HOW CAN COLD FUSION BE REAL, CONSIDERING IT WAS DISPROVED BY SEVERAL WELL-RESPECTED LABORATORIES IN 1989?

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Topic of interest

Public information regarding cold fusion

Abstract

This paper answers the question, "How can cold fusion be real, considering it was disproved by several well-respected laboratories in 1989?" Steven B. Krivit has carried out innovative analysis and reporting on the cold fusion field since 2000 [1,2]. He is one of very few people in the world who is familiar with the breadth and depth of this field, and he has been in contact with a majority of researchers in the field, also known as Low Energy Nuclear Reactions (LENR).

As cold fusion has come to be recognized as a new scientific field, the subject has created much confusion. Few books and magazine articles have conveyed information accurately. Scientific journals have been cautious and reluctant to publish papers in this area. Consequently, the field has developed in the last 16 years outside the view of mainstream science. A major communication gap divides researchers active in the field and those who are not. The purpose of this paper is to help bridge this gap.

This paper will discuss the following:

- False negatives: Retrospective studies of work that supposedly disproved cold fusion. Reference is made to eight published studies that analysed the cold fusion research performed at Caltech, MIT and the Harwell Atomic Energy laboratory. Re-examination of raw data shows possible excess heat at each of these institutions, as well as major procedural errors [3].
- Unknown positives: Little-known early corroborations that supported the claims of Martin Fleischmann and Stanley Pons. Private investigations commissioned by the Electric Power Research Institute and the U.S. Pentagon verified the findings of excess heat at SRI International. Investigations were performed by prominent U.S. scientists; R. Garwin, N. Lewis, C. Barnes, H. Birnbaum and A. Bard. Petroleum companies Amoco and Shell also performed private investigations that corroborated the claims of Fleischmann and Pons [4].
- Overview of cold fusion reaction products: Unlike conventional D-D fusion, cold fusion produces 4He as a dominant product [5] and low-level tritium evolution as a minor product [6]. Evidence is presented that asserts that the levels of excess heat in such D/Pd experiments cannot possibly be of chemical origin [7].
- Energy production: Selected reports of excess heat. 10 watt excess power (30 MJ) reported in 1999 by Arata/Zhang [8], 34 watts (4.6 MJ) by El Boher et al. [9] and 40 watts by Stringham [10] in 2004.
- Power density: A comparison to uranium fuel rods in conventional fission reactors is made. Published papers show Pd yielding a higher volumetric power density than that of conventional nuclear fission fuel rods [11].
- Experiments demonstrating heavy element transmutation in low energy reactions. List of 14 laboratories reporting low energy nuclear transmutations is presented [12]. Reference to experiments performed at Mitsubishi Heavy Industries indicate 100% reproducibility [13], replication at Osaka University indicates 100% reproducibility [14].
- Myths/Facts in support of cold fusion: Reproducibility is high: 83%-100%, Modern calorimetry has become very accurate. Several strong theories now exist. Papers have appeared in 40 peer-reviewed journals.
- Myths/Facts of concern about cold fusion: There is little evidence to support practical scaling-up to commercial power levels; also, military applications are likely.
- U.S. Department of Energy 2004 cold fusion review: What did it accomplish? Was it sincere?
- General characteristics of hot fusion compared with cold fusion: Best results from each field are displayed. The emerging view indicates that hot fusion will be appropriate for large-scale power generation, similar to today's power plants, and cold fusion energy generation likely will be produced at or near the point of consumption.

Summary:

Cold fusion, also called Low Energy Nuclear Reactions, has been studied by 200 men and women with strong backgrounds in science, from 13 nations over the last 16 years. They primarily have worked independently of one another. The results of this research may provide a new source of energy, new substances and new technologies.

References

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