LENR Letter – suggested edits from Orsova

We urgently need your help!

In March 1989, one of the world's pre-eminent electrochemists and his colleague announced that they had succeeded in creating the conditions for fusion energy in a table top experiment. Almost immediately, a media circus ensued and many top laboratories regrettably worked to replicate the finding before key experimental variables had been identified and explored. Though the experiments appeared elementary, they were in fact immensely complex and challenging. Some prestigious labs failed to replicate the finding, and a burst of initial optimism quickly soured into ignominy and hostility.

The field of Cold Fusion never recovered.

By late 1990 the discovery was widely replicated in dozens of major laboratories, and many positive results were published in major scientific journals. The results showed that cold fusion is a real nuclear effect, and that it could become a practical source of energy.

Unfortunately, some ~~early~~ attempts to replicate have failed, and many scientists jumped to the conclusion that the effect is not real. Electrochemist Prof. Heinz Gerischer, the Director of the Max Planck Institute for Physical Chemistry in Berlin, described this misunderstanding in 1991: [2, 3]

"In spite of my earlier conclusion, — and that of the majority of scientists, — that the phenomena reported by Fleischmann and Pons in 1989 depended either on measurement errors or were of chemical origin, there is now undoubtedly overwhelming indications that nuclear processes take place in the metal alloys."

Hundreds of other distinguished scientists replicated the experiment and published similar positive assessments. These included the Chairman of the Indian Atomic Energy Commission, [4] the author of the leading textbook on electrochemistry, [5, 6] a Fellow of the China Lake Naval laboratory, [7] the designer of the Tritium Systems Test Assembly at Los Alamos, [8] and many~~, if not most,~~ of the world's top electrochemists. [9]

Cold fusion is still a laboratory scale phenomenon. It is not yet well understood, so it cannot be fully controlled. If we learn to control it, we can probably scale it up. It has achieved power levels of 100 W lasting for 30 days continuously, at temperatures and power densities comparable to a fission reactor core. [10] Cold fusion produces thousands of times more energy than any chemical reaction, with no chemical fuel. It produces no carbon dioxide, and unlike nuclear power plants or plasma fusion tokamak reactors, no dangerous radiation or radioactive waste. ~~There is enough cold fusion fuel on earth to power civilization for billions of years.~~

In short, cold fusion could halt global warming, lower the cost of energy dramatically, raise standards of living across the world (especially in the global south), reduce the geopolitical uncertainties associated with fossil fuels, and give everyone access to as much clean energy as they need, whilst ~~ending~~ dramatically lowering our use of oil and fossil fuel. Even better, cold fusion is conceivably closer to becoming a practical source of energy than plasma fusion tokamaks or advanced fission, and it is far cheaper and safer than these alternatives.

A great deal of technical progress has been made since 1989, and mainstream acceptance is growing. The DoE is now funding cold fusion research, [11] and so are the government energy research agencies in the EU [12] and Japan. NASA, the U.S. Army and Navy researchers announced important breakthroughs this summer. [13-15] Japan's largest boiler manufacturer hopes

to have prototype cold fusion reactors in ~~a few years~~ within five years. [16] But DoE funding is only $10 million per year. Much more is needed if we are going to make rapid progress, to end the energy crisis and stop global warming. Many enthusiastic young researchers want to begin research in this field. We should fund them, and encourage them. There is still lingering opposition to the research, and ignorance of its importance, because of the unfortunate misunderstandings in 1989.

We must put that behind us.

We need scientists and science-literate members of the public to make the case for cold fusion, and to urge legislators and decision makers to support research. It is not certain that cold fusion can be made practical, but it is likely. The cost of doing this would be trivial, and the benefits will be immeasurable.

Given the future that we increasingly face, it would be a tragedy to write the field off given what we now know after 30 years of careful research.

Not when it still holds such potential.

Notes:

1. Ten million total, or per year?

2. Consider adding Metzler's new preprint to the technical notes?

https://arxiv.org/abs/2208.07245