

Past and Future of the International Conferences on Cold Fusion

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1. Introduction

In 1989, two chemists announced that they measured excess thermal energy under ordinary conditions of temperature and pressure using electrochemistry. They were Martin Fleischmann and Stanley Pons. The relatively high levels of energy production led to their speculating that the energy was of nuclear origin. The reactions were termed “cold fusion,” even though no one knew then with confidence either (a) that nuclear reactions were occurring, or (b) which nuclear reactions were occurring. Experiments designed to measure the particles expected from normal (hot) fusion failed to see the anticipated intensities. Further, the speculated nuclear origin of the measured energy was at odds with known theory. For these two reasons, the work became extremely controversial. Many scientists concluded that there were no nuclear reactions and the reported experimental results were in error. In fact, cold fusion became a widely-known and still-cited example of science gone wrong.

As time passed during the 1990s, processes other than fusion of two deuterons were reported. They included transmutation reactions, which involve and produce isotopes of nuclei with moderate and high atomic weights. That is, they are nuclear reactions not involving only two light nuclei, as fusion does. Because of this, and to emphasize their viewpoints, some researchers in the field sought other names for the effect announced by Fleischmann and Pons. These names include Low Energy Nuclear Reactions (LENR), Chemically Assisted Nuclear Reactions (CANR), Lattice Assisted Nuclear Reactions (LANR), Cold Nuclear Transmutations, Cold Fusion Nuclear Reactions, and New Hydrogen Energy. In 2002 at ICCF9 in Beijing, Professor Xing Zhong Li suggested the name Condensed Matter Nuclear Science (CMNS) for the field. That name can also apply to other known and understood mechanisms, such as the Mossbauer Effect and isotope shifts in spectra. At present, given all the problems with the names of the field, many people are simply referring to the mechanism(s) active in the experiments that followed from the 1989 announcement as the “Fleischmann-Pons Effect” (FPE). In this paper, we will use the terms “cold fusion,” because the International Conferences on Cold Fusion (ICCF) are being discussed here, and the “FPE,” because it is a synoptic moniker specific to the effect(s) of interest here. “Cold fusion” has the advantage of name recognition and the

drawback of being viewed negatively by many people. The FPE has the inverse characteristics, being a better description but little known.

Scientists, whatever their interests, have three basic tasks. The first is to attract funding, since most scientists are not independently wealthy. As scientists working on cold fusion can attest, it is difficult to sustain sophisticated research without adequate support. The second task is to learn new things. Without this process, there is no science. The third requirement is to communicate what was done and found. Without communication, the learning is wasted. So, in general terms, communication of results to sponsors and the

public is what scientists do in response to their receipt of funds from governments, companies, and individuals. This trade is shown schematically in Figure 1. There are serious problems on both the funding and reporting sides of the situation. Because of the early mistakes in the field, the complex interdisciplinary character of experiments in the field and the lack of an accepted comprehensive theory, the field has a bad reputation. The disdain is now undeserved, but still in place.

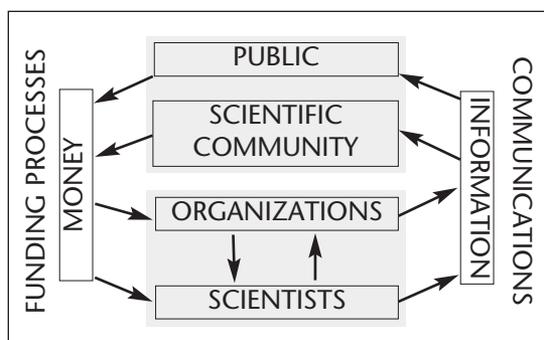


Figure 1. The cycle for funding of research and communication of results.

So, even after two decades of serious research by credentialed investigators, who used adequate equipment and procedures, including calibrations and controls, possible sponsors are still generally unwilling to provide support to work in this field. This has dramatically slowed progress in the field. Especially critical is the inability of FPE scientists to employ modern research tools, which tend to be expensive. Atomic force microscopes and other instruments from nano-science and -technology are especially needed. Such tools might be pivotal for obtaining empirical information that will lead to fundamental understanding in one of the more exciting and contentious topics in modern science, which might lead to distributed sources of clean energy.

There have been many conferences on cold fusion and many sessions at the conferences of large intellectual societies on the subject. We will focus on the primary series of conferences, the ICCFs. They started early and proceeded continually, and they involve and serve the international scientific community. However, we must first acknowledge other continuing conferences and societies with an interest in this topic.

There are continual series of conferences on the FPE, by various names, in Italy, Japan and Russia. The 8th

International Workshop on Anomalies in Hydrogen and Deuterium Loaded Metals was held in October 2007 in Catania, Italy. The 8th Annual Meeting of the Japan CF Research Society met in Kyoto, Japan in November 2007. The 15th Russian Conference on Cold Nuclear Transmutations of Chemical Elements and Ball Lightning is scheduled for October 2008 in Sochi, Russia.

Interest in the FPE effect by intellectual societies has been quite variable over the years. In the recent past, there have been sessions on the topic at large meetings of the American Chemical Society, the American Nuclear Society and the American Physical Society (APS). The number of papers in APS meetings has gradually increased over recent years, largely due to the efforts of Scott R. Chubb. In March of 2008, there were 19 papers scheduled for presentation at the APS meeting in New Orleans, Louisiana.

Written communications of research activities and results have been difficult for some of the same reasons that funding is problematic. Scientific journals have been particularly balky. The editors of many journals, especially the top journals, are unwilling to even consider publication of manuscripts from researchers working on cold fusion. Nevertheless, substantial numbers of papers have been published in many peer reviewed journals. They include the *Journal of ElectroAnalytical Chemistry*, *Fusion Technology*, *Japanese Journal of Applied Physics*, *Physics Letters*, *Il Nuovo Cimento*, and *European Journal of Applied Physics*, among others.

Scientific articles on cold fusion are published in the proceedings of the ICCF and other conferences on the subject, and in diverse books. There are over 50 books on the field and closely related topics. A list is available on the website of the New Energy Institute, which also has references to the proceedings of the more recent conferences in this series: www.newenergytimes.com/Books/books.htm#proceedings. Four of the more comprehensive recent books are (a) Charles Beaudette, *Excess Heat* (Oak Grove Press, 2nd Ed., 2002), (b) Steven B. Krivit and Nadine Winocur, *The Rebirth of Cold Fusion* (Pacific Oaks Press, 2004), (c) Hideo Kozima, *The Science of the Cold Fusion Phenomena* (Elsevier Science, 2006), and (d) Edmund Storms, *The Science of Low Energy Nuclear*

Reaction (World Scientific Publishing, 2007).

There is a great deal of information on the Fleischmann-Pons Effect, by its various names, available on the web:

- <http://www.lenr.org>
- <http://www.newenergytimes.com>
- <http://www.infinite-energy.com>
- <http://www.chem.au.dk/~db/fusion/>
- <http://world.std.com/~mica/cft.html>
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The websites of the International Society for Condensed Matter Nuclear Science (<http://www.iscmns.org/>) and the Japan CF Research Society (<http://dragon.elc.iwate-u.ac.jp/jcf/indexe.html>) are also worthwhile resources.

This is not a technical review, but rather a consideration of the primary means for communicating what has been done and found by researchers studying the FPE. The next section provides an overview of the 13 ICCFs held to date. A tabular summary of most characteristics of each of the ICCFs is provided. The final section addresses some prospects for maintenance of the series of conferences.

2. History of the ICCFs

While this sequence of conferences has been the major venue for presentation of results on the FPE effect, its continuation and evolution are subject to discussion. The characteristics of past conferences provide a basis for that consideration. The rest of this section presents some statistics on the ICCF, and discusses trends over the 18-year history of the series. Table 1 is a summary of the dates, locations and the numbers of attendees, papers in the proceedings, and authors of those papers. It is based on the proceedings of each conference and other materials we have acquired from our attendance at each of the ICCF.

The number of attendees can be gotten in different ways, all of which have problems. The first is from the list published by the conference organizers (which is sometimes in the proceedings). The lists commonly contain more names than people actually attended the conference, so they tend to be too high. The second is from the official conference photo. The photos usually had some people missing and included administrative personnel, but the numbers from the photos are generally too low. The third is from reports by individuals after the conferences. The last is the number given in the proceedings. The reported and published numbers are commonly rounded off. For example, ICCF2 was said to have >200 attendees. Numbers from the provided lists, from counting faces in conference photos, and from the proceedings are given in Table 1. The large discrepancies in the numbers of people attending ICCF3 and ICCF13, shown in Table 1, are indicative of the problem of accurately counting attendees. It is likely that the numbers published in the proceedings and attendee

Table 1. Summary of the dates, locations, attendees, papers, and authors for the ICCF. The numbers for ICCF14 are targets at the time this article went to press.

	General Information			Attendees			Proceedings		
	Date	Location		List	Photo	Reports	Country	Papers	Authors
1	1990	Salt Lake City, UT USA		296		>200		35	90
2	1991	Lake Como, Italy				>200		57	294
3	1992	Nagoya, Japan		324	223	346	18	102	320
4	1993	Lahaina, Maui, HI USA				242	12	65	164
5	1995	Monte Carlo, Monaco		207		228	15	76	91
6	1996	Lake Toya, Hokkaido, Japan		175		179	17	110	288
7	1998	Vancouver, BC Canada		218		206	21	89*	
8	2000	Lerici, La Spezia, Italy		145	135	145	18	69	176
9	2002	Beijing, China		113	111	113	17	87	193
10	2003	Cambridge, MA USA		135	98	>150	15	93	170
11	2004	Marseilles, France			72	170	20	74	164
12	2005	Yokohama, Japan			58	107	9	63	158
13	2007	Sochi, Russia		75	52	76	9	91**	
14	2008	Washington, DC USA		(150)				(80)	

*The ICCF7 Proceedings have 76 papers presented at the conference, plus 13 additional papers which were not presented.
 **The entry for the number of papers at ICCF13 is from the agenda, since the proceedings are now in preparation.

reports are most accurate. It must be noted that, in general, not all of the attendees were present for the entire conference.

The number of papers can be obtained more confidently by simply counting the papers in the proceedings. Similarly, the author index in the proceedings gives the numbers of people with their names on the published papers, which were counted.

Given the incompleteness and uncertainty of the number of attendees, it is difficult to be very specific about attendance trends. But, the general picture is evident. For the first seven meetings during 1990-1998, attendance was somewhat in excess of 200. ICCF3 and ICCF6, both in Japan, were the exceptions in this period. For ICCF 8 through 11, attendance was usually closer to 150. For ICCF12 and 13, the attendance dropped significantly. The goal for ICCF14 is 150 attendees.

The number of countries from which attendees came for the ICCFs are shown in Table 1. Here again, it is not possible to draw any detailed conclusions. However, the overall picture is clear from the numbers given in the proceedings. Generally, 10 to 20 countries were represented at the conferences. The distribution of attendees across countries shows that the larger delegations are usually from about six countries. Examination of the lists of attendees over the years shows that there have been a significant number of attendees from the host country or continent for these conferences. One example is documented. For ICCF3, held in Nagoya in 1992, 229 of the 346 attendees were from Japan.

The numbers of papers in the proceedings of the ICCF series varies between 35 and 110, with no strong trends over the years. The total for the first 12 conferences is 920 papers, that is, an average of 77 published papers per conference. The total number of papers in the ICCF proceedings probably represents around one-third of the papers on the FPE since 1989. In addition to drawing most of the key scientists in the community, these conferences provide in their proceedings a primary repository of information in the field. There will probably be a need to reprint the proceedings from the earlier ICCFs as the number of scientists in the field increases.

The total number of authors listed for ICCF1 through ICCF12, excepting ICCF7 for which an author index is not available, is 2108. This gives an average of 192 authors for those 11 conferences. The total number over the years necessarily includes double counting of individuals who attended more than one of the ICCFs. It would be laborious to determine how many individual scientists contributed to the papers in the proceedings.

There is a significant factor and trend which cannot be gotten from the data in Table 1. The number of reporters present at each of the conferences is not generally recorded. However, we know from attending these conferences what the general level of press interest has been over the years. Initially, there was great and evident press presence, especially at ICCF1 and 2. The number of general press reporters in attendance declined to none or, at most, a few through the following several conferences. This has continued to be the situation in the most recent conferences. Some researchers in the field welcomed this absence of external scrutiny, which permitted work on the FPE to proceed without distractions from the press. We feel that this field, like any field of science, must be able to communicate its activi-

ties and results to both the broader scientific community and to the public generally. When the field is recognized and accepted as a subject for legitimate scientific inquiry, and public funds made available to researchers in the field, then such communications will become necessary and routine.

3. Prospects for the ICCFs

One of the fundamental features of the ICCF series of conferences is the manner in which they are organized. Most scientific conferences are planned and executed by an organization with a long-term charter, notably scientific societies. By contrast, the ICCF are governed by an ad hoc International Advisory Committee, which was founded at ICCF1. This approach to having a continuing series of core conferences was essentially borne of necessity. The controversial nature of cold fusion, even as early as 1990, precluded an existing intellectual society from assuming leadership of the needed conferences. Further, the intrinsically interdisciplinary character of the subject would have complicated the situation, even in the absence of the controversy. The membership of the International Advisory Committee has evolved over the years. Now, it is constituted almost exclusively of past, current, or potential chairmen and co-chairmen of this series of conferences. The primary function of the International Advisory Committee is to choose the chairmen and location of the next conference. This is usually done at an evening meeting late during the week of an ICCF.

The ICCF chairmen and co-chairmen have varied widely in both their experience and ability to organize and operate what amounts to a start-up company with a two-year lifetime. Once chosen by the International Advisory Committee, they are totally responsible for all aspects of organizing the conference. These include logistical aspects (meeting site; guest and meeting rooms; meals, including the reception, banquet and associated entertainment; audio-visual aspects; poster supports, and the conference outing site and buses), the technical program (overall architecture; invited, contributed, and poster papers; session chairpersons and panelists, if any), attendees (the FPE community, other interested persons and the press, with invitation letters for many of the participants), and financial sponsorship (private, industrial and government), plus diverse other items (conference stationery, attendee's bag, abstract book, local and other information, book sales, insurance, security and medical assistance). There are legal and even personal tax ramifications for the chairmen of an ICCF. These problems could be avoided, at least in the U.S., if each chairman set up a not-for-profit corporation to handle funds for the conference for which they are responsible.

Having a standing organization bear some of the responsibility for each of the ICCF would have advantages, most importantly the experience of staff personnel. There are two clear needs for any group to take responsibility for this series of conferences. The first is the willingness of the organization to accept the responsibility. The second is the willingness of the existing community of scientists working on the FPE to cede partial responsibility to any particular organization. The International Society for Condensed Matter Nuclear Science (ISCMNS) is a prime candidate for some continuing responsibility, because it is the only organization that specifically serves the FPE community. As a not-for-profit charitable organization in the U.K., the ISCMNS has a built-in structur-

al advantage for organizing conferences.

There are two central questions: (a) whether or not to change the current manner of organizing and conducting the ICCF and (b) what a new approach might be, if it is thought to be necessary to abandon the current method. These questions can be analyzed by considering the two fundamental requirements of scientific leadership and administrative support. At present, the need for a change is not compelling since the series of conferences has continued and appears to be rebounding in attendance. The strong present interest in holding ICCF15 in Italy, and the current more uncertain possibility of having ICCF16 in India, are evidence that the current system is not broken at this time. And, there is growing acceptance of the FPE as a real phenomenon that deserves continuing research. The likelihood that the field will be more widely accepted as a legitimate area of scientific inquiry might lead to greater interest and, maybe, the need for organizing and operating the conferences differently.

If changes are to be contemplated, it will be desirable to examine alternatives for obtaining both the mandatory technical leadership and the necessary administrative functionality. Given its position, one can ask if the ISCMNS can provide either of these functions? The Executive Committee of the ISCMNS is made up of scientists who are knowledgeable and active in the field. In principle, they could provide the scientific leadership. In fact, some of the members of the ISCMNS Executive Committee are past ICCF chairmen. However, there is no mechanism now in place in the Society to choose chairmen of future ICCF. Further, it is not necessarily desirable to restrict chairmanship of the ICCF to scientists who are both a member of the ISCMNS and have been elected to its Executive Committee. The use of the ISCMNS for administrative support of ICCF would also require changes. Presently, the capable founder and Chief Executive of the Society, William Collis, is both the leader and single staffer of the ISCMNS. He has demonstrated the ability to organize conferences similar to the ICCF, but does not have a staff for the many administrative functions listed above. It would be better if there were a staff associated with

the ISCMNS, which could provide both experience and labor, so that the scientific chairmen of a particular meeting, however chosen, could focus on fundraising, attracting attendees, the technical program and the proceedings.

In summary, it is possible and still attractive for the entire international community, most ably represented now by the International Advisory Committee, to continue to choose the specific chairmen for each meeting. Then, those individuals can work with the staff of their choosing to take care of logistical and administrative responsibilities. The chairmen would have the option of setting up a Local Organizing Committee, as has been commonly done. Or, they could hire a commercial conference organizer, as was done first for ICCF14, to provide both general meeting organizational experience and staff assistance. In either of these cases, the interface between the scientific chairmen and their administrative assistants has a strong possibility of being highly functional. As in the past, the conference leadership can hand pick the members of a local organizing committee. Or, if a professional meeting planning company is retained, there is a natural company-to-customer interface between it and the ICCF chairmen.

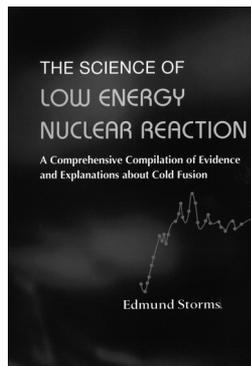
The efforts that have been already expended on the organization and documentation of the ICCF series of conferences have borne considerable fruit. It can be argued that, without this set of meetings, the field would not have been able to sustain the attention and work of dedicated, and usually under funded, researchers from the many needed disciplines in many countries worldwide. The volumes of conference proceedings from the ICCF series constitute the largest and most accessible body of results on the FPE. We hope that, however organized and operated in the future, this series of conferences will both continue and thrive.

Acknowledgments

Insightful comments on this paper from Peter L. Hagelstein, Xing Zhong Li and Michael C.H. McKubre are greatly appreciated.

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