero. Monstrosity! To see the action of  $\mathbf{f}_w$ , take two metal spheres the one charged positively and the other negatively. Put around one of the spheres a circular wire along which current flows so that it is perpendicular to the line connecting the spheres. When connecting the spheres by a wire and current begins to flow, the circular wire begins to rotate. The *only force* which acts on the circular wire is  $\mathbf{f}_w$ .

10. *There is no propagation of interaction.* As only mass can move from one point to another, "interaction" can be only a ghost. But a rational man does not believe in ghosts. On the other hand, the mathematical expressions of  $\mathbf{B}_{\text{mar}}$  and  $S_{\text{mar}}$  show that the "fields" cannot propagate in space with a certain

velocity, as  $\mathbf{B}_{\text{mar}}$  and  $S_{\text{mar}}$  depend on the *direction of motion* of the test charge. To these people who may object that one is not sure whether the Lorentz-Marinov equation is the right one, my answer is: Until the day when some falsifying experiment should be presented (this day will never come!) the world is *impelled* to accept it as true.

11. *Potential, radiation and radiation reaction electric intensities.* These three kinds of intensities can be obtained if putting in the expression for the *Lorentz electric intensity*  $\mathbf{E}_{\text{lor}}$  (see (3)) the observation electric and magnetic potentials

$$\Phi = q/4\pi\epsilon_0 r, \quad \mathbf{A} = \mu_0 q \mathbf{v}/4\pi r \quad (5)$$

with  $r = r' \cdot \mathbf{v}' \cdot \mathbf{r}'/c$ ,  $\mathbf{v} = \mathbf{v}' + \mathbf{u}' \cdot \mathbf{r}'/c$ ,

where  $r$ ,  $\mathbf{v}$ ,  $\mathbf{u}$  are distance, velocity and acceleration at the *observation moment*  $t$  and  $r'$ ,  $\mathbf{v}'$ ,  $\mathbf{u}'$  at the *advanced moment*  $t' = t - r'/c$  (conventional physics wrongly call  $t'$  "retarded moment"). Conventional physics, following Lienard and Wiechert, *wrongly* writes  $\mathbf{A}$  with  $\mathbf{v}'$ . For this reason conventional physics obtains only the potential and radiation intensities  $\mathbf{E}_{\text{pot}}$ ,  $\mathbf{E}_{\text{rad}}$  and *artificially* introduces the radiation reaction intensity  $\mathbf{E}_{\text{rea}}$  coming to phantasmagoric "self-accelerations." Proceeding from (5) I (and any child who can differentiate!) obtained also the radiation reaction intensity  $\mathbf{E}_{\text{rea}} = -\mu_0 q \mathbf{w}/6\pi c$ , where  $\mathbf{w} = \mathbf{w}'$  is the charge's super-acceleration.

$$\mathbf{E}_{\text{rad}} = \mu_0 q \mathbf{r}' \times \{(\mathbf{r}' - \mathbf{v}' \cdot \mathbf{r}'/c) \times \mathbf{u}'\} / 4\pi(\mathbf{r}' - \mathbf{v}' \cdot \mathbf{r}'/c)^3$$

is due to *moving mass* (radiated energy), as charges moving with acceleration lose energy, while  $\mathbf{E}_{\text{rea}}$  acts on the radiating charge itself. To obtain all radiation effects one has simply to integrate the obtained formulas for a single charge. That's *nearly* all about radiation of electromagnetic waves!

12. *There are no "fields."* According to the "field-marshals" the "fields" exist physically. One can move them and a moving magnetic field produces electric field, etc. When I hear all these *stupidities*, I get diarrhea. After repeating the Rowland experiment (a magnetic needle near a charged disk deviates when the disk is set in rotation), I carried out the inverse one (the disk at rest, the needle rotates) and the co-moving one (disk and needle rotate), taking instead of a needle a Hall detector. According to the "field marshals" the inverse experiment must give the same effect as the direct one (I observed *no* effect), while the co-moving experiment must give null result (I observed the same effect as at the direct experiment). The Inertial experiment can be done charging a conveyer belt.

13. *Current conducting wires become charged positively.* Conventional physics asserts that they remain neutral (Clausius postulate). Meanwhile always after measurements, the rheostat in the photograph remained charged and touching it by hand there was a spark. The positive sign was established by the method known to ancient Greeks. Every child explains the

effect taking into account that the positive electrode of the battery "sucks" electrons from the wire while the negative electrodes "spits" electrons and the former effect is *primary*.

14. *B-machines and S-machines.* The electromagnetic machines working on  $\mathbf{B}$  are called *B-machines* and these ones working on  $S$  are called *S-machines*. By the help of the first three fingers of his right hand any child older than 15 can show when looking at the third term in (3) that the B-generators *brake*. Meanwhile by the help of only one finger any child younger than 15 can show when looking at the fourth term in (3) that the S-generators *accelerate*.

15. *The perpetuum mobile SIBERIAN COLIU.*  $S_{\text{whit}}$  is produced by the first term in (2) and for a complete circuit is null. For this reason  $S_{\text{whit}}$  can be observed only at interrupted circuits (see item 9). However  $S_{\text{mar}}$  can be different from zero also for a complete circuit. Why then has nobody observed it? Because all people have worked with cylindrical or quasi-cylindrical magnets for which  $S_{\text{mar}} = 0$ . Who has cut a cylindrical magnet in two pieces rotating the one half up-down? - NOBODY! The first man who has done this is called Gennadi Nicolaev and lives in Tomsk in Siberia. For this reason I called this magnet the SIBERIAN COLIU magnet and the perpetuum mobile which I constructed with it the SIBERIAN COLIU machine. The machine shown in the photograph is a SIBERIAN COLIU machine. It will work as a perpetuum mobile if the *driving* torque produced by the current induced in the ring when it will be set in rotation with a certain velocity will be larger than the friction torque. I constructed the machine in the photograph in 1993 and the last three years I did *nothing else* than to try to increase its driving torque and decrease its friction torque, noting that all B-currents induced in the rotor generated additional friction torque. The driving torque was produced only by the  $S$  (i.e.,  $S_{\text{mar}}$ ) currents.  $S_{\text{mar}}$  is very strong near the cutting plane, from the one side positive, from the other negative. The *dozens* of my SIBERIAN COLIU machines are presented with photographs in *DEUTSCHE PHYSIK*.

16. *All conventional theories for the origin on Earth's magnetization are wrong.* If rotating a cylindrical piece of any metal by a boring machine, one sees that it becomes magnetized. Conventional physics believes first that only ferromagnetics become magnetized and second that the magnetization is proportional to the *angular* rotational velocity, as this was promulgated by Barnett. My friend C. Monstein demonstrated that the magnetization is proportional to the *linear* rotational velocity and I called this the *Monstein-Barnett effect*. Proceeding from the Monstein-Barnett effect, I calculated the magnetization of the Earth, the Sun and the planets, obtaining excellent coincidences with the measured values. As Venus is the only planet whose nucleus is liquid, it is not magnetized. The most cherished conventional theory

for Earth's magnetization is the "unipolar dynamo theory" of Elsasser. It is *ridiculous*, as a unipolar machine can work only at the existence of sliding contacts and moving with respect to each other parts.

17. *Magretic energy does exist.* By the most elementary speculations and calculations I showed that: a) the gravitational energy of two masses is *not* a negative quantity, as accepted by conventional physics, but a *positive* quantity, b) the gravitational potential generated by all masses of the universe is equal to  $c^2$ , c) electricity and gravity are two completely analogical sciences from a mathematical point of view. The *only difference* is that the gravitational "charges" are the proper masses  $m_b = m/(1 - v^2/c^2)^{1/2}$  and that negative masses do not exist. There are *no* other differences. Thus, a *magretic energy*, i.e., a "magnetic kind" of energy in gravity, must exist and gravity is to be called *gravimagretism* (this is the title of part IV of my encyclopædia work CLASSICAL PHYSICS). I proposed a *very simple* experiment which can reveal the existence of magretic energy. This experiment, moreover, can serve for measurement of the Earth's absolute velocity.

18. *The recession hypothesis for the galaxies is wrong.* I call stellar "red shift" this one which is caused by the gravitational action of the star on the emitted by it light, *galactic* "red shift" this one which is caused by the gravitational action of the respective galaxy and *cosmic* - by all cosmic matter. Conventional physics *believes* that the big "red shifts" of light coming from remote galaxies are due to their recession velocities. This is a phantasmagoria. The most simple calculation, which can be carried out by any child, shows that they are due to the gravitational action of all cosmic matter and that they are proportional *not* to the distance to the emitting galaxy (or quasar) but to the *square* of this distance. I showed that the experimental data fit *much better* to a square plot. Respectively, instead of a Hubble constant, a Hubble-Marinov constant is to be introduced, for which the children obtain the *strictly defined value*  $H_M^2 = 2\pi\delta\mu/3c^2$ , where  $\delta$  is the gravitational constant and  $\mu$  is the average mass density in the Universe.

NOTE: On the 5 March 1996 I submitted to *NATURE* my paper "**After 500 Years Columbus-Egg-Problem Has Finally Been Solved,**" in which I show how a body can be maintained in an UNSTABLE equilibrium (problem which, contrary to the general opinion, Columbus has NOT solved). My "Marinov egg" is supported by magnetic forces. If it has SPHERICAL form, it has three degrees of freedom (the Euler angles) free and represents moreover a PERPETUUM MOBILE. If before 1 May the paper will not appear in the scientific columns of *NATURE*, I shall publish it as a paid advertisement. In the first (or second) case 15 days after the publication I shall

present my SIBERIAN COLIU perpetuum mobile at a press conference.

Stefan Marinov  
Morellenfeldgasse 16, A-8010, Graz, Austria  
Marinov is Editor of *Deutsche Physik*, an International Glasnost Journal on Fundamental Physics.

[Editor's challenge: This newsletter invites any reader to prove that Marinov is wrong. We will submit such correspondence to Marinov and publish both sides. If you wish to read further information from Marinov, his book Divine Electromagnetism is highly recommended. Contact the author by fax at +316-377-093 in Graz, Austria.]

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## BELARUS - COLD FUSION AND TRANSMUTATION

V.A. Filimonov (Chem. Dept., Belarus St. Univ., Minsk, Belarus), "Cold Fusion and Transmutation of Nuclei: Recent Achievements and Old Problems," from Frolov's St.-Petersburg abstracts.

### AUTHOR'S ABSTRACT

Corroborative evidences on radiationless producing of excess heat by "Cold Fusion" systems were reported during last two or three years. Thousandfold excess heat release as related to electrical power input was demonstrated under operating Patterson Power Cell™ (USA) using complex palladium cathodes for light water electrolysis, much more excess heat to input energy relation was reported by Arata (Japan) under electrolysis of heavy water using similar cathodes, etc.

Nevertheless, no satisfactory theoretical explanation for non-conventional rates of nuclear transformations "in the cold" is proposed. The problem of poor reproducibility, both quantitative and qualitative one, isn't solved till now.

Noted controversy is analyzed within Synergetic Activation model by the author. Both experimental data and useful analogies with extra-high chemical processes in solids are considered. Invalidity of quantum approaches to provide general explanation for "cold" nuclear reactions is stated. Our conclusions are as follows: i) no radical changes in nuclear physics paradigm re. Coulomb barrier height or sections of nuclear interaction changing is needed to explain experimental data obtained; ii) consideration of cooperative selforganization processes in highly nonequilibrium conditions providing non-conventional probabilities of high-energy excitations in condensed media is significant for understanding Cold Fusion and Transmutation.

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**BELGIUM - SLOW GROWTH FOR HOT FUSION**

by Dr. Xian Jin

Hot Fusion Needs Another More than 50 Years to R&amp;D.

One of the leading hot nuclear fusion scientists, Dr. H. Bruhns (Brussels), said in his paper of "Fusion Energy R&D and the European Fusion Programme"\* that: "Design, construction, and exploitation times of ITER\*\* and DEMO\*\* will sum up to several decades. Hence, fusion will have an impact on the energy market not before the middle of next century."

\**Transactions of Fusion Technology*, vol 29, no 2T, 1996, p 3.

\*\* New generation of hot fusion facility.

**BELGIUM - ENERGY PREDICTIONS**

G. Van Oost and J.P.H.E. Ongena (Plas. Phys. Lab., Royal Military Sch., EURATOM Assc., Brussels, Belgium), "Energy for Future Centuries," *Trans. Fus. Tech.*, vol 29, no 2T, 1996, pp 9-16, 23 refs., 1 fig, 5 tables.

## AUTHORS' ABSTRACT

The current power consumption in different parts of the world and an estimate of the world's future energy needs are given. The present energy supplies and prospects, the possible consequences of a continued massive fossil fuel consumption, and the potential of non-fossil candidates for long-term energy production are outlined. An introduction to possible fusion processes in future fusion reactors is given. The inexhaustibility, safety, environmental and economic aspects of magnetic fusion energy are discussed.

## CONCLUSIONS

In a most profound sense, mankind's quality of life depends on an acceptable response to the continually rising demand for energy. To be able to supply this energy, we have to keep open all viable options.

Fusion is one of these options and is characterized by exclusive properties, some of which represent distinct advantages over the other major energy sources. They can be grouped around three aspects:

- ◆ Fuel: inexhaustible supply of cheap fuels (D and Li) which can be found everywhere; they are non-radioactive, and their collection does not cause any significant ecological problem.
- ◆ Safety: Fusion reactors offer inherent, passive safety. They are not based on a chain reaction and do not contain a large

supply of fuel in their core. An uncontrolled burn of the Chernobyl type is excluded.

◆ Environment: Fusion reactions produce energy and **no direct radioactive waste** with all its problems. However, in current fusion reactor concepts there is radioactivity from two sources. First, from tritium, which is bred locally from lithium, but consumed directly. Second, by neutron activation of reactor structures by neutrons. [The Princeton Tokamak was operated for a few minutes and became too radioactive to continue its use.] Future reactor concepts might strongly limit this radioactivity. In addition, there is no production of combustion gases as is the case for power plants burning fossil fuels. Hence, there is no contribution to the greenhouse effect, to acid rain, and to the destruction of the ozone layer...

If the potential advantages of nuclear fusion outweigh the risks, and dangers of other energy sources, is it not then our responsibility for future generations to continue the fusion effort without delay and with full commitment?

**GERMANY - UNIFIED FORCES OF NATURE**

Adolph Zielinski, "A New Theory that Unifies the Forces of Nature," *Kredit Courier*, March 1996 (in German).

## AUTHOR'S ABSTRACT

A new exciting discovery of the behavior of aether leads to a new concept of the essence of aether, that is able to explain why the famous Michelson-Morley aether experiment of 1887 failed, explain and unify the forces of nature, explain why quantum theory works and even explain where the universe comes from, and last but not least, shows the gateway to the new source of energy of the future.

Another paper by Zielinski is also listed:

Adolf Zielinski, "Die Fähigkeit des Menschen, das Universum zu vernichten" (The Ability of Man to Destroy the Universe), *Kredit Courier*, March 1996 (in German).

## AUTHOR'S ABSTRACT

In their book "Angels don't play this HAARP," the consequences of applied advances in Tesla Technology in the US military project called "HAARP" have been researched and discussed by Dr. Nick Begich and Jeane Manning (Earthpulse Press, P.O. Box 201393, Anchorage, Alaska 99520, USA; ISBN 0-9648812-0-9). The real disaster that the installation of the HAARP program will trigger off, once activated, is far beyond the imagination of the writers and even the US military.

In order to fully understand the total global impact the HAARP installation will create, one has to understand what gravity and gravitational field are (see the article "A new theory that unifies the forces of nature," by A. Zielinski).

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## ITALY - COLD FUSION CONFIRMATION

Elio Conte, (Liberto Ist. Univ. Internazionale Centro Studi di Radioattivit Bari-Italia), "An Experimental Confirmation of Nuclear Fusion of the Proton and the Electron in the Neutron in Accord With the Biquaternion Quantum Mechanics," from Frolov's St.-Petersburgs abstracts.

### AUTHOR'S ABSTRACT

We are attempting a new experiment of cold fusion. It is based on Generalization of Schrodinger Equation that we have obtained recently in the framework of generalization of the usual quantum mechanics. We have called this new theory the "Biquaternion Quantum Mechanics". This theory, in addition to the traditional forces that are derived from potentials, accounts also for interactions due to the mutual overlap of the wavepackets of the components the system taken in consideration. In consequence, the CGSE (Conte Generalization of Schrodinger Equation) shows that bound states are possible at distances shorter than  $10^{-13}$  cm, i.e., for a system of two particles with the first and light particle compressed into the second massive particle (cold fusion). The Biquaternion Quantum Mechanics is theory that generalizes the usual quantum mechanics by using Linear Homogeneous Biquaternion Transformations, LHBT, and it solves basic unsolved problems of the usual quantum mechanics, in particular that one regarding non-linear, non-local interactions due to the overlap of wavepackets and used into a "proper" Hamiltonian operator. In this framework, the biquaternion quantum mechanics also shows detailed examples of wave function reduction while this problem remained unsolved in the usual formulation.

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## ITALY - COLD FUSION & JUDGE'S VERDICT

Courtesy of Jed Rothwell

26 March 1996

D. Morrison (CERN), "Court Judgement on Question of Cold Fusion Being 'Scientific Fraud'," from Internet Newsgroup sci/physics/fusion.

Martin Fleischmann, Stanley Pons, Tullio Bressani, Guiliano Preparata, and Emilio Del Giudice

Versus

Editoriale *La Repubblica* s.p.a., Eugenio Scalfari and Giovanni Maria Pace.

In October 1991, the *La Repubblica* published an article by their science editor, Giovanni Maria Pace, which reviewed the book False Prophets and essentially suggested that cold fusion was "scientific fraud" and the names of Fleischmann and Pons were mentioned. Letters from Bressani (Turin), Preparata (Milan), and Del Giudice (Milan) were written to the newspaper and published. The five then sued the newspaper, its editor and the journalist for 8 billion lire (about \$5 million at that time).

The court appointed Prof. Giovanni Licheri of Cagliari to assess the 105 pieces of scientific evidence presented. The five plaintiffs asked Prof. Daniele Gozzi (Rome) to be their adviser. *La Repubblica* asked Douglas Morrison, of CERN, Geneva, to be their scientific adviser. See *Nature* 363(1993)107. Both sides submitted further written evidence. This may be the first time, or one of the first times that a law court has been asked to decide on a scientific issue.

DECISION - The decision of the court has just been received. It rejected the plaint of Fleischmann, Pons, Bressani, Preparata, and Del Giudice. It condemned the five to pay the legal expenses of 28 million lire (less than \$20,000) of the defendants.

MOTIVATION - Firstly the court considered whether the manner in which Fleischmann and Pons presented their results was correct. They concluded that it was correct because on the 13th March 1989 they submitted their paper for publication, and it was accepted on the 22nd March before their press conference of the 23rd March.

However there were some negative aspects;

1. They failed to mention the work of Prof. Stephen Jones which began in 1986. Fleischmann and Pons had agreed with Jones to submit their papers for publication together on the 24th March.
2. When it was pointed out to Fleischmann and Pons that their gamma ray peak was at an impossible energy, they changed the scale.
3. They claimed to have observed and measured fusion for a long time but were not subject to gamma radiation - therefore it was not fusion.
4. In April 1989, the US government set up a committee of 22 scientists to check the results. Despite complicated work, the results were negative. This is described in the book by John Huizenga, the Co-Chairman, entitled Cold Fusion - The Scientific Fiasco of the Century.
5. On the 8th July 1989, in the *Deseret News* (daily newspaper published in Utah) appeared an article (with photograph) where Pons declared that he had made an apparatus of the size of a thermos which would satisfy the needs of a normal family and could make tea. Pons also said that the boiler was giving off 10 to 15 times the energy put in.

The court noted that little progress had been made since 1991, There was no good theory to explain the claims of cold fusion and there was a failure to observe the products of fusion as would be expected (tritons, neutrons, protons,  $^3\text{He}$ ,  $^4\text{He}$  and gamma rays).

The court noted the compartment of Fleischmann and Pons who provided different and inconsistent data at different times, noted that they omitted to cite the work of Prof. Jones, noted the manner in which they dealt with the press, and noted how they considered future developments and concluded that they were separated from reality. The court noted that most scientists had now abandoned cold fusion.

Thus, the court judged that Giovanni Maria Pace was justified in making his comments in the exercise of his profession, since there had been great discussion and contestation.

The above is a brief summary of the 14 page judgement. Since this was translated from Italian, it is possible that there are some small errors in translation (please inform me so I may correct them) but the sense of the judgement is clear.

Douglas R. O. Morrison  
Address; drom@vxcern.cern.ch

\*\*\*\*\*

Here are some comments by Chris Tinsley about the Italian court judgment against Pons and Fleischmann. I agree with Chris 100%. I am sorry, but I think Pons and Fleischmann got what was coming to them.

- Jed Rothwell

Date: 31-Mar-96 18:08 EST  
From: Chris Tinsley  
>INTERNET:100433.1541@compuserve.com  
Subj: Italian justice.....

Dear All,

I've just heard the result of a court case in Italy, the one where Fleischmann and Pons and others sued the Repubblica newspaper for referring to cold fusion as scientific fraud. They lost the case. This has been gleefully reported on sci.physics.fusion by the scientific advisor to the defence, one Dr. Douglas O. Morrison of CERN ...

So, why am I pleased? Because I hope this will finally knock some sense into the heads of CF people. I said in Boston that we haven't got time for science in CF. That was not because I'm against science - I'm all for it - but because (as I also said) **scientists will believe anything which they are funded**

**to believe.** Also, contrariwise. But there's only one way they'll be funded.

If the CF wars are to be fought within science, then Planck's Other Constant will apply: "The time it takes for fresh minds to overcome the past" Planck set this value at 20 years.

...

So, how do we reduce Planck's twenty years? By putting the machines into the hands of people with money, showing that they work, and bringing some **materials scientists** in on the act - in a big way. Not piecemeal, and most definitely not by doing "really good science" to find out exactly why they work...

I will bet that some of the big companies who are now dabbling in the field are finding that the problems of reproducibility of results will not have gone away. I will also bet that some of them are cutting their losses and getting out of CF. The solutions to non-reproducibility are likely to be counter-intuitive...

Meanwhile, out there we have all these little groups... All of them seem to think that they have the **one best system**, and are terrified that if they tell anybody about it - then somebody will find an improvement or circumvent their patents [which they usually don't have].

Commercial secrecy is legitimate, but paranoia, greed and secretiveness are not. I would suggest to these groups that they are far more likely to be relegated to the most microscopic of footnotes. Other people with a more open, co-operative and positive attitude will just walk past them.

And let us be clear about the present role of science in CF. Its role is primarily to help in the development of high-performance machines, and to ensure the safety of products.

**Once there are commercial products - even poor-quality, low performance products - then there will be no shortage of scientists to work on improving them. There will also be plenty of funding to find out the basic phenomenon. In the face of such funding, there will be plenty of believing scientists.**

To find the mechanism - or mechanisms - of CF is perhaps the most important aspect of the subject, but it is certainly the **least** urgent.

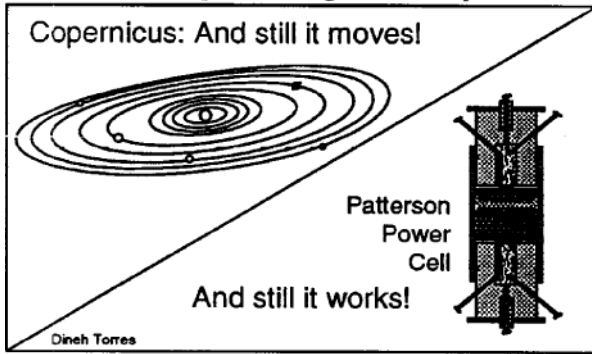
Maybe this court judgement will wonderfully concentrate a few minds. I doubt it, though. As Schiller puts it:

*"Mit der Dummheit kämpfen Gotter selbst vergebens."*

... And if 'the gods themselves contend in vain against stupidity,' I don't give much for the chances of an Italian judge.

Chris Tinsley

### An Enduring Message to Skeptics...



### ROMANIA - ACCELERATION MECHANISM FOR CF

Dan Chicea (Phys. Dept., T.T.P.A., Univ. "Lucian Blaga", Sibiu, Romania), "Microscopic Acceleration Mechanism and the Cold Fusion in Deuterated Materials," from Frolov's St.-Petersburg abstracts.

The Ampere forces occurring in a solid deuterated fibre which is the target of a high voltage capacitor discharge has been numerically estimated, in a way resembling the computations P. Granneau and M. Rambaut performed and published. The energy increase of the ions trapped in the lattice caused by the ampere force acceleration mechanism has been estimated. Considering the increase of a nucleus' Coulomb barrier penetration probability caused by the electron over-concentration the possibility of nuclear cold fusion of nuclei is analyzed. Conclusion: The energy excess reported in the experiments traditionally named "Cold Fusion", can not be explained only by means of a microscopic acceleration mechanism and a strong Coulomb barrier screening, but the low nuclear radiation level reported in some of the experiments can.

### RUSSIA - FROM RUSSIA WITH WORDS

S.A. Flerova, N.N. Kranik, & S.A. Popov, "Luminescence Induced by the Polarization Switching in the Diffuse Phase Transition Ferroelectric  $\text{PbMg}_{1/3}\text{Nb}_{2/3}\text{O}_3$ ," *Ferroelectrics*, 1988, Vol. 82, pp 167-171.

### EDITOR'S SELECTED QUOTE FROM CONCLUSIONS

"We can conclude that electroluminescence investigations of the diffuse phase transition ferroelectrics give a self-consistent picture of the polarization orientation processes as a function of the electric field at different stages of the diffuse phase transition and reveal the specific features of the polarization switching processes in nonuniform heterophase state."

[We suggest that authors and translators use shorter sentences and clearer explanations. Ed.]

### E. LETTERS FROM READERS

#### FIND US IN *CHEMICAL ABSTRACTS*

To the Attention of Hal Fox, Editor, *Journal of New Energy*

Dear Mr. Fox,

**Chemical Abstracts Service** has received Volume 1, Issue 1, of your new journal, *Journal of New Energy*, for evaluation purposes.

**We are pleased to report that this periodical has been evaluated and found suitable for abstracting and indexing in *Chemical Abstracts*.** We would, therefore, like to make arrangements to receive all future issues as they are published.

Respectfully yours,

Jodi L. Schneider, Acquisitions Assistant

#### LETTER FROM MILLENNIUM TWAIN

Muchas gracias, mi amigo, for your helpful letter of 3/29. Surprising that, in the year of 1996, almost no one is willing to broach the subject of nuclear structure -- even in the supposed alternative energy / technology journals! Thank you for addressing the topic directly.

But what a funny community we are a part of. A natural philosopher parading with the name of Millennium Twain; UFO and Free-Energy publications and conferences blossoming everywhere; Cold Fusioners all back-stabbing, hiding or grandstanding; the Zine and Web revolution making the centuries of the printed press look like a microscopic void; the only political movement with any ethics or honesty goes by the name of Anarchy (meaning "no rulers," not "bomb-throwers"); and Chaos is not a world or cosmos in destructive collision, but in the moment of birth! ...

Re: digging "deeper" into the literature on probes and targets. It is an enormous and empty literature. See my chapter

references on the electron as well as the proton. I haven't found anyone in the world who has looked as deeply as I have at the literature, or the subject. (Though I will be the first to admit that I have a lot more looking to do.) Fact is, there are almost zero people in the institution who have looked at the structure of the electron or the proton. Looks like this is a very new area for you.

## F. NEW BOOKS

### QUANTIZED MASS - A BOOK REVIEW

By Hal Fox

Petar K. Anastasovski & Trevor M. Benson, Quantum Mass Theory Compatible with Quantum Field Theory, Nova Science Publishers, Commack, N.Y., c1995, 44 figs, 30 refs, indexed, 165 pages.

In high school I was taught an atomic model that was like a miniature solar system. With hydrogen it was one central body (the nucleus) and one orbiting planet (the electron). As I and the model grew up, the orbiting electron became variously a wave of energy surrounding the nucleus at some distance; endowed with indeterminacy so that you would never be able to tell exactly where it was; and ultimately a spread-around force moving rapidly in an orbitshell. In this book the electron gets some new attributes.

Consider the following sketch:

$N < \text{----- } r < h/mc \text{ -----} > r = h/mc < \text{----- } r > h/mc \text{ -----} >$

N represents the nucleus of a hydrogen atom. The electron occupies an **orbitshell** at various distances from the nucleus at a radial distance **r**. The distance is measured by Planck's constant **h**, divided by a mass **m** multiplied by **c**, the speed of light.  $r = h/mc$  at about  $4 \times 10^{-11}$  centimeters. At larger distances, the normal physics of the hydrogen atom can be used, that is the charge of the electron and the mass of the electron are provided by standard text books.

The remarkable development in this book is the concept that as the electron interacts with a photon **the electron absorbs the mass of the photon**. Therefore, when an electron absorbs a photon it changes its orbit. There is empirical (experimental) evidence for the changes in orbits of electrons around the nuclei and the concept that only certain orbits are permitted. This book provides an explanation. **Mass is quantized**. Therefore, the electron cannot have any mass but only discrete increments (or decrements) of mass. With different mass, the electron occupies a different orbitshell.

Another concept discussed in this book is that the mass of the electron responds normally to gravity at distances **r** greater than **h/mc**. At closer distances gravity becomes antigravity and the electron is repelled from the nucleus. However, the

charge on the nucleus (consisting of one proton for hydrogen) attracts the electron (the well-known Coulomb barrier). The balance between the charge attraction and the anti-gravity repulsion determines the electron's orbit. Remember that when the electron emits a photon or absorbs a photon, it is changing its mass **and therefore changing its orbitshell distance**.

Assume that the authors are correct. Here is one possible application of this new view of the hydrogen atom:

Photons traveling through interstellar space will have a small (but finite) probability of interacting with hydrogen atoms that exist in interstellar space. As small but finite quanta of photon mass is lost to the electrons there is a reduction in photon momentum or energy. When such a photon arrives at our telescopes, we observe this phenomena as a **red-shift**. Currently we accept the red-shift as being due to the velocity of the source of the photons. Nearly all distant galaxies demonstrate the red-shift. Our current explanation is that all of these galaxies, **in every direction**, are moving away from us and the more distant the galaxy the faster it is moving away. **Therefore, we must be living in an expanding universe**. If we accept this simple **and easy to understand concept that photons from more distant stars give up more quanta of energy in their travel through interstellar space than do the photons from less distant stars**, the implications are the following: 1. The universe is not expanding. 2. The velocity of light may not be a constant (in line with experimental evidence). 3. The big bang is not needed. 4. The universe is relatively stable. **Remember that the major reason for the Big Bang is to give the universe the impetus for expanding**. Thanks to these authors, the universe has just become much simpler, more quiescent, and much easier to understand.

This book tells us a lot more about the implications of the Quantum Mass Theory and provides numerous equations (258 are labeled) and explains what are implied by the equations. If you have a reasonable math background, you will find this book to be an exciting adventure into a set of new ideas. The book is expensive, \$87 plus shipping, and is not for the lay person. However, I am convinced that you will see the new ideas and concepts detailed in this book make their way into the forthcoming **paradigm shift** (the big model change) in science. We commend the authors for reporting on new great ideas in a well-prepared, well-written, important book.

### GRAVITATION OF THE SUN

A book review by Hal Fox

Pari Spolter, Gravitational Force of the Sun, c1993, 260 pages, 351 refs, illus, indexed, ISBN 0-9638107-5-8, published by Orb Publishing, 11862 Balboa Blvd. #182, Granada Hills, CA 91344-2753, \$29.95.

This is the most readable technical book that it has been my pleasure to review. Dr. Spolter begins every topic with a review of the earliest experimental data and writings. She quotes what the original authors wrote, and what later authors thought they wrote. The topics covered range from **The Universal Law, Relativity** (two chapters), **Fundamental Problems, Gravitational Force of the Sun**, to **The Distance Law, Gravitational Force of the Planets**, and ends with **Eccentricity, Inertia**, and the **Units of Force and Energy**. In every chapter, the author exhibits a readable style, carefully prepared review of the background for each topic, and ends most chapters with a simple statement of her position.

After chapter 1 (**The Universal Law**), the author states factually, "Newton did not need, nor did he estimate the masses of the earth and the moon to deduce the reciprocal square of the distance from the center of attraction--and therefore--there is no basis for inclusion of the term **product of the two masses ( $m_1, m_2$ )**, or for that matter, for inclusion of any terms for mass in the equation of the gravitational force. In her evaluation of the universal law, Spolter looks at the dimensions of the formulation:

$$F = ma = G(m_1 m_2)/r^2 \text{ and finds that dimensionally } kg \cdot m/s^2 = kg \cdot kg/m^2, \text{ or}$$

$m^3 = kg \cdot s^2$ , and relates that the instructor will tell you that the constant G just happens to have the dimensions that balance the equation. She also reports that other authors throw in a unit vector to explain why the vector F is equated to scalar quantities. It is careful analysis like this that leaves the reader pondering, "Why didn't I question that?"

It was the two chapters on Relativity that was the most interesting to me. Dr. Spolter cites over thirty authors who questioned the validity of the theory of relativity. Two of the most interesting are the following: "General relativity is a splendid piece of mathematics built on quicksand and leading to more and more mathematics about cosmology (a typical science-fiction process)." L. Brillouin (1970).

The quote I liked best: "In spite of its great success in various fields, the present theoretical physics is still far from being able to provide a unified foundation on which the theoretical treatment of all phenomena could be based. We have a general relativistic theory of macroscopic phenomena, which however has hitherto been unable to account for the atomic structure of matter and for quantum effects, and we have a quantum theory, which is able to account satisfactorily for a large number of atomic and quantum phenomena but which by its very nature is unsuited to the principle of relativity." **Albert Einstein** and N. Rosen (1935).

When I was in high school, I read that there were only ten people in the world who could understand Einstein and in my youthful enthusiasm I determined to be no. 11. Since that time, I have read nearly everything Einstein wrote that was published. My conclusion is that Einstein (and, as it turns out, with his wife) did a wonderful job of structuring a partial

explanation of reality based on a negative experiment (the Michelson-Morley experiment) but not consistent with physical reality.

Dr. Spolter also demolishes the strongly-held belief that Michelson & Morley proved that there was no energetic aether. She cites Shankland quoting Einstein, "He [Michelson] told me more than once that he did not like the theories that had followed from his work!" Spolter states (page 254), "**In the Michelson and Morley experiment the calculations were based on an assumption of simple additive effect of  $c \pm v$ . ... an assumption of a simple additive effect of velocities is incorrect when dealing with electromagnetic radiation.**" [It is interesting to consider Zielinski's statement: "Had Michelson and Morley pointed their interferometer in a vertical plane, they would have concluded that the earth is moving in a perpendicular direction to the surface of the earth into space." This quote is from "A New Theory that Unifies the Forces of Nature", to be presented at the Third International Symposium on New Energy, April 25-28, 1996, Denver, Colorado.]

Judging from the covers of most magazines and pocketbooks, sex is the most compelling topic for readers. If you, as a reader, are as interested in science as the typical American reader supposedly is in sex, this book, to you, will be as readable as any of the current best sellers. It is superbly written with painstaking research to quote the original experimenters (or theorists). Each conclusion is buttressed by careful explanation of the facts. Although the author uses the calculus when required, she ensures that the non-mathematician reader can read between the equations.

The book quotes Newton as saying, "Hitherto we have explained the phenomena of the heavens and of our sea by the power of gravity, but have not yet assigned the cause of this power." *Philosophiae Naturalis Principia Mathematica* near end of Book III. We leave it to the reader to discover why Pari Spolter writes the following: "What is constant for all planets, is the gravitational force of the sun. ...  $F_s = a \cdot A$ , where a is the acceleration and A is area." It is a challenging conclusion in a book that is a pleasant reading journey. **We promise that you will be much less ready to accept the lecturing of physics instructors or the writers of textbooks as being the sole and ultimate truth!** That questioning attitude lies behind every new-energy invention and development and should be the attitude adopted by every seeker of truth.

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#### NEW BOOK JUST RECEIVED

Courtesy of James Berry, The Message Company

Dale Pond, Edgar Cayce, John Keely, Rudolf Steiner, Nikola Tesla, [The Physics of Love: The Ultimate Universal Laws](#), c1996, letter size, paperback, 144 pages, 183 refs, illus., indexed. Available from The Message Company, 4 Camino Azul, Sante Fe, New Mexico 87505, \$17.95.

## PUBLISHER'S BLURB

Explore the physics of love and consciousness in an easy-to-understand and exciting manner. The universal laws in this book are applicable to music, electronics, mechanics, healing and all branches of science and philosophy. This science demonstrates the commonality that underlies all phenomena - vibration. Another name for Sympathetic Vibration is Love. Science and Spirituality are finally reunited!

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will be held 13-18 October 1996

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The conference will consist of both oral and poster sessions covering experimental work and theory on the following topics:

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- Correlation Between Excess Energy and Nuclear Products
- Nuclear Physics Approaches
- Material Science Studies
- Innovative Approaches (Miscellaneous Phenomena)

**The Dead Line for abstracts is May 1996.** Registration fee of ¥40,000 (about \$400) includes a banquet and proceedings. A technical tour to the NHE lab is scheduled, along with other professional and social events.

International Association of Science and Technology of  
Development (IASTED)

**International Conference on****HIGH TECHNOLOGY IN THE POWER INDUSTRY**

4-8 June 1996, Banff, Alberta, Canada

The aim of this conference is to act as a forum for the exchange of information and experience on all aspects of high technology and advances in the power field.

(Contact IASTED at (403) 288-1195 or Fax (403) 247-6851, e-mail iasted@istd.cuug.ab.ca for specific paper instructions.) The registration fee of \$400 should be paid by 1 April 1996. Notification of acceptance will be mailed by March 1, 1996.

**INTERNATIONAL  
SYMPOSIUM ON NEW ENERGY****An Exploration of "Free Energy" Generators**

**April 25-28, 1996**

Denver Hilton South Hotel

Denver, Colorado

Presented papers will topics related to New Energy, including one or more of the following: Theories, designs, inventions, and research results.

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International Association of New Science

1304 S. College Ave.

Fort Collins, Co 80524

**PLANNING FOR 1999 - POLLUTION SOLUTION**

The World Harmony Foundation (P.O. Box 1148, Midland 6936, Western Australia) proposes **THE POLLUTION SOLUTION** Conference to be held at the Sheraton Mirage Hotel, Port Douglas, Queensland, Australia, October 15-22, 1999. Those interested, please write or fax 619/454-3024, E-mail: steveb@iinet.net.au

For USA: contact World Harmony (US), P.O. Box 317, Rainier, Washington 98576.

International Conference on

**NEW IDEAS IN NATURAL SCIENCES**

St.-Petersburg, Russia

17-22 June 1996

Problems, new ideas and new directions in natural science will be discussed, including reports of experiments and demonstrations of new effects. There will be a physics and a geology section of the conference taking place concurrently. The physics section will be divided into 4 main themes: Modern problems in physics -- theoretical research; New energetics -- practical results; Gravitation and overlapping technologies; and Investigation of the properties of space and time.

Participation fee is US\$ 300. Hotel accommodations can also be arranged through the conference organizers.

Contact: Alexander V. Frolov, P.O. Box 37, 193024 St.-Petersburg, Russia

Phone ++7-812-2747877 or

e-mail to <<postmaster@frolov.spb.ur>>

**INTERNATIONAL SYMPOSIUM ON  
CONSCIOUSNESS,  
NEW MEDICINE AND NEW ENERGY**

Yomiuri Hall, Tokyo, Japan  
November 21-22, 1996

Dr. Shiuji Inomata is organizing a symposium to discuss and present research results in such broad topics as consciousness phenomena, holistic medicine, integration of Western and Eastern medicine, and new energy technology. The sponsor is the Japan Green Cross Society. Paramahansa Tewari has been chosen as the keynote speaker for the conference. Participation fee is US\$ 190.

Contact: Mr. Tetsu Nagano, Japan Green Cross Society  
2F Kamon Building  
2-7-14 Hamatsu-cho  
Minato-ku Tokyo 105 JAPAN  
Tel: +81(0)3-3437-2218  
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## Commercial Column

The following companies (listed alphabetically) are commercializing cold fusion or other enhanced energy devices:

**COMPANY: PRODUCT**

**American Cold Fusion Engineering and Supply:** Information and troubleshooting for the fusion research and development industry. Sacramento, California. The president, Warren Cooley, can be reached at 916-736-0104.

**CETI** (Clean Energy Technologies, Inc.): Developers of the Patterson Power Cell™. Dallas, Texas. Voice (214) 982-8340, FAX (214) 982-8349.

**Clustron Sciences Corp.:** New energy research consulting and information. Contact: Ron Brightsen, 703-476-8731.

**ENECO:** Portfolio of intellectual property including over thirty patents issued or pending in cold nuclear fusion and other enhanced energy devices. Salt Lake City, Utah. Contact Fred Jaeger, Voice 801/583-2000, Fax 801/583-6245.

**E-Quest Sciences:** Exploring The Micro-Fusion™ process. Seeking qualified research partners for their sonoluminescence program. Contact Russ George, FAX (415) 851-8489.

**Fusion Information Center (FIC):** Research and development of new energy systems. The world's most complete resource depository for cold fusion research information, as well as other new energy research including zero-point energy; space energy research; electronic, electromagnetic, and mechanical over unity

devices and more. We are the publishers for *Fusion Facts*, *New Energy News*, and *the Journal of New Energy*. Voice 801-583-6232, Fax 801-583-2963.

**Holotec AG,** Clean Energy Technology, contact André Waser, Gen. Mgr., Bireggstrasse 14, CH-6003, Luzern, Switzerland. Phone 011 41-41 /360 4485, or Fax 011 41-41 /360 4486.

**Hydro Dynamics, Inc.:** Hydrosonic Pump, heat-producing systems using electrical input with thermal efficiencies of 110 to 125 percent. Rome, Georgia. Contact James Griggs, Voice 706/234-4111 Fax 706/234-0702.

**International Management Systems Co. (IMSC):** Technical project/program management assistance, and technology development and commercialization assistance. Contact Mark Harris or Richard Youngs, Phone 801-583-6232, Fax 801-583-2963, or Phone/Fax 801-255-3000.

**JET Energy Technology, Inc.:** Design and manufacture of  $\pi$ -electrode systems, calorimeters, and associated equipment and systems. Consulting regarding radiation, materials, and other scientific and engineering issues. Weston, MA. Contact Dr. Mitchell Swartz, Voice 617/237/3625. Fax 617/237/3625.

**Magnetic Power Inc.:** The Joint Venture partner with Sciex (UK) for Takahashi supermagnets and supermotors in North America. Sebastopol, CA. Contact Mark Goldes, Voice 707/829-9391, Fax 707/829-1002.

**Nova Resources Group, Inc.:** Design and manufacture ETC (Electrolytic Thermal Cell); EG (commercial power cogeneration module); and IE (integrated electrolytic system). Denver, CO. Call Chip Ransford, Phone (303) 433-5582.

**UV Enhanced Ultrasound:** Cold Fusion Principle being used for an ultrasonic water purifier. Hong Kong. FAX (852) 2338-3057.

Note: The Fusion Information Center has been acting as an information source to many of these companies. We expect to augment our international service to provide contacts, information, and business opportunities to companies considering an entry into the enhanced energy market.

### INFORMATION SOURCES

"*Cold Fusion*", monthly newsletter, edited by Wayne Green, 70 Route 202N, Petersborough, NH 03458.

*Cold Fusion Times*, quarterly newsletter published by Dr. Mitchell Swartz, P.O. Box 81135, Wellesley Hills MA 02181. Home Page: <http://world.std.com/~mica/cft.html>

*Cycles*, a R&D newsletter, published by Dieter Soegemeier, Editor, GPO Box 269, Brisbane, QLD.4001, Australia. Phone/Fax: +61 (0)7 3809 3257.

*Electric Spacecraft Journal*, quarterly, edited by Charles A. Yost, 73 Sunlight Drive, Leicester, NC 28748.



**Fusion Facts** monthly newsletter: Salt Lake City, UT 801/583-6232, also publishes Cold Fusion Impact and Cold Fusion Source Book. Plans on-line database access.

*Fusion Technology*, Journal of the American Nuclear Society publishes journal articles on cold nuclear fusion. 555 N. Kensington Ave., La Grange Park, IL 60525.

*Infinite Energy*, new bi-monthly newsletter edited by Dr. Eugene Mallove (author of **Fire from Ice**), P.O. Box 2816, Concord, NH 03302-2816. Voice: 603-228-4516.  
Fax: 603/224/5975 E-mail 76570.2270@compuserve.com

Institute for New Energy (INE), organization to promote and help find funding for new energy research.

Home Page: [www.padrak.com/ine/](http://www.padrak.com/ine/) contains many important scientific papers and current reports on all areas of research.  
E-mail: [ine@padrak.com](mailto:ine@padrak.com) Salt Lake City, Utah.  
Voice 801/583/6232, Fax 801/583/2963.

*New Energy News* monthly newsletter for INE, highlighting the research and development in the worldwide new energy arena. Edited by Hal Fox.

*Journal of New Energy*, quarterly, presenting papers representing the new areas of energy research, leading-edge ideas in the development of new energy technology,

and the theories behind them. Published by the Fusion Information Center, Inc., for the Institute for New Energy. Editor: Hal Fox.

*Planetary Association for Clean Energy Newsletter*, quarterly, edited by Dr. Andrew Michrowski. 100 Bronson Ave, # 1001, Ottawa, Ontario K1R 6G8, Canada.

Now available: *Clean Energy Review*, a technical and scientific discussion prepared for the Canadian Environmental Assessment Agency's panel reviewing nuclear fuel wastes disposal. Discusses transmutation as a possible solution for nuclear waste disposal. \$5 U.S. and Canadian, \$7.50 other countries.

*Space Energy Journal*, quarterly, edited by Jim Kettner & Don Kelly, P.O. Box 11422, Clearwater, FL 34616.

*21st Century Science & Technology*, P.O. Box 16285, Washington, D.C., 20041. Includes cold fusion developments.

The above list of commercial and information sources will be growing. New listings will be added as information is received. Send information to *FF*, P.O. Box 58639, Salt Lake City, UT, 84158.

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by Peter Graneau (Northeastern Univ., Boston)  
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The book deals with the resurgence of nineteenth century electromagnetism in physics and electrical engineering. It describes a series of important experiments, and new technologies based on these experiments, which cannot be explained and analyzed with the modern relativistic electrodynamics of the twentieth century. The Newtonian electrodynamics of Coulomb, Ampere, Neumann, and Kirchhoff, which was current from 1750 to 1900, is fully reviewed and greatly extended to deal with contemporary research of exploding wires, railguns, and other electromagnetic accelerators, jet propulsion in liquid metals, arc plasma explosions, capillary fusion, and lightning phenomena. Much of the book is based on the atomic definition of the Amperian current element. Finite element techniques are described for solving many electrodynamic problems. Approx. 350 pp.

Expected publishers price: US\$ 55. May be ordered through *New Energy News*, address on this page. This book will be reviewed in the near future.

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