Rothwell, J., *Tally of Cold Fusion Papers*. 2009, LENR-CANR.org.

Tally of Cold Fusion Papers

Jed Rothwell
LENR-CANR.org
1954 Airport Road, Suite 204
Chamblee, GA 30341

Abstract

This document contains a tally of cold fusion papers from two sources: the list maintained by Dieter Britz at Aarhus U., and the EndNote database used to generate the indexes at LENR-CANR.org. Various tallies such as the number of peer-reviewed experimental papers are presented.

Purpose

This report presents some background and a breakdown of the items in two databases of cold fusion papers: the Britz collection, and the LENR-CANR database. The purpose is to give the reader a sense of the scale, variety, and sources of the material available about this subject. This is also intended to give some indication of how much has been published on cold fusion, where it was published, and approximately how many positive and negative papers have been published.

This paper includes the following tallies:

1. Summary statistics for the LENR-CANR database
2. Positive, peer-reviewed excess heat papers culled from both databases.
3. Papers from Britz collection.
4. Famous failed neutron studies from 1989. These had a large influence on scientific opinion and the subsequent history of the field, but many cold fusion researchers believe they were flawed and should not be given weight today.

Details from these four tallies are gathered in Appendix A. They include multipage lists of journal titles, authors and the individual titles of papers referenced in the four tallies.

Sources

This data is compiled from two databases:

1. Britz's Cold Nuclear Fusion Bibliography (the Britz collection) which is located on the web page of the Chemistry Department at Aarhus University, at http://www.chem.au.dk/~db/fusion/.
2. The LENR-CANR database, in EndNote format.

The Britz collection consists of nine bibliographies of cold fusion related material:

1. Books
2. Journal Articles (from peer-reviewed journals only)
3. Patents
4. Magazine & newspaper comments
5. Peripherals (papers that relate to cold fusion but are not directly about it)
6. ICCF-4 papers, from the *Transactions of Fusion Technology*
7. Sonoluminescence
8. Cluster impact fusion
9. The Filimonov collection (Russian work).

In this study I tallied data from bibliographies number 2 and 6. As of December 21, 2008 bibliography 2 included 1,390 peer-reviewed (refereed) journal papers. Bibliography 6 was compiled in 1994 and includes 66 items.

The LENR-CANR database is in the EndNote format. [1] It was originally compiled by E. Storms. As of April 2009, it includes 3,575 items. It includes peer-reviewed journal papers plus a much broader selection of resources such as proceedings papers, papers from non-peer reviewed journals, reports issued by national laboratories and the U.S. Navy, books, some newspaper articles, and a few records of television broadcasts.

I updated the original Storms database, and cross-checked it against the Britz collection. I added some (but not all) proceedings papers published subsequently, and papers from various other sources such as the Bhabha Atomic Research Centre (BARC). I also added papers sent by authors to be uploaded, and titles they asked me to add. The database lists everything that that has been added to the on-line collection of papers, which includes things like PowerPoint slides from conferences, and some papers that have little or nothing to do with the science of cold fusion, such as a useful guide to energy published by NREL [2] and an autobiographical essay by J. O'M. Bockris. [3]

The LENR-CANR database is comprehensive but not exhaustive. It is not intended to be an authoritative listing of every paper ever published about cold fusion. It is a tool used to maintain the website and to write papers about cold fusion. I have several hundred papers that I have not added to the database for various reasons, mainly because in my opinion these papers are unimportant. They would probably not be of much interest to readers and I do not plan to upload them. Most of these unlisted papers are in conference proceedings. Some are in foreign languages that cannot easily be entered into EndNote or transcribed, especially Japanese.

The database contains a small number of items that are not directly related to cold fusion. These are included because they are referenced by other books and papers in the literature. Here is an example: Jung, P., *Fundamental Aspects of Inert Gasses in Solids Diffusion and Clustering of Helium in Noble Metals*, ed. S.E. Donnelly and J.H. Evans. 1991: Plenum Press, NY Jung.

The main focus of LENR-CANR is on the experimental literature, rather than theory. The database includes nearly every experimental paper published in peer-reviewed mainstream journals. We may have left out a few peer-reviewed theory and review papers. We have probably included most of the important experimental papers from the conference proceedings, but not all theory, review and history papers.

Some of the totals in this document are approximate. As noted above, our purpose is not to track down and record exactly how many papers have been published about this subject. There are various inaccuracies in the database such as the same book listed twice when different editions were published. Assigning categories to the papers is sometimes problematic. Some papers are difficult to categorize as positive or negative. Many results are mixed and in some cases even the author does not reach a firm conclusion.

There are discrepancies between the Britz and LENR-CANR databases because of differences of opinion. We categorize some papers as “refereed” (peer-reviewed) that Britz deemed not refereed enough to make the cut, such as the ones in ICCF-4 *Transactions of Fusion Technology*, Vol. 26T (1994). As noted above, he moved these papers into a separate database titled “ICCF4”

Because of these inaccuracies, the numbers of papers in various categories should be taken as a general trend and not a precise total.

1. Summary statistics for the LENR-CANR database

As of April 2009, the LENR-CANR database lists 3,575 items. They are broken down into 12 categories such as Journal Article and Conference Proceeding. The numbers of items in the 5 major categories are shown in Table 1.

Table 1. Number of items in major categories in LENR-CANR database

Category	**Number of items**
Journal Article	2,066
Conference Proceedings paper	1,250
Report	87
Newspaper Article	53
Book	49
Other (magazine articles, videos, etc.)	70

The database lists 4,752 authors.

Most of the Journal Articles, Conference Proceedings papers and Reports are written by multiple authors. In many cases a group of authors have written several papers, and groups from institutions such as the NRL, SRI and Energetics Technologies have collaborated to coauthor some major papers.

Most newspapers articles, books and “others” have only one author. Since there are 172 items in these categories, that comes to roughly 200 authors. The other 4,500 authors wrote the 3,403 articles, proceedings and reports. Groups of them often wrote several papers, so the average number of authors per paper is high. This reflects the multidisciplinary nature of cold fusion research. A project that requires expertise in calorimetry, electrochemistry and neutron detection should be done by at least two or three senior researchers. Most of these studies have been conducted with such groups. Many experiments also employ graduate students, as usual, but perhaps not as many as you would find in a less controversial area of research. More often than usual, senior professors do their own lab work.

There are 470 Journals in the database. Storms and I did not distinguish between peer-reviewed and non-peer-reviewed journals. All of the journals are listed in the Appendix A, List 1, so the reader is welcome to categorize them.

Britz, Morrison and others have noted that the number of cold fusion papers published per year declined rapidly after 1989. Morrison and others claim this is a symptom of "pathological science." (Britz does not make this claim.) [4] Most cold fusion researchers feel that it is caused by academic politics and opposition to the research. Britz and Morrison published graphs showing a sharp decline in peer-reviewed papers. These graphs are probably accurate, but the data in the LENR-CANR database does not agree with them. Figure 1 shows the Britz collection papers tallied by year. Figure 2 shows the papers in the LENR-CANR database tallied by year of publication. This does not reflect the trends in peer-reviewed papers and it probably does not reflect actual overall totals, because our database is skewed in favor of recent proceedings papers. We did not enter many papers published in early proceedings, or in more recent proceedings that I did not edit, such as ICCF-13.

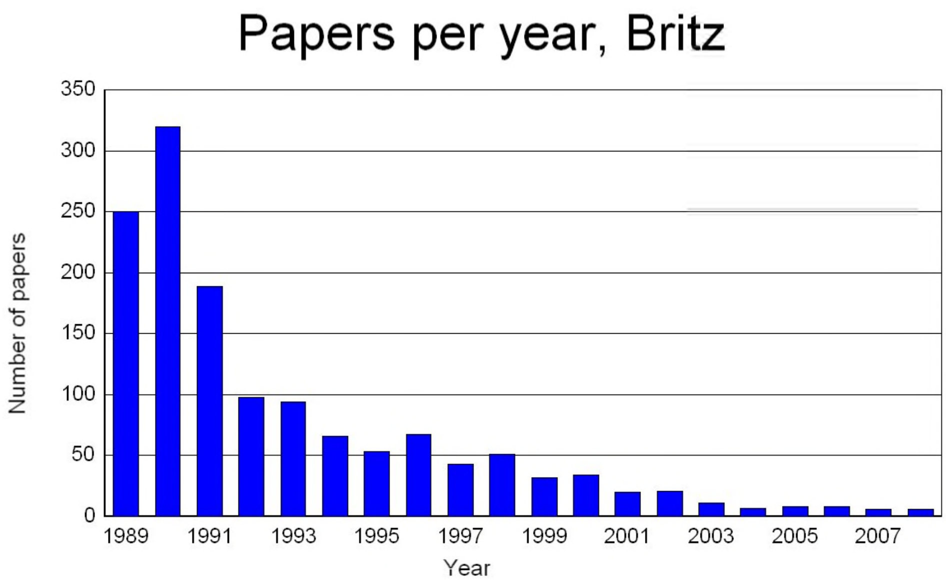

Figure 1. Papers in Britz Bibliography 2 Journal Articles published per year. Data courtesy D. Britz

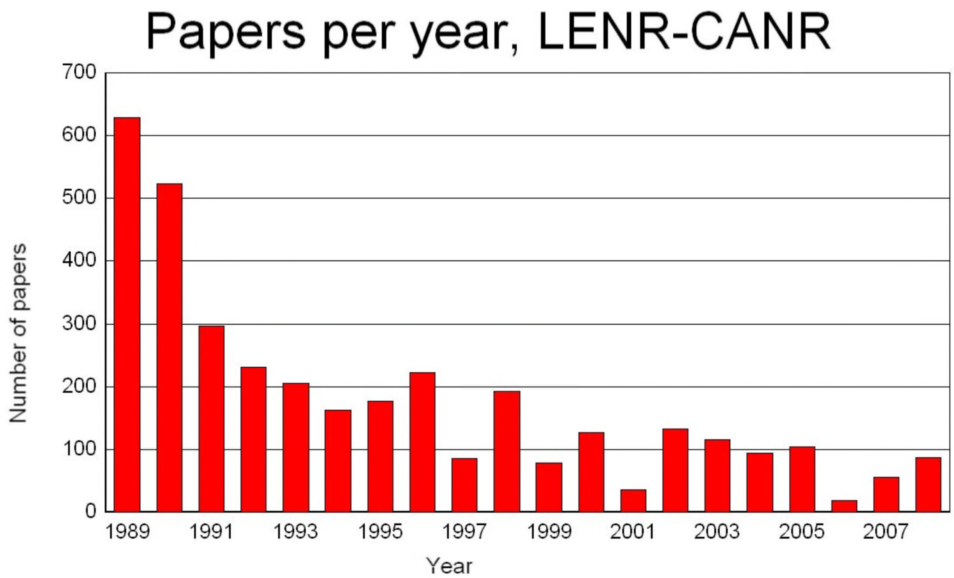

Figure 2. Papers in the LENR-CANR database published per year

Thousands of newspaper articles about cold fusion have been published, but we have added only 58. These have technical, scientific or historic significance. Storms added these items in order to reference them while writing books and papers, which was the original purpose of the database, and the customary purpose of the EndNote program. Most were written by Jerry Bishop (*Wall Street Journal*) or William Broad (*New York Times*). We added only 9 newspaper articles after 1994, even though hundreds were published, especially in 2008 and 2009.

The database includes 69 papers from *Infinite Energy* magazine, which is a small fraction of the total papers published there. Many papers in *Infinite Energy* are not directly related to cold fusion, and others we simply neglected to add.

There are 695 full text papers available for download at LENR-CANR.org. They are not representative of the full set of papers in the literature, or in our database. They skew toward informal sources such as conference proceedings, because these papers have fewer copyright restrictions. Compared to papers in the database, the full text papers include more mass media newspaper and magazine articles, and more papers for the layman.

The selection of papers at LENR-CANR.org is somewhat haphazard because the authors decide what they want us to upload. LENR-CANR.org is a library, not a journal. It is not selective. We do not endorse a paper by uploading it. We accept papers from harsh critics of the field as well as supporters. We accept both research papers and mass media articles. In most cases we will accept any paper that has been published in a conference proceedings, journal or magazine. We have imposed some selectivity by asking leading authors to contribute papers. Several of them did not wish to, and some were told by their publishers that it would violate copyright restrictions, so there are gaps in the collection. We urge readers who are seriously interested in this topic to read books about cold fusion and original source papers in a university library.

2. Positive, peer-reviewed excess heat papers culled from both databases

It has been widely reported in the mass media that cold fusion was never replicated, and that peer-reviewed papers on cold fusion have not been published. The primary claim made by Fleischmann and Pons in 1989 was the production of excess heat without chemical changes. This tally shows that the claim was replicated and reported in the peer-reviewed literature.

This tally includes positive, peer-reviewed papers describing excess heat experimental results only. It does not include things such as: negative papers describing null results; papers describing tritium or other effects but not heat; theory papers; or non-peer reviewed papers published by national laboratories, corporations and in conference proceedings.

Papers reporting both excess heat and also tritium, neutrons and other effects are included in this tally.

The titles are culled from both the Britz and LENR-CANR database.

Totals from this tally include:

153 papers
49 journals
348 authors and co-authors
62 principle authors
51 affiliations of principal authors

There are 62 principal authors (Table 2). Altogether they have 51 affiliations, because a few authors come from the same laboratory, such as Kainthla and Lin, who were graduate students with Bockris at Texas A&M U. In some cases, multiple laboratories in the same institution are listed, such as Hokkaido U., Catalysis Res. Center and Hokkaido U., Engineering Dept. Researchers from these two laboratories worked and published independently of one another.

The 51 affiliations are laboratories at universities, national laboratories and corporations. However, researchers from many more than 51 institutions contributed to this set of papers. I only tallied the first author's affiliation, not those of coauthors. Many experiments are collaborations between researchers from two or three laboratories. For example, Melvin Miles of China Lake sent samples to be tested for helium to the University of Texas and the Bureau of Mines. He also collaborated and co-authored papers with researchers at the NRL, the Nuclear Safety Department of E.G.&G. and elsewhere.

As noted above, this tally is of peer-reviewed papers only. Many more papers have been published in non-peer reviewed sources. Some of the positive papers in this non-reviewed literature are, in my opinion, better researched and better written than that the average peer-reviewed paper, especially speculative peer-reviewed papers. Noteworthy non-peer reviewed papers include Claytor *et al.* [5] and the Miles and Johnson. [6] They deserve to be published. Therefore, these numbers are more of an indication of how much journal editors resist publishing papers about cold fusion than a comprehensive tally.

Table 2. Principal researchers and their affiliations

Principal Researcher	Affiliation	Country
Aoki, T.	U. Tsukuba	Japan
Arata, Y.	Arata Hall, Osaka U.	Japan
Babu, K.S.C.	Banaras U.	India
Battaglia, A.	CISE spa (Piantelli et al.)	Italy
Belzner, A.	Stanford U. (Huggins et al.)	USA
Bertalot, L.	Associazione EURATOM-ENEA	Italy
Birgul, O.	Hacezepe U.	Turkey
Brudanin, V.B.	Joint Inst. For Nuclear Res.	Russia
Bush, B.F.	U. Texas	USA
Bush, R.T.	California State Polytechnic U.	USA
Celani, F.	INFN Frascati	Italy
Dash, J.	Portland State U.	USA
Dufour, J.	CNAM - Laboratoire des sciences nucléaires	France
Fleischmann, M.	U. Utah	USA
Focardi, S.	U. Bologna (Piantelli et al.)	Italy
Gozzi, D.	U. di Roma La Sapienza	Italy
Isagawa, S.	High Energy Accelerator Res. Org. (KEK)	Japan
Isobe, Y.	Osaka U., Nuclear Eng. Dept. (Takahashi et al.)	Japan
Iwamura, Y.	Mitsubishi Heavy Industries Ltd.	Japan
Iyengar, P.K.	Bhabha Atomic Research Centre	India
Kainthla, R.C.	Texas A&M U. (Bockris et al.)	USA
Kamada, K.	National Institute for Fusion Science	Japan
Karabut, A.B.	Scientific Industrial Association "Lutch"	Russia
Kunimatsu, K.	IMRA Japan	Japan
Lewis, D.	Studsvik Energiteknik AB	Sweden
Li, X.Z.	Tsinghua U.	China
Liaw, B.Y.	U. Hawaii	USA
Lin, G.H.	Texas A&M U. (Bockris et al.)	USA
Lipson, A.G.	Ins. Physical Chem., Russian Acad. Of Sciences	Russia
Lyakhov, B.F.	Ins. Physical Chem., Russian Acad. Of Sciences	Russia
Mathews, C.K.	Indira Gandhi Centre for Atomic Research	India
McKubre, M.C.H.	SRI, Inc.	USA
Mengoli, G.	CNR IPELP, Padova	Italy
Miao, B.	J. Northwest Normal U.	China
Miles, M.	Naval Air Warfare Center, China Lake	USA
Miley, G.H.	U. Illinois	USA
Mills, R.L.	BlackLight Power, Inc.	USA
Mizuno, T.	Hokkaido U., Engineering Dept.	Japan
Mosier-Boss, P.	SPAWAR Systems Center San Diego (Szpak et al.)	USA
Nakamura, K.	Kinki U., Atomic Energy Res. Institute	Japan
Noninski, V.	Lab. Electroch. (LEPGER)	Bulgaria
Notoya, R.	Hokkaido U., Catalysis Res. Center	Japan

Numata, H.	Tokyo Institute of Technology	Japan
Ohmori, T.	Hokkaido U., Catalysis Res. Center	Japan
Okamoto, M.	Tokyo Institute of Technology, Res. Lab. Nuclear Reactors	Japan
Oriani, R.A.	U. Minnesota	USA
Ota, K.	Yokohama Nat. University	Japan
Oyama, N.	Tokyo U. Of Agriculture & Technology	Japan
Pons, S.	IMRA France	France
Preparata, G.	U. Milano	Italy
Santhanam, K.S.V.	Tata Institute of Fundamental Research	India
Savvatimova, I.	Scientific Industrial Association “Lutch”	Russia
Scott, C.D.	Oak Ridge National Laboratory	USA
Shirai, O.	Kyoto U.	Japan
Srinivasan, M.	Bhabha Atomic Research Centre	India
Storms, E.	Los Alamos National Laboratory	USA
Swartz, M.R.	JET Energy Technology, Inc.	USA
Szpak, S.	SPAWAR Systems Center San Diego (Szpak et al.)	USA
Takahashi, A.	Osaka U., Nuclear Eng. Dept. (Takahashi et al.)	Japan
Velev, O.	Texas A&M U. (Bockris et al.)	USA
Yun, K.S.	Korea Institute of Science and Technology	Korea
Zhang, Q.	Sichuan Union University	China

Table 3 shows the countries and the number of principal authors in each country for this set of papers. Eleven countries are shown. The total number of authors is again 62.

Table 3. List of countries and the number of principal authors from each country

Country	**Number of Primary Affiliations**
Bulgaria	1
China	3
France	2
India	5
Italy	7
Japan	17
Korea	1
Russia	5
Sweden	1
Turkey	1
USA	19

Appendix A shows details from Tables 1 and 2:

List 2. Peer-reviewed excess heat papers, from both databases
List 3. Authors and co-authors of the peer-reviewed papers in List 2
List 4. Peer-reviewed journals of the papers in List 2

3. A Tally of Papers in the Britz collection

In tally number 1, above, I counted only papers devoted to excess heat; in this tally I counted all papers in the Britz collection 2 Journal Articles (from peer-reviewed journals only), and collection 6 ICCF-4 papers.

The Britz collection is a large text file, not a structured database. This makes it awkward to tally the number of entries and to categorize papers. I used a small Pascal program to tally the results.

Britz puts papers in various categories by marking them as “experiment, theory, polemic, review” and so on. He also characterizes the results for most papers by marking them as:

res+ a positive result
res- a negative result
res0 undecided

In an e-mail Britz explained that “res0” means “undecided.” This means the author did not reach a firm conclusion. It does not mean that Britz himself finds the paper inconclusive or unpersuasive. He also applied this “res0” tag to null results, such as T. Green, [7] who did good quality calorimetry but found no excess heat. He explained that a negative paper is one which the author concludes that an experiment or theory casts doubt upon the existence of cold fusion itself.

Britz did not evaluate results for 418 papers, such as one that described a technique to measure loading in a cold fusion experiment, without reporting a specific positive or negative result.

A record in the Britz bibliography includes:

Author (or multiple authors)
Journal
Title (in quotes)
Category (or multiple categories) and result (res+, res- or res0)
A summary written by Britz, and submission/publication dates

The submission/publication dates are missing or incomplete in 383 papers. Here is a sample record:

```
McKubre MCH, Crouch-Baker S, Rocha-Filho RC, Smedley SI, Tanzella FL,
Passell TO, Santucci J;
J. Electroanal. Chem. 368 (1994) 55--66
"Isothermal flow calorimetric investigations of the D/Pd and H/Pd systems".
** Experimental, electrolysis, Pd, calorimetry, res+
Thought by many to be one of the most thorough studies in this area, and long
delayed in publication, this paper at last reports the results. A quality
isothermal flow calorimeter was used here, and D/Pd (or H/Pd) loadings were
monitored in situ by resistance measurements. The cells were closed, and
gases recombined within them, so that recombination was fully accounted for.
Excess powers were observed only for D/Pd above 0.9 and reached 28% input
power, but were typically about 5-10%, with the noise lying at about 1/20 the
excess power level. No excess power was observed under other conditions, the
output balancing the input within the error.  021993|041994
```

Britz puts many papers in multiple categories, such as this one, which he classified as “Experimental, electrolysis, Pd, calorimetry.” He concludes that this is a positive result (res+).

I tallied papers in two categories: “Experiment” which includes papers that were marked “experimental” plus other categories, and Other, which includes any paper *not* marked experimental (mainly theory, review and what Britz calls “polemic” papers). Table 4 shows the results for Bibliography 2, and Table 5 shows the results for bibliography 6.

Table 4. Bibliography 2 Journal Articles tally

Britz’s evaluation	**Experiments**	**Other**	**Both**
res+ a positive result	291	212	503
res- a negative result	215	66	281
res0 undecided	83	68	151
No evaluation	36	419	455
Totals	625	765	1,390

The grand total papers on Experiments plus Other is 1,390, which agrees with Britz’s count of the number of papers in the database.

Table 5. Bibliography 6 ICCF-4 tally

Britz’s evaluation	**Experiments**	**Other**	**Both**
res+ a positive result	23	17	40
res- a negative result	3	1	4
res0 undecided	7	3	10
No evaluation	1	11	12
Totals	34	32	66

The grand total number of papers is 66, which agrees with Britz’s count.

Figure 3 shows the positive, negative and undecided papers sorted by year. This includes 754 papers because some were not tagged by date, and the “No evaluation” category is not included. After 1991 few negative papers were published, presumably because researchers getting negative results had given up by this time.

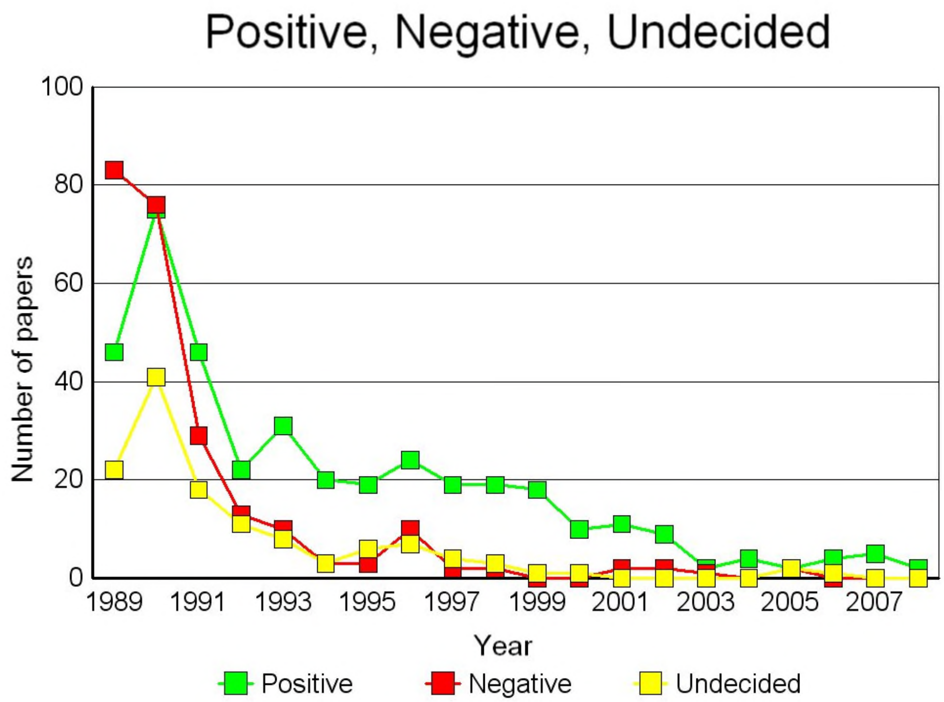

Figure 3. Britz Bibliography 2 Journal Articles, positive, negative and undecided, sorted by year

Most non-peer-reviewed papers from conference proceedings and national laboratories are positive. If you were to add these papers to the totals, positive papers after 1989 would far outnumber the negative ones.

I believe that the trend shown here is generally correct for peer-reviewed papers, and that most of the grades Britz applied to papers are correct. However, I disagree with a substantial number of his grades. I think that he is biased toward interpreting authors' comments as negative or undecided. In many cases, authors expressed some doubts or pointed out that open questions still remain, and Britz took this to mean that the authors were undecided, or that the results were null.

Classifying papers as positive or negative can be subjective. Even when you intend to evaluate and report the author's opinion rather than your own (which is what Britz wants to do) your own opinion can interfere and bias the result. This shows why it is important to read original sources rather than to depend upon other people to evaluate scientific claims, especially controversial claims.

I looked at a sample of 49 papers that Britz classified as undecided. In my opinion, 55% of them are positive. Some were strongly positive. Details and examples are shown in Appendix B.

4. Famous failed neutron studies from 1989

This is a tally of U.S. and Canadian research groups that published peer-reviewed papers in 1989 and 1990 describing cold fusion experiments in which:

1. Researchers looked for neutrons, particles or x-rays only, without looking for excess heat or tritium.
2. The experiment produced no positive results, or results the researchers considered within the noise.

There were 20 such groups with 135 researchers. They are listed in Table 6. There were other negative experiments in 1989, but there are no other peer-reviewed journal papers in the LENR-CANR database describing them. Mallove [8] listed some others, such as the one at the Georgia Institute of Technology. This group probably never published. There were also some positive experiments in 1989 and later that were not published.

One or two groups reported ambiguous or what they called "interesting" results. They are not listed here. Other groups not listed here reported looking for excess heat and/or tritium and not finding any. This is the correct way to do the experiment, although in most cases they did not fulfill some other necessary condition; i.e., they did not run electrolysis long enough. A few of these researchers went on to report positive results later on.

One group on this list did, in a sense, look for excess heat along with other products: Albagli *et al.*, MIT. They performed calorimetry and their data shows low levels of excess heat. However, the published version of the data was manually changed to erase this evidence, and they claimed there was no heat. [9,10] In my opinion this counts as "not looking" or perhaps "refusing to look."

This list does not include Salamon *et al.*, U. Utah, [11] because they monitored cells run by Fleischmann and Pons. They did not detect any particles.

Since Fleischmann and Pons reported that they did detect neutrons and gammas, it was reasonable for these 20 groups of researchers to look for them. But in retrospect it is a shame that so much effort went into the search for products that we now know are almost never detected from cold fusion reactions.

Because little was known about cold fusion in 1989, many of these groups performed the experiment in ways that could not have succeeded. [12] This often happens with groundbreaking experiments.

In his book, Storms reported that some researchers who failed to replicate in 1989 were irate, and understandably so: [13] "[T]he many failures and the serious errors found in the Fleischmann and Pons paper fueled a growing doubt about the original claims. Too many people had spent too much time to get so little. They were beginning to feel they had been had." This list shows how many people there actually were — or at least it shows the lower bounds of the number of people looking for the lower bounds of fusion reactions.

It is, perhaps, unfair to include Campell & Perkins and Rugari in this list because they worked with titanium instead of palladium, and other researchers have observed nuclear effects with titanium without excess heat. I am not aware of any who subjected titanium to high-low currents the way Campell & Perkins did. It is good that they tried this. Many approaches should be explored, and there should be no fault or blame attached to a failed experiment. It is not my intention to condemn the researchers in this list, but only to point out that some failed experiments have had unwarranted influence over public opinion.

Table 6. Groups that looked for neutrons and without confirming excess heat in 1989

Principal author	Number Of People	Affiliation
Albagli	16	MIT
Anderson	11	Yale
Campbell	2	Lawrence Livermore N. L.
Deakin	5	Florida State U.
Dignan	4	San Francisco State U.
Ewing	4	Sandia N. L.
Faller	3	Env. Monitoring Systems Lab.
Fleming	5	AT&T Bell Labs.
Guilinger	9	Sandia N. L.
Hayden	10	U. British Columbia
Hill	11	Iowa State U.
Kashy	10	Michigan State U.
Porter	8	U. California Berkeley
Rehm	3	Argonne N. L.
Roberts	12	U. Michigan
Rugari	7	Yale/Brookhaven
Schirber	8	Sandia N. L.
Silvera	2	Harvard U.
Southon	4	McMaster U.
Wiesmann	1	Brookhaven N. L.

Appendix A, List 5, shows the papers tallied for these 20 items. Some groups published more than one paper, but only one is listed in Appendix A.

Appendix A. Detailed Lists

List 1. The 467 journals in the LENR-CANR database

21st Century Sci. & Technol.
Accaio Inossid.
Accountability Res.
Acta Mater.
Acta Metall.
Acta metall. Mater.
Acta Phys. Hung.
Acta Phys. Pol. A
Acta Sci. Nat. Univ. Norm. Hunanensis
Acta Univ. Lodz., Fol. Phys.
Acta. Metall.
Adv. Hydrogen Energy
Adv. in X-ray Analysis
Akad. Nauk USSR, Fiz.-Mat. Nauk
Alchemy Today
Am. J. Applied Sci. 2
Am. J. Sci.
Am. Scholar
Am. Sci.
An. Fis., Ser. B
Anal. Chem.
Anal. Sci. & Technol.
Analog Science Fiction and Fact
Angew. Chem. Int. Ed. Engl.
Ann. Nucl. Energy
Ann. Rev. Astr. Astrophys.
Annu. Rep. Osaka Prefect. Radiat. Res. Inst.
Annu. Rev. Mater. Sci.
Appl. Radiat. Isot.
Appl. Surf. Science
Astrophys. J.
At. Energy

Atom. Tekh. za Rubez.
Atomwirtsch. Atomtech.
Aust. J. Chem.
Aust. Phys.
Beijing Shifan Daxue Xuebao. Ziran Kexueban
Ber.
Ber. Bunsenges. Phys. Chem.
Berichte Bunsengesellschaft
Braz. J. Phys.
Bull. Chem. Soc. Japan
Bull. Electrochem.
Bull. Faculty of Eng., Hokkaido Univ,
Bull. Inst. Chem. Res., Kyoto Univ.
Bull. Sci. Tech. Soc.
Bull. Soc. Roy. Sci. Liege
Bull. Univ. Osaka Prefect., Ser A
Bulletin of Science, Technology and Society
Busshitsu Kogaku Gijutsu Kenkyusho Hokoku
C. R. Acad. Sci., Ser. 2
CALPHAD
Can. J. Phys.
Canadian J. Chem.
Carbon
Catalysis Lett
Centaurus
Chem. & Ind.
Chem. Eng. News
Chem. Express
Chem. Health & Saf.
Chem. Health Safety
Chem. Innov.
Chem. J. Chin. Univ
Chem. Labor Betr.
Chem. Lett.
Chem. Listy
Chem. Phys. Lett.
Chem.-Tech. (Heidelberg)
Chemiker-Zeitung
Chim. Ind. (Milan)
Chim. Ind. (Milan)
Chimia
Chin. J. At. Mol. Phys.
Chin. J. Nucl. Phys.
Chin. Phys. Lett.
Chin. Sci. Bull.
Cienc. Tecnol. Mater.
Cold Fusion
Colloid J. USSR
Colloids Surf.
Commun. Monogr.
Commun. Theor. Phys. (China)
Corrosion
Crit. Stud. Mass Commun.
Curr. Sci.
Curr. Topics Electrochem.
Czech. J. Phys.
Defect and Diffusion Forum
Denki Kagaku
Denki Kagaku oyobi Kogyo Butsuri Kagaku
Denki Tsushin Daigaku Kiyo
Denshi Gijutsu Kenkyusho Iho
Denshi Gijutsu Sogo Kenkyusho Iho
Deutsche Apotheker Zeitung
Dokl, Akad. Nauk SSSR
Dokl. Akad. Nauk [Tekh. Fiz.]
Dokl. Akad. Nauk SSSR
Dokl. Akad. Nauk SSSR Fiz. Khim.
Dokl. Akad. Nauk Ukr.
Doky. Akad. Sci. SSSR
Electrochim. Acta
Elektrokhimiya
Energ. Nucl. (Rome)
Energiespektrum
Environ. Res. Forum
Ettore Majorana Int. Sci. Ser.: Phys. Sci.
Eur. J. Phys.
Eur. Phys. J. A
Eur. Phys. J. Appl. Phys.
Europhys. Lett.
Evol. Trends Phys. Sci., Proc. Yoshio Nishina Centen. Symp., Tokyo 1990
Faraday Soc.
Faraday Soc. Trans.
Fiz. Metal. Metalloved.
Fiz. Tverd. Tela
Fiz.-Khim. Mekh. Mater.
Fizika (Zagreb)
Fortune Magazine
Forum Appl. Res. Public Policy
Front. Phys. China
Front. Sci. Ser., 28 (Nuclear Responses and Medium Effects)
Fusion
Fusion Eng. Des.
Fusion Facts
Fusion Sci. & Technol.
Fusion Sci. Technol.
Fusion Technol.
Gaojishu Tongxun
Gaoneng Wuli Yu Hewuli
Genshikaku Kenkyu
Genshiryoku Kogyo
GIT Fachz. Lab.
Hadronic J.
Helv. Phys. Acta
High Energy Chem.
High Power Laser Part. Beams
High Temperature Materials and Processes
Hoken Butsuri
Hoshasen
Hoshasen Kagaku (Tokyo)
Hua Hsueh

Hunan Shifan Daxue Ziran Kexue Xuebao
Hwahak Kwa Kongop Ui Chinbo
Hyomen Gijutsu
Hyomen Kagaku
Hyperfine Interactions
IEEE Power Eng. Rev.
IEEE Trans. Nucl. Sci.
Il Nuovo Cimento, Note Brevi
Indian J. Chem. Sci.
Indian J. Pure Appl. Phys.
Indian J. Technol.
Indian J. Theo. Phys.
Infinite Energy
Inorg. Mater.
Int. J. Appl. Electromagn. Mater.
Int. J. Appl. Radia. Isot.
Int. J. Hydrogen Energy
Int. J. Soc. Mat. Eng. Resources
Int. J. Theo. Phys.
International J. Theoret. Phys.
Inz. Aparat. Chem.
Inzh.-Fiz. Zh.
Ionics
Ioniz. Radiat. (Tokyo)
Isotopenpraxis
Isv. Akad. Nauk USSR, ser. phys.
Izv. Vysch. Uchebn. Zaved. Fiz.
J. Adv. Sci.
J. Alloys and Compounds
J. Alloys Comp.
J. Am. Chem. Soc.
J. Appl. Electrochem.
J. Appl. Phys.
J. Appl.Phys.
J. Business Tech. Commun.
J. Catal.
J. Changsa Univ. Elec. Power (Nat. Sci.)
J. Chem. Ed.
J. Chem. Phys.
J. Chem. Soc., Faraday Trans.
J. Chem. Thermodyn.
J. Chim. Phys.
J. de Physique, Colloque C9, Supp.
J. Electroanal. Chem.
J. Electrochem. Soc.
J. Eng. Env. Sci.
J. Facul. Eng., Univ. Tokyo B
J. Forensic Sci.
J. Fusion Energy
J. Geochem.
J. High Temp. Soc.
J. Hydrogen Energy
J. Hydrogen Eng.
J. Inorg. Nucl. Chem.
J. Inst. Electron. Inf. Commun. Eng. (Japan)
J. Kratk. Soobshch. Fiz.
J. Less-Common Met.
J. Mater. Proc. Technol.
J. Mater. Res.
J. Mater. Sci. Lett.
J. Molec. Catal.
J. New Energy
J. Nucl. Mater.
J. Nucl. Sci. Technol.
J. Nuclear Mater.
J. Opt. Res.
J. Phys B
J. Phys. and Chem. Ref. Data
J. Phys. B
J. Phys. Chem.
J. Phys. Chem. B
J. Phys. Chem. Solids
J. Phys. D: Appl. Phys.
J. Phys. F
J. Phys. F: Met. Phys.
J. Phys. France
J. Phys. G: Nucl. Part. Phys.
J. Phys. Soc. Japan
J. Phys., Lett.
J. Phys.: Condens. Mater.
J. Radioanal. Nucl. Chem.
J. Radioanal. Nucl. Chem. Lett.
J. Sci. Expl.
J. Solid State Chem.
J. Thermal Anal.
J. Vac. Sci. Technol. A
JETP
JETP Lett.
Jishou Daxue Xuebao, Ziran Kexueban
Journalism Quarterly
Jpn. J. Appl. Phys. A
Jpn. J. Appl. Phys. Lett., Part 2
Jpn. J. Appl. Phys. Part 1
Jpn. J. Appl. Phys. Part 2
Jpn. J. Appl. Phys. Suppl.
Juaxue Tongbao
Kagaku Kogaku
Kagaku to Kogyo (Tokyo)
Kaku Yugo Kenkyu
Kenkyu Kiyo - Miyagi
Kogyo Koto Senmom Gakko
Kerntechnik
Kim. Sanayi
Kinki Daigaku Genshiryoku Kenkyusho Nenpo
Knowledge: Creation, Diffusion, Utilization
Koon Gakkaishi
Koord. Khim.
Kotai Butsuri
Kratk. Soobshch. Fiz.
Kristallografiya
Lanzhou Daxue Xuebao, Ziran Kexueban [J. Lanzhou Univ. (Nat. Sci)
LENR-CANR.org
Library of Congress
Litovskii Fiz. Sbornik

Magy. Kem. Fol
Mat. Sci. Forum
Mater. Adv. Energy Systems & Fission and Fusion Eng.
Mater. Res. Soc. Symp. Proc.
Mater. Sci. and Eng.
Materials Transactions JIM
Materials. Sci. and Eng.
Meiji Daigaku Nogakubu Hokoku
Mem. Fac. Eng. Hokkaido Univ.
Metal. Electr. (Spain)
Metal. Trans.
Metal. Trans. A
Mineracao Metalurgia
Mitteilungsblatt - Chem. Ges. DDR
Mod. Phys. Lett. A
Mod. Phys. Lett. B
MOSAIC
Nachr. Chem. Tech. Lab.
NATO ASI Ser., Ser. B
Nature (London)
Nature India
Nature Phys. Sci.
Naturwiss.
Natuur en Technik
Nauchni Tr., Plovdivski Univ.
Ned. Tijdschr. Natuurkd.
Neorg. Mater.
Netsu Sokutei
New Energy Times
New Scientist
Nihon Genshiryoku Gakkaishi
Nippon Butsuri Gakkaishi
Nippon Kagaku Kaishi
Nucl. Eng. (Inst. Nucl. Eng.)
Nucl. Fusion
Nucl. Fusion Plasma Phys.
Nucl. Geophys.
Nucl. Instrum. Methods Phys. Res. A
Nucl. Instrum. Methods Phys. Res. B
Nucl. Phys. A
Nucl. Phys. Rev. (China)
Nucl. Sci. Tech.
Nucl. Tech. (China)
Nucl. Techniques (China)
Nucl. Tracks Radiat. Meas.
Nukleonika
Nuovo Cimento Soc. Ital. Fis. A
Nuovo Cimento Soc. Ital. Fis. D
Osiris
Oyo Butsuri
Oyobi Kogyo Butsuri Kagaku
Petrotech. (Tokyo)
Philos. Mag. A
Philos. Mag. B
Phys.
Phys. At. Nucl.
Phys. Bl.
Phys. Dokl.
Phys. Earth Planet. Interior
Phys. Essays
Phys. Fluids B
Phys. Lett.
Phys. Lett. A
Phys. Lett. B
Phys. Mag
Phys. Metals Metallogr.
Phys. Rev.
Phys. Rev. A: At. Mol. Opt. Phys.
Phys. Rev. B: Mater. Phys.
Phys. Rev. C: Nucl. Phys.
Phys. Rev. Lett.
Phys. Scr.
Phys. Stat. Sol. A
Phys. Stat. Sol. B
Phys. Today
Physica A
Physica B
Physics Today
Physics World
Pis'ma Zh. Eksp. Teor. Fiz.
Pis'ma Zh. Tekh. Fis.
Pis'ma Zh. Tekh. Fiz.
Pis'ma Zh. Teor. Fiz.
Platinum Met. Rev.
Pol. J. Chem.
Postepy Fiz.
Poverkhnost
Power Eng. (USSR Acad. Sci)
Pramana
Pribory i Teckh. Eksp.
Prikl. Fiz.
Proc. Electrochem. Soc.
Proc. Jpn. Acad., Ser. B
Proc. Natl. Acad. Sci. U.S.A.
Proc. Royal Soc London, A
Prog. Theor. Phys.
Pt. Met. Rev.
Public Understand. Sci.
Radiat. Effects Defects Solids
Radiat. Phys. Chem.
Radiat. Prot. Manage.
Radio. Fernsehen Elektro. (East Ger.)
Radioanal. Nucl. Chem., Lett.
Radioisot.
Rasplavy
Ratk. Soobshch. Fiz.
Recherche
Rept. Fac. Sci. Eng., Saga Univ.
Rev. Inst. Mex. Pet.
Rev. Mod. Phys.
Rev. Roum. Phys.
Rev. Sci. Instr.
Rev. Sci. Instrum.
Revue de Pathologie Comparee
Ross. Khim. Zh.

Royal Society of London Proceedings A
Russ. Chem. Rev.
Russ. J. Electrochem.
Russ. J. Phys. Chem.
Russ. Phys. J.
Sae Mulli
Sci. Am.
Sci. News (Washington, DC)
Sci. Technol. Librarian
Sci., Technol. Human Values
Science
Science in China A
Science in Context
Science News
Scientific American
Scr. Metall.
Scr. Metallurg. Mater.
Share International
Sichuan Lianhe Daxue Xuebao, Gongcheng Kexueban (J. Sichuan Union Univ., Eng. Sci. Ed.)
Skeptiker
Social Studies of Science
Solid State Commun.
Solid State Ionics
Sov. Electrochem.
Sov. J. Low Temp. Phys.
Sov. J. Nucl. Phys.
Sov. J. Nucl. Phys. Originally Oin: Yad. Fiz. 55 [1992] 79.
Sov. Phys. - Lebedev Inst. Rep.
Sov. Phys. Crystallogr.
Sov. Phys. Dokl.
Sov. Phys. J.
Sov. Phys. Lebedev Inst. Rep.
Sov. Phys. Tech. Phys.
Sov. Phys. Usp.
Sov. Tech. Phys. Lett.
Space Power
Spectrum
Springer Proc. Phys.
St. Louis Journalism Rev.
Suid-Afrik. Tydskr. Wetenskap
Suiso Enerugi Shisutemu
Sur. Sci.
Sur. Technol.
Surf. Coatings Technol.
Surf. Sci.
Surf. Sci. Lett.
Surf. Technol.
Suri Kagaku
Tap Chi Vat Ly
Tec. Ital.
Tech. Phys.
Tech. Phys. Lett.
Technol. Rep. Kyushu Univ.
Tecnol. Chim.
The American Scholar
The Chronicle of Higher Education
The Scientist
The World & I
Thermochim. Acta
Tool & Alloy Steels
Trans. Amer. Nucl. Soc.
Trans. Electrochem. Soc.
Trans. Faraday Soc.
Trans. Fusion Technol.
Trans. Metal. Soc., AIME
Trans. SAEST
translated from Elektrokhimiya
Trends Nucl. Phys.
Trud. Ord. Lenin. Ord. Oktyab. Revol. Fiz. Inst. im. P.N. Lebedeva, Ross. Akad. Nauk
Ukr. Fiz. Zh. (Russ. Ed.)
Ukr. Khim. Zh. (Russ. Ed.)
Vacuum
Vestnik Akad. Nauk SSSR
Vopr. At. Nauki Tekh. Ser.: Fiz. Radiats. Povr. Radiats. Materialoved.
Vopr. At. Nauki Tekh. Ser.: Termoyader Sintez
Wiad. Chem.
Wiss. Z. TU Karl-Marx-Stadt
Wissensch. Fortschr.
Wuli Xuebao
Xibei Shifan Daxue Xuebao, Ziran Kexueban
Xibei Shifan Xuebao. Ziran Kexueban
Yuanzi Yu Fenzi Wuli Xuebao
Yuanzineng Kexue Jishu (Atomic Energy Science and Technology)
Z. Metallkde
Z. Nature. A
Z. Naturforsch. A
Z. Phys. A: At. Nucl.
Z. Phys. B: Condens. Matter
Z. Phys. Chem.
Z. Phys. Chem. Neue Folge
Z. Phys. Chemie
Z. Phys. D: At., Mol. Clusters
Zairyo
Zeitschrift fur Physik. Chemie
Zh. Fiz. Khim.
Zh. Obshch. Khim.
Zh. Tekh. Fiz.

List 2. Peer-reviewed excess heat papers, from both databases

1. Agelao, G. and M.C. Romano, *Heat and helium production during exothermic reactions between gases through palladium geometrical elements loaded with hydrogen.* Fusion Technol., 2000. **38**: p. 224.
2. Aoki, T., et al., *Search for nuclear products of the D + D nuclear fusion.* Int. J. Soc. Mat. Eng. Resources, 1998. **6**(1): p. 22.
3. Arata, Y. and Y.C. Zhang, *Achievement of intense 'cold fusion' reaction.* Kaku Yugo Kenkyu, 1989. **62**: p. 398 (In Japanese).
4. Arata, Y. and Y.C. Zhang, *Achievement of an intense cold fusion reaction.* Fusion Technol., 1990. **18**: p. 95.
5. Arata, Y. and Y.C. Zhang, *Achievement of intense 'cold' fusion reaction.* Proc. Jpn. Acad., Ser. B, 1990. **66**: p. 1.
6. Arata, Y. and Y.C. Zhang, *Corroborating evidence for 'cold' fusion reaction.* Proc. Jpn. Acad., Ser. B, 1990. **66(B)**: p. 110.
7. Arata, Y. and Y.C. Zhang, *'Cold' fusion caused by a weak 'on-off effect'.* Proc. Jpn. Acad., Ser. B, 1992. **66**: p. 33.
8. Arata, Y. and Y.C. Zhang, *'Cold' fusion in deuterated complex cathode.* Kaku Yugo Kenkyu, 1992. **67**((5)): p. 432 (in Japanese).
9. Arata, Y. and Y.C. Zhang, *Reproducible "Cold" Fusion Reaction Using A Complex Cathode.* Fusion Technol., 1992. **22**: p. 287.
10. Arata, Y. and Y.C. Zhang, *Excess heat in a double structure deuterated cathode.* Kaku Yugo Kenkyu, 1993. **69**((8)): p. 963 (in Japanese).
11. Arata, Y. and Y.C. Zhang, *A new energy caused by "Spillover-deuterium".* Proc. Jpn. Acad., Ser. B, 1994. **70 ser. B**: p. 106.
12. Arata, Y. and Y.C. Zhang, *A new energy generated in DS-cathode with 'Pd-black'.* Koon Gakkaishi, 1994. **20**(4): p. 148 (in Japanese).
13. Arata, Y. and Y.C. Zhang, *Achievement of solid-state plasma fusion ("cold fusion").* Koon Gakkaishi, 1995. **21**((6)): p. 303 (in Japanese).
14. Arata, Y. and Y.C. Zhang, *Deuterium nuclear reaction process within solid.* Proc. Jpn. Acad., Ser. B, 1996. **72 Ser. B**: p. 179.
15. Arata, Y. and C. Zhang, *Presence of helium (4/2He, 3/2He) confirmed in highly deuterated Pd-black by the new detecting methodology.* J. High Temp. Soc., 1997. **23**: p. 110 (in Japanese).
16. Arata, Y. and Y.C. Zhang, *Solid-state plasma fusion ('cold fusion').* J. High Temp. Soc., 1997. **23 (special volume)**: p. 1-56.
17. Arata, Y. and Y.C. Zhang, *Observation of Anomalous Heat Release and Helium-4 Production from Highly Deuterated Fine Particles.* Jpn. J. Appl. Phys. Part 2, 1999. **38**: p. L774.
18. Arata, Y. and Y.C. Zhang, *Formation of Condensed Metallic Deuterium Lattice and Nuclear Fusion.* Proc. Jpn. Acad., Ser. B, 2002. **78**(Ser. B): p. 57.
19. Arata, Y. and Y. Zhang, *The Establishment of Solid Nuclear Fusion Reactor.* J. High Temp. Soc., 2008. **34**(2): p. 85.
20. Babu, K.S.C., et al., *On the formation of palladium deuteride and its relationship to suspected cold fusion.* Adv. Hydrogen Energy, 1990. **8 Hydrogen Energy Prog. VIII, Vol. 2),**: p. 1051.

21. Battaglia, A., et al., *Neutron emission in Ni-H systems.* Nuovo Cimento Soc. Ital. Fis. A, 1999. **112 A**: p. 921.
22. Belzner, A., et al., *Two fast mixed-conductor systems: deuterium and hydrogen in palladium - thermal measurements and experimental considerations.* J. Fusion Energy, 1990. **9**(2): p. 219.
23. Belzner, A., et al., *Recent results on mixed conductors containing hydrogen or deuterium.* Solid State Ionics, 1990. **40/41**: p. 519.
24. Bertalot, L., et al., *Study of deuterium charging in palladium by the electrolysis of heavy water: heat excess production.* Nuovo Cimento Soc. Ital. Fis. A, 1993. **15 D**: p. 1435.
25. Birgul, O., et al., *Electrochemically induced fusion of deuterium using surface modified palladium electrodes.* J. Eng. Env. Sci., 1990. **14**(3): p. 373.
26. Brudanin, V.B., et al., *Search for the cold fusion d(d,(4)He) in electrolysis of D2O.* Phys. Lett. A, 1990. **151**(9): p. 543.
27. Bush, B.F., et al., *Helium production during the electrolysis of D2O in cold fusion experiments.* J. Electroanal. Chem., 1991. **304**: p. 271.
28. Bush, R.T., *A light water excess heat reaction suggests that 'cold fusion' may be 'alkali-hydrogen fusion'.* Fusion Technol., 1992. **22**: p. 301.
29. Bush, R.T. and R.D. Eagleton, *Evidence for Electrolytically Induced Transmutation and Radioactivity Correlated with Excess Heat in Electrolytic Cells with Light Water Rubidium Salt Electrolytes.* Trans. Fusion Technol., 1994. **26**(4T): p. 334.
30. Celani, F., et al., *Deuterium overloading of palladium wires by means of high power microsecond pulsed electrolysis and electromigration: suggestions of a "phase transition" and related excess heat.* Phys. Lett. A, 1996. **214**: p. 1.
31. Celani, F., et al., *Reproducible D/Pd ratio > 1 and excess heat correlation by 1-microsec-pulse, high-current electrolysis.* Fusion Technol., 1996. **29**: p. 398.
32. Dash, J., G. Noble, and D. Diman, *Surface Morphology and Microcomposition of Palladium Cathodes After Electrolysis in Acified Light and Heavy Water: Correlation With Excess Heat.* Trans. Fusion Technol., 1994. **26**(4T): p. 299.
33. Dufour, J., *Cold fusion by sparking in hydrogen isotopes.* Fusion Technol., 1993. **24**: p. 205.
34. Dufour, J., et al., *Interaction of palladium/hydrogen and palladium/deuterium to measure the excess energy per atom for each isotope.* Fusion Technol., 1997. **31**: p. 198.
35. Fleischmann, M., S. Pons, and M. Hawkins, *Electrochemically induced nuclear fusion of deuterium.* J. Electroanal. Chem., 1989. **261**: p. 301 and errata in Vol. 263.
36. Fleischmann, M., et al., *Calorimetry of the palladium-deuterium-heavy water system.* J. Electroanal. Chem., 1990. **287**: p. 293.
37. Fleischmann, M. and S. Pons, *Some comments on the paper Analysis of experiments on the calorimetry of LiOD-D2O electrochemical cells, R.H. Wilson et al., J. Electroanal. Chem. 332 [1992] 1.* J. Electroanal. Chem., 1992. **332**: p. 33.
38. Fleischmann, M. and S. Pons, *Calorimetry of the Pd-D2O system: from simplicity via complications to simplicity.* Phys. Lett. A, 1993. **176**: p. 118.
39. Fleischmann, M. and S. Pons, *Reply to the critique by Morrison entitled 'Comments on claims of excess enthalpy by Fleischmann and Pons using simple cells made to boil.* Phys. Lett. A, 1994. **187**: p. 276.
40. Focardi, S., R. Habel, and F. Piantelli, *Anomalous heat production in Ni-H systems.* Nuovo Cimento Soc. Ital. Fis. A, 1994. **107A**: p. 163.

41. Focardi, S., et al., *Large excess heat production in Ni-H systems.* Nuovo Cimento Soc. Ital. Fis. A, 1998. **111A**: p. 1233.
42. Gozzi, D., et al., *Evidences for associated heat generation and nuclear products release in palladium heavy-water electrolysis.* Nuovo Cimento Soc. Ital. Fis. A, 1990. **103**: p. 143.
43. Gozzi, D., et al., *Nuclear and thermal effects during electrolytic reduction of deuterium at palladium cathode.* J. Fusion Energy, 1990. **9**(3): p. 241.
44. Gozzi, D., et al., *Calorimetric and nuclear byproduct measurements in electrochemical confinement of deuterium in palladium.* J. Electroanal. Chem., 1995. **380**: p. 91.
45. Gozzi, D., et al., *Quantitative measurements of helium-4 in the gas phase of Pd + D2O electrolysis.* J. Electroanal. Chem., 1995. **380**: p. 109.
46. Gozzi, D., et al., *X-ray, heat excess and 4He in the D/Pd system.* J. Electroanal. Chem., 1998. **452**: p. 251.
47. Isagawa, S., Y. Kanda, and T. Suzuki, *Present status of cold fusion experiment at KEK".* Int. J. Soc. Mat. Eng. Resources, 1998. **65**(1): p. 60.
48. Isobe, Y., et al., *Search for multibody nuclear reactions in metal deuteride induced with ion beam and electrolysis methods.* Jpn. J. Appl. Phys. A, 2002. **41**(part 1): p. 1546.
49. Iwamura, Y., et al., *Detection of anomalous elements, x-ray, and excess heat in a D2-Pd system and its interpretation by the electron-induced nuclear reaction model.* Fusion Technol., 1998. **33**: p. 476.
50. Iyengar, P.K., et al., *Bhabha Atomic Research Centre studies on cold fusion.* Fusion Technol., 1990. **18**: p. 32.
51. Kainthla, R.C., et al., *Eight chemical explanations of the Fleischmann-Pons effect.* J. Hydrogen Energy, 1989. **14**(11): p. 771.
52. Kainthla, R.C., et al., *Sporadic observation of the Fleischmann-Pons heat effect.* Electrochim. Acta, 1989. **34**: p. 1315.
53. Kamada, K., H. Kinoshita, and H. Takahashi, *Anomalous heat evolution of deuterium-implanted Al upon electron bombardment.* Jpn. J. Appl. Phys. A, 1996. **35**: p. 738.
54. Kamada, K., *Heating of deuteron implanted Al on electron bombardment and its possible relation to 'cold fusion' experiment.* Fusion Eng. Des., 2001. **55**: p. 541.
55. Karabut, A.B., Y.R. Kucherov, and I.B. Savvatimova. *Cold Fusion Observation at Gas-Discharge Device Cathode*. in *Anniversary Specialist Conf. on Nucl. Power Eng. in Space*. 1990. Obninsk, Russia.
56. Karabut, A.B., Y.R. Kucherov, and I.B. Savvatimova, *Nuclear reactions at the cathode in a gas discharge.* Sov. Tech. Phys. Lett., 1990. **16**(6): p. 463.
57. Karabut, A.B., Y.R. Kucherov, and I.B. Savvatimova, *The investigation of deuterium nuclei fusion at glow discharge cathode.* Fusion Technol., 1991. **20**: p. 924.
58. Kirkinskii, V.A., V.A. Drebushchak, and A.I. Khmelnikov, *Excess heat release during deuterium sorption-desorption by finely powdered palladium deuteride.* Europhys. Lett., 2002. **58**: p. 462.
59. Kunimatsu, K., *Current status of room-temperature nuclear fusion. Excess heat measurement.* Petrotech. (Tokyo), 1994. **17**(12): p. 998 (in Japanese).
60. Kunimatsu, K., *Surface modification of the cathode in the study of cold fusion.* Hyomen Gijutsu, 1996. **47**(3): p. 218 (in Japanese).
61. Lewis, D. and K. Sk'ld, *A phenomenological study of the Fleischmann-Pons effect.* J. Electroanal. Chem., 1990. **294**: p. 275.

62. Lewis, D., *Some regularities and coincidences in thermal, electrochemical and radiation phenomena observed in experiments at Studsvik on the Fleischmann-Pons effect.* J. Electroanal. Chem., 1991. **316**: p. 353.
63. Li, X.Z., *A new approach towards nuclear fusion without strong nuclear radiation.* Nucl. Fusion Plasma Phys., 1996. **16**(2): p. 1 (in Chinese).
64. Li, X.Z., et al., *Correlation between abnormal deuterium flux and heat flow in a D/Pd system.* J. Phys. D: Appl. Phys., 2003. **36**: p. 3095-3097.
65. Liaw, B.Y., et al., *Elevated-temperature excess heat production in a Pd + D system.* J. Electroanal. Chem., 1991. **319**: p. 161.
66. Liaw, B.Y., P.L. Tao, and B.E. Liebert, *Helium analysis of palladium electrodes after molten salt electrolysis.* Fusion Technol., 1993. **23**: p. 92.
67. Lin, G.H., et al., *On electrochemical tritium production.* Int. J. Hydrogen Energy, 1990. **15**: p. 537.
68. Lipson, A.G., et al., *Generation of the products of DD nuclear fusion in high-temperature superconductors YBa2Cu3O7-deltaDy near the superconducting phase transition.* Tech. Phys., 1995. **40**: p. 839.
69. Lipson, A.G., et al., *The nature of excess energy liberated in a Pd/PdO heterostructure electrochemically saturated with hydrogen (deuterium).* Russ. J. Phys. Chem., 1995. **69**: p. 1810.
70. Lyakhov, B.F., et al., *Anomalous heat release in the Pd/PdO system electrolytically saturated with hydrogen.* Russ. J. Phys. Chem., 1993. **67**: p. 491.
71. Mathews, C.K., et al., *On the possibility of nuclear fusion by the electrolysis of heavy water.* Indian J. Technol., 1989. **27**: p. 229.
72. McKubre, M.C.H., et al., *Isothermal Flow Calorimetric Investigations of the D/Pd and H/Pd Systems.* J. Electroanal. Chem., 1994. **368**: p. 55.
73. Mengoli, G., et al., *Absorption-desorption of deuterium at Pd95%-Rh5% alloy. I: Environment and temperature effects.* J. Electroanal. Chem., 1995. **390**: p. 135.
74. Mengoli, G., et al., *Anomalous heat effects correlated with electrochemical hydriding of nickel.* Nuovo Cimento Soc. Ital. Fis. A, 1998. **20 D**: p. 331.
75. Mengoli, G., et al., *Calorimetry close to the boiling temperature of the D2O/Pd electrolytic system.* J. Electroanal. Chem., 1998. **444**: p. 155.
76. Miao, B., *Experimental exploration on the possible mechanism of D-D cold fusion in titanium lattice.* Xibei Shifan Xuebao. Ziran Kexueban, 1994. **30**(1): p. 39 (in Chinese).
77. Miao, B., *Experimental exploration on possible mechanism of D-D cold fusion in titanium lattice.* Xibei Shifan Daxue Xuebao, Ziran Kexueban, 1994. **30**: p. 44 (in Chinese).
78. Miles, M., K.H. Park, and D.E. Stilwell, *Electrochemical calorimetric evidence for cold fusion in the palladium-deuterium system.* J. Electroanal. Chem., 1990. **296**: p. 241.
79. Miles, M., et al. *Heat and Helium Production in Cold Fusion Experiments*. in *Second Annual Conference on Cold Fusion, "The Science of Cold Fusion"*. 1991. Como, Italy: Societa Italiana di Fisica, Bologna, Italy.
80. Miles, M., et al., *Correlation of excess power and helium production during D2O and H2O electrolysis using palladium cathodes.* J. Electroanal. Chem., 1993. **346**: p. 99.
81. Miles, M., B.F. Bush, and J.J. Lagowski, *Anomalous effects involving excess power, radiation, and helium production during D2O electrolysis using palladium cathodes.* Fusion Technol., 1994. **25**: p. 478.

82. Miles, M., B.F. Bush, and D.E. Stilwell, *Calorimetric principles and problems in measurements of excess power during Pd-D2O electrolysis.* J. Phys. Chem., 1994. **98**: p. 1948.
83. Miles, M. and B.F. Bush, *Heat and Helium Measurements in Deuterated Palladium.* Trans. Fusion Technol., 1994. **26**(4T): p. 156.
84. Miles, M. and B.F. Bush, *Heat and Helium Measurements in Deuterated Palladium.* Trans. Fusion Technol., 1994. **26**(4T): p. 156.
85. Miles, M., *Reply to 'An assessment of claims of excess heat in cold fusion calorimetry'.* J. Phys. Chem. B, 1998. **102**: p. 3648.
86. Miles, M., *Reply to 'Examination of claims of Miles et al. in Pons-Fleischmann-type cold fusion experiments'.* J. Phys. Chem. B, 1998. **102**: p. 3642.
87. Miles, M., *Calorimetric studies of Pd/D2O+LiOD electrolysis cells.* J. Electroanal. Chem., 2000. **482**: p. 56.
88. Miles, M., M.A. Imam, and M. Fleischmann, *Calorimetric analysis of a heavy water electrolysis experiment using a Pd-B alloy cathode.* Proc. Electrochem. Soc., 2001. **2001-23**: p. 194.
89. Miles, M., M.A. Imam, and M. Fleischmann, *Calorimetric analysis of a heavy water electrolysis experiment using a Pd-B alloy cathode.* Proc. Electrochem. Soc., 2001. **2001-23**: p. 194.
90. Miley, G.H., et al., *Electrolytic Cell with Multilayer Thin-Film Electrodes.* Trans. Fusion Technol., 1994. **26**(4T): p. 313.
91. Mills, R.L. and P. Kneizys, *Excess heat production by the electrolysis of an aqueous potassium carbonate electrolyte and the implications for cold fusion.* Fusion Technol., 1991. **20**: p. 65.
92. Mills, R.L., *Reply to 'Comments on "Excess heat production by the electrolysis of an aqueous potassium carbonate electrolyte and the implications for cold fusion"'.* Fusion Technol., 1992. **21**: p. 96.
93. Mizuno, T., et al., *Anomalous heat evolution from a solid-state electrolyte under alternating current in high-temperature D2 gas.* Fusion Technol., 1996. **29**: p. 385.
94. Mizuno, T., et al., *Production of Heat During Plasma Electrolysis.* Jpn. J. Appl. Phys. A, 2000. **39**: p. 6055.
95. Mizuno, T., et al., *Hydrogen Evolution by Plasma Electrolysis in Aqueous Solution.* Jpn. J. Appl. Phys. A, 2005. **44**(1A): p. 396-401.
96. Mosier-Boss, P.A. and S. Szpak, *The Pd/(n)H system: transport processes and development of thermal instabilities.* Nuovo Cimento Soc. Ital. Fis. A, 1999. **112**: p. 577.
97. Nakamura, K., T. Kawase, and I. Ogura, *Possibility of element transmutation by arcing in water.* Kinki Daigaku Genshiryoku Kenkyusho Nenpo, 1996. **33**: p. 25 (in Japanese).
98. Noninski, V.C. and C.I. Noninski, *Determination of the excess energy obtained during the electrolysis of heavy water.* Fusion Technol., 1991. **19**: p. 364.
99. Noninski, V.C., *Excess heat during the electrolysis of a light water solution of K2CO3 with a nickel cathode.* Fusion Technol., 1992. **21**: p. 163.
100. Notoya, R., *Cold fusion by electrolysis in a light water-potassium carbonate solution with a nickel electrode.* Fusion Technol., 1993. **24**: p. 202.
101. Notoya, R., Y. Noya, and T. Ohnishi, *Tritium generation and large excess heat evolution by electrolysis in light and heavy water-potassium carbonate solutions with nickel electrodes.* Fusion Technol., 1994. **26**: p. 179.

102. Numata, H. and M. Fukuhara, *Low-temperature elastic anomalies and heat generation of deuterated palladium.* Fusion Technol., 1997. **31**: p. 300.
103. Ohmori, T. and M. Enyo, *Excess heat evolution during electrolysis of H2O with nickel, gold, silver, and tin cathodes.* Fusion Technol., 1993. **24**: p. 293.
104. Ohmori, T. and T. Mizuno, *Nuclear transmutation occurring in the electrolysis on several metal electrodes.* Curr. Topics Electrochem., 1997. **5**: p. 37.
105. Ohmori, T., et al., *Transmutation in the electrolysis of lightwater - excess energy and iron production in a gold electrode.* Fusion Technol., 1997. **31**: p. 210.
106. Ohmori, T., et al., *Transmutation in a gold-light water electrolysis system.* Fusion Technol., 1998. **33**: p. 367.
107. Okamoto, M., et al., *Excess Heat Generation, Voltage Deviation, and Neutron Emission in D2O-LiOD Systems.* Trans. Fusion Technol., 1994. **26**(4T): p. 176.
108. Okamoto, M., et al., *Excess Heat Generation, Voltage Deviation, and Neutron Emission in D2O-LiOD Systems.* Trans. Fusion Technol., 1994. **26**(4T): p. 176.
109. Oriani, R.A., et al., *Calorimetric measurements of excess power output during the cathodic charging of deuterium into palladium.* Fusion Technol., 1990. **18**: p. 652.
110. Oriani, R.A., *An investigation of anomalous thermal power generation from a proton-conducting oxide.* Fusion Technol., 1996. **30**: p. 281.
111. Ota, K., H. Yoshitake, and N. Kamiya, *Present status of cold fusion.* Hyomen Kagaku, 1993. **14**(9): p. 570 (in Japanese).
112. Ota, K. and T. Kobayashi, *Cold fusion and calorimetry.* Netsu Sokutei, 1997. **24**(3): p. 138 (Japan., Engl. abstr.).
113. Ota, K., et al., *Effect of boron for the heat production during the heavy water electrolysis using palladium cathode.* Int. J. Soc. Mat. Eng. Resources, 1998. **6**(1): p. 26.
114. Oyama, N., et al., *Electrochemical calorimetry of D2O electrolysis using a palladium cathode - an undivided, open cell system -.* Bull. Chem. Soc. Japan, 1990. **63**: p. 2659.
115. Oyama, N., et al., *Probing absorption of deuterium into palladium cathodes during D2O electrolysis with an in situ electrochemical microbalance technique.* Jpn. J. Appl. Phys. Part 2, 1990. **29**(5): p. L818.
116. Oyama, N. and O. Hatozaki, *Present and future of cold fusion - nuclear fusion induced by electrochemical reaction.* Oyo Butsuri, 1991. **60**: p. 220 (in Japanese).
117. Pons, S. and M. Fleischmann, *Calorimetric measurements of the palladium/deuterium system: fact and fiction.* Fusion Technol., 1990. **17**: p. 669.
118. Pons, S. and M. Fleischmann, *Etalonnage du systeme Pd-D2O: effets de protocole et feed-back positif. ["Calibration of the Pd-D2O system: protocol and positive feed-back effects"].* J. Chim. Phys., 1996. **93**: p. 711 (in French).
119. Preparata, G., M. Scorletti, and M. Verpelli, *Isoperibolic calorimetry on modified Fleischmann-Pons cells.* J. Electroanal. Chem., 1996. **411**: p. 9.
120. Ray, M.K.S., et al., *The Fleischmann-Pons phenomenon - a different perspective.* Fusion Technol., 1992. **22**: p. 395.
121. Santhanam, K.S.V., et al., *Electrochemically initiated cold fusion of deuterium.* Indian J. Technol., 1989. **27**: p. 175.
122. Santhanam, K.S.V., et al., *Excess enthalpy during electrolysis of D2O.* Curr. Sci., 1989. **58**: p. 1139.
123. Savvatimova, I. and A.B. Karabut, *Nuclear reaction products detected at the cathode after a glow discharge in deuterium.* Poverkhnost, 1996(1): p. 63 (in Russian).

124. Savvatimova, I. and A.B. Karabut, *Radioactivity of palladium cathodes after irradiation in a glow discharge.* Poverkhnost, 1996(1): p. 76 (in Russian).
125. Scott, C.D., et al., *Measurement of excess heat and apparent coincident increases in the neutron and gamma-ray count rates during the electrolysis of heavy water.* Fusion Technol., 1990. **18**: p. 103.
126. Scott, C.D., et al., *Preliminary Investigation of Possible Low-Temperature Fusion.* J. Fusion Energy, 1990. **9**(2): p. 115.
127. Shirai, O., et al., *Some experimental results relating to cold nuclear fusion.* Bull. Inst. Chem. Res., Kyoto Univ., 1991. **69**: p. 550.
128. Srinivasan, M., *Nuclear fusion in an atomic lattice: An update on the international status of cold fusion research.* Curr. Sci., 1991. **60**: p. 417.
129. Storms, E., *Measurements of excess heat from a Pons-Fleischmann-type electrolytic cell using palladium sheet.* Fusion Technol., 1993. **23**: p. 230.
130. Storms, E., *Some Characteristics of Heat Production Using the "Cold Fusion" Effect.* Trans. Fusion Technol., 1994. **26**(4T): p. 96.
131. Storms, E., *How to produce the Pons-Fleischmann effect.* Fusion Technol., 1996. **29**: p. 261.
132. Swartz, M.R., *Codeposition of palladium and deuterium.* Fusion Technol., 1997. **32**: p. 126.
133. Swartz, M.R., *Consistency of the biphasic nature of excess enthalpy in solid-state anomalous phenomena with the quasi-one-dimensional model of isotope loading into a material.* Fusion Technol., 1997. **31**: p. 63.
134. Szpak, S., et al., *Electrochemical charging of Pd rods.* J. Electroanal. Chem., 1991. **309**: p. 273.
135. Szpak, S., P.A. Mosier-Boss, and J.J. Smith, *On the behavior of Pd deposited in the presence of evolving deuterium.* J. Electroanal. Chem., 1991. **302**: p. 255.
136. Szpak, S., P.A. Mosier-Boss, and S.R. Scharber, *Charging of the Pd/(n)H system: role of the interphase.* J. Electroanal. Chem., 1992. **337**: p. 147.
137. Szpak, S., et al., *Cyclic voltammetry of Pd + D codeposition.* J. Electroanal. Chem., 1995. **380**: p. 1.
138. Szpak, S. and P.A. Mosier-Boss, *Nuclear and Thermal Events Associated with Pd + D Codeposition.* J. New Energy, 1996. **1**(3): p. 54.
139. Szpak, S. and P.A. Mosier-Boss, *On the behavior of the cathodically polarized Pd/D system: a response to Vigier's comments.* Phys. Lett. A, 1996. **221**: p. 141.
140. Szpak, S., P.A. Mosier-Boss, and J.J. Smith, *On the behavior of the cathodically polarized Pd/D system: Search for emanating radiation.* Phys. Lett. A, 1996. **210**: p. 382.
141. Szpak, S., et al., *On the behavior of the Pd/D system: Evidence for tritium production.* Fusion Technol., 1998. **33**: p. 38.
142. Szpak, S. and P.A. Mosier-Boss, *On the release of n/1H from cathodically polarized palladium electrodes.* Fusion Technol., 1998. **34**: p. 273.
143. Szpak, S., P.A. Mosier-Boss, and M. Miles, *Calorimetry of the Pd+D codeposition.* Fusion Technol., 1999. **36**: p. 234.
144. Szpak, S., et al., *Thermal behavior of polarized Pd/D electrodes prepared by co-deposition.* Thermochim. Acta, 2004. **410**: p. 101.
145. Szpak, S., et al., *Evidence of nuclear reactions in the Pd lattice.* Naturwiss., 2005. **92**(8): p. 394-397.

146. Takahashi, A., et al., *Excess heat and nuclear products by D2O/Pd electrolysis and multibody fusion.* Int. J. Appl. Electromagn. Mater., 1992. **3**: p. 221.
147. Takahashi, A., *Cold fusion research: present status.* Koon Gakkaishi, 1993. **19**(5): p. 179 (in Japanese).
148. Takahashi, A., *Production of neutron, tritium and excess heat.* Oyo Butsuri, 1993. **62**: p. 707 (In Japanese).
149. Takahashi, A., et al., *Experimental study on correlation between excess heat and nuclear products by D2O/Pd electrolysis.* Int. J. Soc. Mat. Eng. Resources, 1998. **6**(1): p. 4.
150. Velev, O.A. and R.C. Kainthla, *Heat flow calorimeter with a personal-computer-based data acquisition system.* Fusion Technol., 1990. **18**: p. 351.
151. Yun, K.S., et al., *Calorimetric observation of heat production during electrolysis of 0.1 M LiOD + D2O solution.* J. Electroanal. Chem., 1991. **306**: p. 279.
152. Zhang, Q., et al., *The excess heat experiments on cold fusion in titanium lattice.* Chin. J. At. Mol. Phys., 1995. **12**(2): p. 165.
153. Zhang, Q., et al., *The experimental study on the 'excess heat' for deuteron absorbed in the lattice of titanium.* Chin. J. At. Mol. Phys., 1998. **15**: p. 210 (In Chinese).

List 3. Authors and co-authors of the peer-reviewed papers in List 2

Agelao, G.
Aida, M.
Akimoto, T.
Anderson, M. W.
Aoki, T.
Aoki, Y.
Arata, Y.
Arunachalam, J.
Azumi, K.
Babu, K. S. C.
Babu, S. R.
Bajpai, H. N.
Balducci, G.
Battaglia, A.
Batyrbekov, E. G.
Belzner, A.
Bernardini, M.
Bertalot, L.
Birgul, O.
Bischler, U.
Bockris, J.
Bose, H.
Boss, R. D.
Boutet, A.
Braganza, O'N.
Bressani, T.
Broadhurst, J. H.
Brudanin, V. B.
Bush, B. F.
Bush, R. T.
Bystritsky, V. M.
Caputo, R.
Celani, F.
Celebi, S.
Cellucci, F.
Chattopadhyay, G.
Cheng, L.
Cheng, X.
Chitra, V.
Cho, B. W.
Cho, W. I.
Cignini, P. L.
Cisbani, E.
Crouch-Baker, S.
Daddi, L.
Das, D.
Dash, J.
Datta, T.
De Marco, F.
De Maria, G.
De Ninno, A.
Degwekar, S. B.
Deryagin, B. V.
Di Gioacchino, D.
Di Stefano, V.
Diman, D.
Doga-Turk
Drebushchak, V. A.
Dufour, J.
Dufour, X.
Eagleton, R. D.
Ebihara, H.
Egorov, V. G.
Enyo, M.
Fabrizio, M.
Fleischmann, M.
Focardi, S.
Foos, J.
Frullani, S.
Fukuhara, M.
Fukuoka, H.
Gabbani, V.
Gabriel, C. J.
Gangadharan, S.
Gaonkar, D. G.
Garg, S. P.
Garibaldi, F.
Ghio, F.
Gigli, G.
Giudice, E. Del
Gnanasekaran, T.
Gordon, F.
Gotoh, N.
Gou, Q.
Gozzi, D.
Greenbaum, E.
Guer, T. M.
Guha, S. N.
Habel, R.
Haram, S. K.
Hatozaki, O.
Hawkins, M.
Hollins, R. A.
Hora, H.
Huggins, R. A.
Iida, T.
Ikegami, H.
Imai, Y.
Imam, M. A.
Imamura, M.
Isagawa, S.
Isobe, Y.
Itoh, T.
Ivanova, T. S.
Iwamura, Y.
Iyengar, P. K.
Iyengar, T. S.
Iyer, C. S. P.
Jodice, M.
Joseph, T. B.
Joshi, P. V.
Ju, J. B.
Kaba, L.
Kainthla, R. C.
Kalyanaraman, R.
Kamada, K.
Kamiya, N.
Kanda, Y.
Karabut, A. B.
Kasahara, S.
Katayama, Y.
Kawase, T.
Khmelnikov, A.I.
Kihara, S.
Kinoshita, H.
Kirkinskii, V. A.
Kishore, K.
Kitaichi, M.
Kneizys, P.
Kobayashi, T.
Krishnan, M. S.
Kucherov, Ya. R.

Kulkarni, L. V.
Kunimatsu, K.
Kurasawa, Y.
Kurata, Y.
Kurokawa, K.
Kusunoki, T.
Kutty, K. K.
Kuznetsov, V. A.
La Barbera, A.
Lagowski, J. J.
Lal, M.
Lalla, N. P.
Lee, S. K.
Lewis, D.
Li, L. J.
Li, X. Z.
Liaw, B. Y.
Liebert, B. E.
Limaye, N. M.
Lin, G. H.
Lipson, A. G.
Liu, B.
Liu, F.
Lucier, G.
Luo, J.
Lyakhov, B. F.
Malhotra, S. K.
Mancini, A.
Mandal, K. C.
Manducchi, C.
Manduchi, C.
Marini, P.
Mathews, C. K.
Matsui, M.
McKubre, M. C. H.
Mega, A.
Mengoli, G.
Miao, B.
Michaels, G. E.
Miles, M.
Miles, R. E.
Miley, G. H.
Milli, E.
Millot, J. P.
Mills, R. L.
Minagawa, H.
Misra, S. C.
Mitra, S. K.
Mittal, K. C.
Miyamaru, H.
Mizuno, T.
Montalbano, V.
Moorthy, P. N.
Mori, H.
Mosier-Boss, P. A.
Motohira, N.
Mrochek, J. E.
Murthy, T. S.
Nagvenkar, V. B.
Nakamura, K.
Nakamura, T.
Nayar, M. G.
Nelson, J. C.
Newman, E.
Noble, G.
Nodasaka, Y.
Noninski, C. I.
Noninski, V. C.
Notoya, R.
Nowak, R. J.
Noya, Y.
Numata, H.
Ochiai, K.
Ogura, I.
Ohmori, T.
Ohnishi, T.
Ohsaka, T.
Ohta, N.
Okamoto, M.
Omote, T.
Oriani, R. A.
Ostrom, G. S.
Ota, K
Ota, K.
Oyama, N.
Oyama, Y.
Ozdural, A.
Pace, S.
Packham, N. J. C.
Panajkar, M. S.
Pandey, R. N.
Park, K. H.
Park, S. Y.
Parthasarathy, R.
Passell, T. O.
Pekmez, K.
Periaswami, G.
Petek, M.
Petrocchi, A.
Petrucci, L.
Piantelli, F.
Pons, S.
Prabhu, L. H.
Preparata, G.
Radhakrishnan, T. P.
Ragarajan, J.
Raghunathan, P.
Raj, P.
Raju, V. S.
Ramesh, C.
Rangarajan, J.
Rao, K. A.
Rao, P. S.
Ray, M. K. S.
Rocha-Filho, R. C.
Romano, M. C.
Rout, R. K.
Sadhukhan, H. K.
Saini, R. D.
Sakov, D. M.
Sankaranarayanan, S.
Santhanam, K. S. V.
Santucci, J.
Sathyamoorthy, A.
Saunin, E.I.
Savvatimova, I.
Savvatimova, I. B.
Scaramuzzi, F.
Scharber, S. R.
Schreiber, M.
Scorletti, M.
Scott, C. D.
Scott, T. C.
Sen, B. K.
Sharma, K. G. B.
Shetiya, R. S.
Shibata, S.
Shibata, T.

Shirai, O.
Shrikhande, V. K.
Shyam, A.
Sikka, S. K.
Sk'ld, K.
Smedley, S. I.
Smith, J. J.
Sohrin, Y.
Sona, P. G.
Spallone, A.
Srinivas, K. C.
Srinivasan, M.
Srivastava, O. N.
Stetsenko, S. G.
Stilwell, D. E.
Storms, E.
Sun, J.
Sun, Y.
Sundaresan, R.
Suryanarayana, P.
Suzuki, T.
Swartz, M. R.
Szklarczyk, M.
Szpak, S.
Tabet, E.
Takahashi, A.
Takahashi, H.
Takeuchi, T.
Taniguchi, M.
Tanzella, F. L.
Tao, P. L.
Thiyagarajan, B.
Tian, J
Tiwari, R. S.
Tomellini, M.
Toyoda, I.
Tripodi, P.
Turner, P.
Ueda, S.
Uneme, S.
Urciuoli, G. M.
Uwamino, Y.
Veeraraghavan, N.
Velev, O. A.
Venkataramani, R.
Venkateswaran, G.
Venkateswarlu, K. S.
Veronesi, S.
Verpelli, M.
Violante, V.
Wagh, D. N.
Wass, J.
Wass, J. C.
Wei, Q.
Yabuta, K.
Yamamoto, N.
Yasuda, K.
Yavich, A. A.
Ye, A.
Yildiz, A.
Yoshikawa, N.
Yoshinaga, Y.
Yoshitake, H.
Young, C.
Yu, Z. W.
Yun, K. S.
Yurum, Y.
Yutlandov, I. A.
Yuvaraju, B.
Zannoni, G.
Zeppa, P.
Zhang, C.
Zhang, Q.
Zhang, Y. C.
Zhou, R.
Zhou, X.
Zhu, Z.
Zich, R. L.

List 4. Peer-reviewed journals of the papers in List 2

Adv. Hydrogen Energy
Bull. Chem. Soc. Japan
Bull. Inst. Chem. Res., Kyoto Univ.
Chin. J. At. Mol. Phys.
Curr. Sci.
Curr. Topics Electrochem.
Electrochim. Acta
Europhys. Lett.
Fusion Eng. Des.
Fusion Technol.
Hyomen Gijutsu
Hyomen Kagaku
Indian J. Technol.
Int. J. Appl. Electromagn. Mater.
Int. J. Hydrogen Energy
Int. J. Soc. Mat. Eng. Resources
J. Chim. Phys.
J. Electroanal. Chem.
J. Eng. Env. Sci.
J. Fusion Energy
J. High Temp. Soc.
J. Hydrogen Energy
J. New Energy
J. Phys. Chem.
J. Phys. Chem. B
J. Phys. D: Appl. Phys.
Jpn. J. Appl. Phys. A
Jpn. J. Appl. Phys. Part 2
Kaku Yugo Kenkyu
Kinki Daigaku Genshiryoku Kenkyusho Nenpo
Koon Gakkaishi
Naturwiss.
Netsu Sokutei
Nucl. Fusion Plasma Phys.
Nuovo Cimento Soc. Ital. Fis. A
Oyo Butsuri
Petrotech. (Tokyo)
Phys. Lett. A
Poverkhnost
Proc. Electrochem. Soc.
Proc. Jpn. Acad., Ser. B
Russ. J. Phys. Chem.
Solid State Ionics
Sov. Tech. Phys. Lett.
Tech. Phys.
Thermochim. Acta
Trans. Fusion Technol.
Xibei Shifan Daxue Xuebao, Ziran Kexueban
Xibei Shifan Xuebao. Ziran Kexueban

List 5. Famous failed neutron studies from 1989

1. Albagli, D., et al., *Measurement and analysis of neutron and gamma-ray emission rates, other fusion products, and power in electrochemical cells having Pd cathodes.* J. Fusion Energy, 1990. **9**: p. 133.
2. Anderson, R.E., et al. *Neutron Measurements in Search of Cold Fusion*. in *Anomalous Nuclear Effects in Deuterium/Solid Systems, "AIP Conference Proceedings 228"*. 1990. Brigham Young Univ., Provo, UT: American Institute of Physics, New York.
3. Campbell, R.B. and L.J. Perkins, *A study of 'cold fusion' in deuterated titanium subjected to high-current densities.* Fusion Technol., 1989. **16**: p. 383.
4. Deakin, M.R., et al., *Search for cold fusion using x-ray detection.* Phys. Rev. C: Nucl. Phys., 1989. **40**(5): p. R1851.
5. Dignan, T.G., et al., *A search for neutrons from fusion in a highly deuterated cooled palladium thin film.* J. Fusion Energy, 1990. **9**(4): p. 469.
6. Ewing, R.I., et al., *Negative results and positive artifacts observed in a comprehensive search for neutrons from 'cold fusion'.* Fusion Technol., 1989. **16**: p. 404.
7. Faller, S.H., R.W. Holloway, and S.C. Lee, *Investigation of cold fusion in heavy water.* J. Radioanal. Nucl. Chem., 1989. **137**(1): p. 9.
8. Fleming, J.W., et al., *Calorimetric studies of electrochemical incorporation of hydrogen isotopes into palladium.* J. Fusion Energy, 1990. **9**(4): p. 517.
9. Guilinger, T.R., et al., *Investigation of Fusion Reactions in Palladium and Titanium Tritide Using Galvanostatic, Coulometric, and Hydrogen Permeation Techniques.* J. Fusion Energy, 1990. **9**(3): p. 299.
10. Hayden, M.E., et al., *High precision calorimetric search for evidence of cold fusion using in situ catalytic recombination of evolved gases.* J. Fusion Energy, 1990. **9**(2): p. 161.
11. Hill, J.C., et al., *Search for cold fusion using Pd-D2O cells and Ti-D mixtures.* J. Fusion Energy, 1990. **9**: p. 305.
12. Kashy, E., et al., *Search for neutron emission from deuterium-loaded palladium.* Phys. Rev. C: Nucl. Phys., 1989. **40**(1): p. R1.
13. Porter, J.D., et al., *Limits on electromagnetic and particle emission from palladium-D2O electrolytic cells.* J. Fusion Energy, 1990. **9**: p. 319.
14. Rehm, K.E., W. Kutschera, and G.J. Perlow, *Search for protons from the 2H(d,p)3H reaction in an electrolytic cell with palladium-platinum electrodes.* Phys. Rev. C: Nucl. Phys., 1990. **41**(1): p. 45.
15. Roberts, D.A., et al., *Energy and flux limits of cold fusion neutrons using a deuterated liquid scintillator.* Phys. Rev. C: Nucl. Phys., 1990. **42**: p. R1809.
16. Rugari, S.L., et al., *Upper limits on emission of neutrons from Ti in pressurized D2 gas cells: A test of evidence for 'cold fusion'.* Phys. Rev. C: Nucl. Phys., 1991. **43**: p. 1298.
17. Schirber, J.E., et al., *Search for cold fusion in high-pressure deuterium-loaded titanium and palladium metal and deuteride.* Fusion Technol., 1989. **16**: p. 397.
18. Silvera, I.F. and E. Moshary, *Deuterated palladium at temperatures from 4.3 to 400K and pressures to 105 kbar: search for cold fusion.* Phys. Rev. B: Mater. Phys., 1990. **42**(14): p. 9143.
19. Southon, J.R., et al., *Upper limit for neutron emission from cold deuteron-triton fusion.* Phys. Rev. C: Nucl. Phys., 1990. **41**(5): p. R1899.

20. Wiesmann, H., Examination of cathodically charged palladium electrodes for excess heat, neutron emission, or tritium production. Fusion Technol., 1990. **17**: p. 350.

Appendix B. Evaluations made by Britz versus those by Rothwell

This Appendix presents details and examples from section 3.

Evaluating these papers is not easy. Many papers are ambiguous, so assigning a simple positive/negative/undecided grade to them is an oversimplification. Some papers report a split decision. Botta [14] reported no neutrons with palladium, but with titanium: "2.5 MeV neutron emission, with a signal having a statistical significance of ~5 σ." A single grade for this paper seems inadequate, but I would call it positive, whereas Britz tagged it undecided.

In 1990, Britz reported there were 75 positive papers, 76 negative ones, and 41 in which the authors were undecided, or did not see significant results. This struck me as too many indecisive results. Researchers who do not see clear results one way or the other often refrain from publishing anything. I examined some of the undecided papers and in my opinion several of them should be reassigned to the positive column.

I did not examine many samples of the 76 papers that Britz puts in the "negative" column, but I expect he classified them correctly. Britz defines a "negative" paper as one that calls into question the very existence of cold fusion. Note the critical difference between a null result and this kind of "negative" one. A researcher will normally report with caution: "I saw no excess heat or neutrons, but that does not mean there can be no neutrons. My result has to be compared and contrasted with positive results to see what we can learn, to determine whether the effect is real or an artifact." This is a null result which Britz puts in the "undecided" column. Some researchers took the "negative" hard line instead: "I saw no neutrons and therefore the effect does not exist and any other researchers who report neutrons or heat must be mistaken." This assertion, that my results automatically overrule yours, is a violation of the scientific method.

Here are some examples of "undecided" papers.

Bushuev: [15]

> Several instances of neutron bursts were recorded. The effect is unstable and not reproducible so no definite conclusions can be made about the origin of the effect or its magnitude. . . .
>
> The above results were obtained in April-May 1989 but, because they were not reproducible, they have not been published until now. However, recent publications [4,5] reporting pulsed neutron emission during the electrolysis of heavy water with palladium and titanium cathodes have stimulated the publication of the present results.

I agree with Britz that this is undecided, although I would say it leans positive. I think the author would call it an interesting result that merits further investigation. There are degrees and shades of indecision ranging from muddled indecision to lively, well-considered, cautious indecision. As noted above, researchers usually refrain from publishing inconclusive results. Bushuev *et al.* held this report back until they learned that two other groups had seen similar results.

Britz graded a paper by Karabut *et al.* [16] as undecided. This seemed odd to me, because I am familiar with Karabut's work, and because Britz's own description of the paper makes it sound positive:

> A chamber with a Pd foil of 0.1-1 mm thickness in an atmosphere of D2 at 3-10 Torr was used. Thermistors measured the foil temperature and this served as calorimeter. Also in the chamber were detectors for neutrons, gammas and charged particles (cp's) as well as x-rays. . . . During running, excess heat, neutrons, gammas and cp's were detected. These parameters were however not in the ratios expected from a fusion reaction. Postmortem examination of the foil revealed some increase in (3)He and an increase by factors of 4-100 in (4)He. All nuclear products, however, were at levels 3-4 orders of magnitude lower than commensurate with excess heat. The authors regard the calorimetry results as promising.

The abstract to the paper itself says:

> New results for glow discharge in deuterium calorimetry are presented. In separate experiments a heat output five times exceeding the input electric power was observed. The result for the charged particle spectrum measurement is presented. Charged particles with energies up to 18 MeV and an average energy of 2—4 MeV were seen. Beams of gamma-rays with energies of about 200 keV and a characteristic X-ray radiation were registered. The summed energy of the registered products is three orders short of the values needed to explain the calorimetric results.

Their conclusion raises some questions, but not what I consider doubts:

> Many new questions arise with the latest results. The trigger mechanism of the nuclear reaction still remains unclear. As we already pointed out charged particles with a good portion of alphas are found in quantities 3–4 orders short of those needed to explain the excessive heat. We did not measure the electron flows in our work and this still leaves the possibility of K-electron capture with a radioactive isotope formation with a consequent beta decay with large energy release. A more plausible scenario is that the main mass of the charged particles does not leave the cathode. . . . Anyway, the calorimetric results are promising by themself.

I looked up first 54 papers in the bibliography marked "undecided." I could not evaluate 5 of them because I do not have copies or they are in languages I do not understand. Of the remaining 49:

27 (55%) I agree are undecided, although 7 might fit the "no evaluation" category better

4 (8%) seem "negative" ruling out the possibility that cold fusion can exist

18 (37%) are positive in my opinion

Some of the 18 papers I reviewed and moved into the positive column make such strong assertions that I cannot imagine why Britz considers them inconclusive, or even marginal. Here are some examples. De Ninno: [17]

The model is not concerned with heat production; however, many experiments indicated a correlation between excess heat production and deuterium concentration in the cathode. [8,9] Then, it must be very useful to know exactly the concentration profile inside the electrode.

Gozzi: [18]

We present the results of a new experiment with our multicell set-up implemented with mass spectrometric measurements of ^{4}He and a highly improved neutron detector. The excess heat measured is comparable with the results of other laboratories, but no neutrons were found and the tritium excess was lower than expected from the power excess, 4He has been measured in the electrolysis gases and a tentative correlation of 4He with excess power is presented and discussed.

Our calorimetric results show an excess power which is quite in line with the other positive results reported up to now. In particular, if we consider the power excess per unit electrode surface area as a function of the current density, fair agreement is found with the general behaviour first pointed out by Storms [27] by considering that many calorimetric measurements on the Pd + D_2O electrolysis were carried out at room temperature in various laboratories where different calorimetric devices and procedures were used. With regard to the nuclear products, in the present experiment a lack of neutrons and a low tritium excess on two out of four cells has been observed, in contrast with what is expected on the basis of d,d reactions. Our results confirm the previous findings which exhibited such a large unbalance.

Britz's own description of Granada *et al.* [19] sounds positive to me:

. . . Results show modest neutron fluxes above the background, but statistical analysis shows that it is about 95% certain that the results are not simply noise. The authors do not commit themselves to a neutron rate emission because of experimental uncertainties but they do seem 95% certain that neutrons were emitted whenever current flowed.

I agree that is an accurate summary of the paper, and I would classify it "positive." Granada *et al.* concluded: "Even though these results alone cannot be conclusive to settle the issue of the cold fusion phenomena, they constitute a piece of experimental evidence which lends support to the existence of such processes."

When Britz reviewed this paper in manuscript, he decided to reclassify Karabut and Granada as positive. The totals in this paper have not been adjusted to reflect these changes.

Based on this sample of 49, I would reassign the 1,390 papers as shown in Table 7. Although we differ in our evaluation of some papers, my overall tally of positive/negative/undecided is within 5% of Britz's. The biggest difference between us is in the conclusion we draw from the literature as whole: I am convinced that cold fusion does exist, but Britz does not think it exists. To be precise, he says he is "not sure whether it [exists] or not" He says he is: "[not] among those who totally deny that may be a new phenomenon. I do believe there may well be." In the past he said: "There are enough quality positives for the original F&P system (tritium, some XS [excess] heat) to force me to give it a (small) chance." [20]

Table 7. Evaluations by Britz and Rothwell

	Britz evaluation	Percent	Rothwell projected evaluation	Percent
res+ a positive result	503	36%	~569	41%
res- a negative result	281	20%	~293	21%
res0 undecided	151	11%	~83	6%
No evaluation	455	33%	~445	32%

Britz said that he did not grade papers according to his own personal opinion, and as proof of that, he pointed out that he marked some papers positive even though in his opinion these papers were sloppy or "somewhat ridiculous." I think his personal opinions have sometimes clouded his evaluation of the author's intent. When an author expresses doubts about one aspect of the work, or says "many new questions arise" or "the trigger mechanism of the nuclear reaction still remains unclear," Britz sometimes seizes upon such comments as a reason to call the paper undecided.

Incidentally, I agree wholeheartedly that many ridiculous positive papers have been published. So have many ridiculous negative papers, especially ones that attempt to overrule experimental evidence by appealing to theory. In groundbreaking new research people often make mistakes that seem ridiculous in retrospect. Segre described the work of Hahn and Meitner: "Their early papers are a mixture of error and truth as complicated as the mixture of fission products resulting from the bombardments. Such confusion was to remain for long time a characteristic of much of the work on uranium." [21] There are also many negative experimental papers that seemed important in 1989 but which were subsequently shown to be in error (such as the ones in section 4). They are not ridiculous, but they have no significance.

Let me speculate about the likely cause of our disagreements. I feel that Britz is biased because he does not believe cold fusion exists. Britz is the only electrochemist I know who has read the literature extensively and yet who does not believe cold fusion is real. The others agree with Gerischer, [22] who wrote in 1991: "there is now undoubtedly overwhelming indications that nuclear processes take place in the metal alloys."

Frankly, I find it amazing that Britz has read so many positive experimental papers and yet he remains unconvinced. He may consider some of the 291 positive papers "sloppy" or "quite ridiculous" (as do I) but if cold fusion is not real, that means all positive papers are sloppy or ridiculous, especially the ones that report strongly positive results, by Fleischmann, McKubre, Miles, Mengoli, Bockris, Will, Dardik and others. If cold fusion does not exist, then Dardik mistook 1 W of heat for 25 W. I find it inconceivable that any scientist in the last 230 years could have made such a large error, and even more unthinkable that a group of roughly 2,000 scientists have made such mistakes for 20 years. Someone would have caught some of these errors by now, but no paper has been published pointing out errors in any major study. To my knowledge, Britz himself has not found any such errors.

Even discounting the results we agree are "ridiculous," that leaves hundreds of solid papers. Most scientists look for five or at most 10 solid, independent, high signal-to-noise replications before they believe an effect is real. Britz has read hundreds of solid replications yet he does not believe a single one of them. If even one of these tests is valid, that makes cold fusion real, just as one airplane flight in 1903 proved that airplanes can fly. [1] Britz considers himself "neutral" and in the past he said he is "trying to be evenhanded." [23] I believe this is a Middle Ground logical fallacy (also called Fallacy of Moderation). [24] A judge can be evenhanded and yet still find a defendant guilty when the evidence is "undoubtedly overwhelming." Most cartographers are neutral, unbiased and moderate but none believes that the world is flat. From my point of view, Britz is biased and he is grasping at straws to find reasons to deny that cold fusion is real.

References

[1] Thomson Reuters, Inc., http://www.endnote.com/
[2] NREL, *Energy Overview from NREL*. 2006, NREL. p. 17.
[3] Bockris, J. *The History Of The Discovery Of Transmutation At Texas A&M University*. in *Tenth International Conference on Cold Fusion*. 2003. Cambridge, MA: LENR-CANR.org.
[4] Britz, D., private communication, 2009
[5] Claytor, T.N., et al. *Tritium Production from Palladium Alloys*. in *The Seventh International Conference on Cold Fusion*. 1998. Vancouver, Canada: ENECO, Inc., Salt Lake City, UT.
[6] Miles, M. and K.B. Johnson, *Anomalous Effects in Deuterated Systems, Final Report*. 1996, Naval Air Warfare Center Weapons Division.
[7] Green, T.G. and T.I. Quickenden, *Calorimetric studies of highly loaded deuterides and hydrides of palladium.* J. Electroanal. Chem., 1995. **389**: p. 91.
[8] Mallove, E., *Fire From Ice*. 1991, NY: John Wiley.
[9] Mallove, E., *MIT Special Report.* Infinite Energy, 1999. **4**(24): p. 64.
[10] Miles, M. *Twenty Year Review of Isoperibolic Calorimetric Measurements of the Fleischmann-Pons Effect*. in *ICCF-14 International Conference on Condensed Matter Nuclear Science*. 2008. Washington, DC.
[11] Salamon, M.H., et al., *Limits on the emission of neutrons, gamma-rays, electrons and protons from Pons/Fleischmann electrolytic cells.* Nature (London), 1990. **344**: p. 401.
[12] Cravens, D. and D. Letts. *The Enabling Criteria Of Electrochemical Heat: Beyond Reasonable Doubt*. in *ICCF-14 International Conference on Condensed Matter Nuclear Science*. 2008. Washington, DC.
[13] Storms, E., *The Science Of Low Energy Nuclear Reaction*. 2007: World Scientific Publishing Company.
[14] Botta, E., et al., *Measurement of 2.5 MeV neutron emission from Ti/D and Pd/D systems.* Nuovo Cimento Soc. Ital. Fis. A, 1992. **105A**: p. 1663.
[15] Bushuev, V.S., et al., *Some results obtained by detecting nuclear radiation during heavy-water electrolysis.* Sov. Phys. Lebedev Inst. Rep., 1990(5): p. 57.
[16] Karabut, A.B., Y.R. Kucherov, and I.B. Savvatimova, *Nuclear product ratio for glow discharge in deuterium.* Phys. Lett. A, 1992. **170**: p. 265.
[17] De Ninno, A. and V. Violante, *Study of deuterium charging in palladium by electrolysis of heavy water.* Fusion Technol., 1994. **26**: p. 1304.
[18] Gozzi, D., et al., *Calorimetric and nuclear byproduct measurements in electrochemical confinement of deuterium in palladium.* J. Electroanal. Chem., 1995. **380**: p. 91.
[19] Granada, J.R., et al., *Thermal neutron measurements on electrolytic cells with deuterated palladium cathodes subjected to a pulsed current.* J. Nucl. Sci. Technol., 1990. **27**(3): p. 30.
[20] Rothwell, J., *Dieter Britz: A Knowledgeable Skeptic.* Infinite Energy, 1998. **3**(18).
[21] Mallove, E., *Fire From Ice*. 1991, NY: John Wiley.
[22] Gerischer, H., *Memorandum on the present state of knowledge on cold fusion*. 1991, Fritz Harber Institute der Max Planke: Berlin.
[23] Rothwell, J. *ibid.*
[24] http://www.nizkor.org/features/fallacies/middle-ground.html

[1] Depending on the nature of the experiment, a claim may require some number of replications before it can be believed. But in some cases, the proof is dramatic and irrefutable on its own. The Kitty Hawk airplane flight of 1903 is an example. The fact that dozens of airplanes failed to get off the ground before 1903 has no relevance. In my opinion, the experiments reported by McKubre, Miles and several others would be convincing even without hundreds of other independent replications.