

Clearing the air about the cold fusion controversy

by Marjorie Mazel Hecht

Fire from Ice: Searching for the Truth Behind the Cold Fusion Furor

by Eugene F. Mallove

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If you want to learn the truth about cold fusion—the science and the politics of its tumultuous two-year history—read this book.

Author Eugene Mallove, chief science writer at the Massachusetts Institute of Technology News Office, started out as a skeptic after the initial March 1989 announcement by Martin Fleischmann and Stanley Pons. As the battle lines were drawn and the sticks and stones began to fly, he found the subject “irresistible,” and he began to chronicle the experiments, the theory, and the intrigue.

Mallove is well qualified and well situated to tell this complex story. He knows many of the scientists involved, he knows the “hot” fusion program, and he knows how to write about science for non-scientists as well as for scientists. In fact, he seems to delight in making scientific concepts understandable and even exciting.

Most important, Mallove did what the title of the book says: He sought for the truth behind the furor. It is clear from the initial publicity for the other two recent books on cold fusion (one by Frank Close and the other by Gary Taubes), that Mallove’s commitment to tell the *full* story makes his book unique.

In the preface, Mallove lets the reader know that after reviewing the mounting evidence he is “persuaded that it provides a *compelling* indication that a new kind of nuclear process is at

work. . . . that the evidence is *overwhelmingly* compelling that cold fusion is a real, new nuclear process capable of significant excess power generation . . . [and that there] is yet no *proved* nuclear explanation for the excess heat.”

This does not mean that Mallove presents everything done by Fleischmann and Pons in glowing terms. For example, he criticizes some of the initial claims they made as “extravagant” and takes issue with how they handled certain aspects of the politics. However, for Fleischmann and Pons as well for as a host of other scientists both pro and con cold fusion, Mallove presents enough of what they actually said—material from transcripts of scientific presentations and interviews—for the reader to draw his own conclusions.

From the beginning

The book starts with some basics on fusion reactions and the history of hot fusion, and then moves chronologically through the first 18 months of the cold fusion saga.

For those not familiar with the cold fusion players, Mallove provides ample information on who’s who, what experiments they conducted, what the results were, and what reaction (political reaction, that is) their results produced. There is a table summarizing the 80 or so research groups that produced positive results—heat, tritium, neutrons, gamma rays, and helium.

Even for those who have followed cold fusion and read some of the technical papers, the book offers much new detail on cold fusion’s beginnings. For example, there is a straightforward account of the work of Steven Jones at Brigham Young University and his relationship to Fleischmann and Pons. The scientific criticisms leveled at the cold fusion experiments are fully described—along with the part missing from most other reportage of cold fusion: the scientific rejoinders.

The cold fusion conferences, the scientific sessions (for

example at the American Society of Mechanical Engineers, or the American Physical Society), as well as the Department of Energy's review panel are fully reported, including some of the more interesting back and forth at the podium. There are several pages, for example, on the scientific exchange at the Department of Energy's Santa Fe meeting in May 1989 between cold fusion researchers like John Bockris at Texas A&M and cold fusion attackers, like Nathan Lewis of the California Institute of Technology.

Of particular interest to me—especially because reading the original technical papers is admittedly difficult—is Mallove's recounting of the development of cold fusion theories by MIT's Peter Hagelstein. Hagelstein, known for his brilliant work at Lawrence Livermore National Laboratory on the X-ray laser, began to believe that cold fusion was possible "after he discovered a possible way around the Coulomb barrier." Mallove treats the reader to some of the dialogue between Hagelstein and his critics at an MIT meeting.

'Science' and 'Nature' act shamefully

Finally, there is a good account of bad behavior: that of certain scientists who played a leading role in attacking cold fusion, and of the science press, specifically the journals *Science* and *Nature*. Having seen some of this shameful behavior in person, I think Mallove is too kind in describing the worst of the "skeptics"—the vicious, piggish, lying reporters and their counterparts in the scientific community.

Why such malice toward this promising new discovery? Mallove offers many reasons, but he falls short of seeing the total political picture in which a technological advance that would spur growth is willfully suppressed, not by individual accident but by malthusian design. Because of this, he also has trouble characterizing the role of *Fusion* magazine, *21st Century*, and Lyndon LaRouche in the fight for science.

Mallove does, however, usefully point out, both at the beginning and end of the book, how science really works, including these basics: Science does not proceed by majority rule, and one cannot throw out experimental results because current theory suggests these results are "impossible."

Mallove leaves the reader with an optimistic view of the future of cold fusion, and indeed he should. In the months since this book was written there have been many exciting new results and new theories. In fact, I am sure of two things: that Eugene Mallove is already writing the next installment of the cold fusion saga, and that the skeptics are going to have to eat a lot of hat.

Mallove and the case of MIT

The saga of cold fusion at the Massachusetts Institute of Technology (MIT), where Dr. Mallove was chief science writer for the past five years, is a case study of how science should not work. Mallove resigned from MIT in June, because he felt that he could no longer represent the university, given its "tragic and indefensible abrogation of academic

standards" on the issue of cold fusion.

An alumnus of MIT with degrees in astronautical engineering and environmental science, Mallove over the past two and a half years became intrigued enough with the cold fusion phenomenon—and with the dishonest response to it from the scientific establishment—to write his book.

Mallove's 17-page resignation letter catalogues MIT's brutal and dishonest response to cold fusion. Among the incidents he reports is that a review article he prepared for MIT's magazine *Technology Review* was dropped, after being scheduled as a cover story, because an MIT senior physicist found it too positive. The same physicist told Mallove that he had "50 years of experience in nuclear physics and I know what's possible and what's not. . . . I don't want to see any more evidence! I think it's a bunch of *junk* and I don't want to have anything further to do with it."

Mallove comments, "I'm profoundly embarrassed that we have such closed-mindedness here on scientific issues."

Another incident Mallove relates concerns disparaging statements about Pons and Fleischmann ("possible fraud," and "scientific schlock") by MIT's Ronald Parker in May 1989 and printed in the *Boston Herald*. Parker claimed he did not say those things, and Mallove issued an MIT press release with Parker's denial. Then a year later Mallove heard a tape recording where Parker indeed said what the *Boston Herald* writer had reported—and more.

Fudged data at MIT?

The most egregious incident involves the MIT Plasma Fusion Center's own cold fusion experiments in 1989, which were reported as negative at the time and used to make the case that Fleischmann and Pons's experiment could not be replicated. The actual data from the experiment as published by MIT show nothing of interest in the heavy water and light water cells. However, the processed but unaveraged data presented in an unpublished graph dated three days prior to the published version indicates that there was some excess power in the heavy water cell.

The question Mallove asks is "why do we see no evidence of this possible excess power in the graphs that are in the final report and the published paper? The inescapable answer seems to be that the averaged data for the heavy water was *moved down an arbitrary amount* so that it now has more the appearance of the null result in the case of the light water averaged data. Interestingly, the light water averaged data seem to be consistent in level with the corresponding curve of raw processed data; that is, it has not been moved down."

Mallove was promised by Parker in June an answer to his questions on the MIT cold fusion experiment and access to the raw data, but as of mid-August, nothing had been provided him. Mallove has now requested a formal investigation.

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