



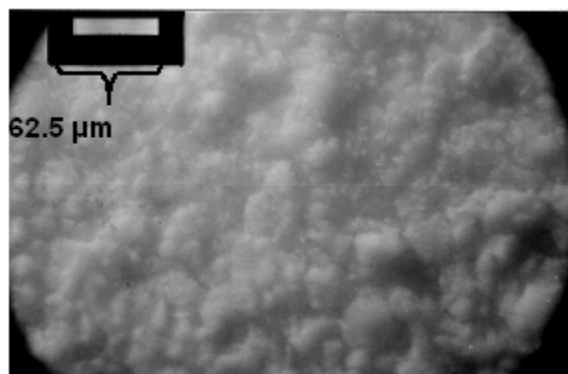
Cold Fusion Has Its Press Conference

Mar 26 2009 by [mitch](#) (3723 Views)

Jeremy and I scored press passes to the recent Cold Fusion Press Conference at the ACS 2009 Spring Meeting. Unfortunately for them I'm a nuclear chemistry PhD student. Jeremy did a quick wrap-up of the press conference, [\[CB\]](#) but I thought it would be useful to have a critical chemist perspective of their recent announcement. The press conference did nothing to address the violation of the most elementary of chemistry and physics that I painstakingly explained in this old post titled "[The difference between cold fusion and cold fusion](#)", but I'll move on to address their statements.

As this was a press conference and not a scientific talk there wasn't any data that I can point to as evidence for a cold fusion claim. However, we can tear some sanity from their own words. I asked why they haven't observed any gamma rays from their cold fusion experiments. Pamela Mosier-Boss was quick to reply that they indeed did measure gamma rays, but they "came in bursts... and are averaged away [over the duration of the experiment]". Dissect that statement and reflect on it as a scientist. Think to yourself: "Hmmm... clusters of peaks coming all of a sudden but randomly", "Hmmm... as they run the experiment they see these peaks average out?", "What does this mean?". You don't have to be a spectroscopy expert to figure this one out. The answer is simple, they measured background. Background is a random process, it will come in bursts, they may even cluster to make a peak for a short time, but when you run it over the course of the whole experiment it is "averaged out"; that my friend is background you measured.

At an other point of the conference Mahadeva Srinivasan claims to be able to measure tritium, neutrons, and other ionizing radiation not by actually measuring them, but indirectly from looking at his electrodes and observing craters and holes and trying to ascribe the radiation that caused it. Sounds sort of reasonable unless you've ever done any electrodeposition, which is what the process he described would yield if running current through a wire. Here is a picture of an electrodeposited layer of europium oxide my fellow colleagues made in the lab.



You can see craters and valleys in the image. I hope their electrodes didn't look anything as awful as this, but you can see for yourself that electrodeposition can create ugly surfaces. Which was a major reason for the Thin Film community's move away from electrodeposition and embrace of Sol-Gel techniques, because it causes less cratering and produces homogeneous and uniform films.

So should I believe the claims of a scientist who does not understand the difference between background and peaks? Should I believe a scientist who doesn't understand the basic consequences of his own technique? You don't even have to be a nuclear chemist to call bull-shit on this one.

I want to end this on a positive note, because I've spent a lot of time hammering these cold fusion people over the years. Honestly, if they are measuring more energy out of their systems than the energy they are putting in, then this is fantastic news. If they see excess heat, then they need to chase this line of inquiry down. But nuclear fusion is not the right path. I truly want to believe these people are capable of measuring the amount of energy in their system versus the energy out correctly. But the electrochemistry they are performing is non-reversible and that makes energy accounting, in their dynamic system, a very difficult mess. The simple act of having gas bubbles float from your electrodes will deposit more energy into your solution, due to friction, then you would expect. And frankly, after listening to these people talk for 45 minutes I don't believe they are capable of correctly accounting for energy in a dynamic system.

Mitch

P.S. Make up your own mind, a link to the press conference is here, [Cold Fusion Press Conference](#). I ask my question around the 28 minute mark. Aaron Rowe from [wired science blog](#) is now my favorite science journalist, his question is asked at 34:50 minute mark.

 [Subscribe to the comments for this post](#)

Posted on : Mar 26 2009

Tags: [Mahadeva Srinivasan](#), [Pamela Mosier-Boss](#)

Posted under [ACS](#), [nuclear](#), [opinion](#) |

[RSS feed](#) | [Trackback URI](#)

Trackback responses to this post

» [Chemistry Blog](#) » [Blog Archive](#) » [ACS Front Page](#) 

14 Comments »

Comment by [sobe](#)

2009-03-26 06:04:17

Thanks, I've been wondering about the re-emergence of cold fusion – an idea so attractive that it *must* be true.

[Reply to this comment](#)

Comment by [Chemgeek](#)

2009-03-26 07:44:28

What troubles me is that the ACS has the appearance of endorsing it and giving it some validity. Most scientists will understand the relationship, but for the non-scientists out there that get their science from CNN.com and FoxNews, they can be led to believe that this is true and real because it is endorsed by a big organization.

[Reply to this comment](#)

Comment by [11minutes](#)

2009-03-26 08:41:48

I see what you are saying, and as fellow scientist I share your skepticism. However, your point about background is oversimplified in itself.

That point is that not any signal that gets "averaged out" is truly random, noise or unrelated to the experiment. This is only true if the signal is rectified (i.e. there are no negative values in your measurements). Otherwise, you will "average out" any non-phase locked information, even if it was evoked in your experiment.

Averaging (non-rectified) signals over many repetitions of an experiment will reveal phase-locked components only. In order to differentiate the stuff that gets averaged out from true background one needs to look at the rectified (power) signal, and see if that deviates from a baseline level representing the background radiation.

This is just a general comment, and I am not sure it applies to experiment at hand, but her comment does not seem that offhand to anyone aware of the above distinction.

[Reply to this comment](#)

Comment by *retread*

2009-03-26 08:49:43

Agree with ChemGeek – doesn't anyone vet these things before they appear? Could I present my handy-dandy perpetual motion machine at the next ACS meeting? You know, the one based on hydrinos?

[Reply to this comment](#)

Comment by *Noel*


2009-03-26 09:36:23

It's definitely a one-sided story if your news source is non-academic.

<http://www.foxnews.com/story/0,2933,510589,00.html>

I think if you watch the press conference you can probably detect something fishy... but not from the summary, even an unbiased one.

[Reply to this comment](#)

Comment by *Jeremy* 

2009-03-26 09:46:15

I completely agree about the "fishy"-ness.

For example, I'm not entirely sure why a group of chemists would need a scientific journalist (who admittedly mentioned that he did not have a scientific background) to act as their "lawyer." This press conference did not strike me as being an opportunity to present ground breaking work; it resembled a PR stunt.

[Reply to this comment](#)

Comment by *Noel*

2009-03-26 10:47:57

oh, and lol @ 31min mark, anyone? "the German journal" 😊


[Reply to this comment](#)

Comment by *Noel*

2009-03-26 10:51:15

Turn out that this said paper was published in Die Naturwissenschaften. I guess I wouldn't try to pronounce it, neither.

[Reply to this comment](#)

Comment by [mitch](#) 

2009-03-26 12:53:19

Remind me not to ever publish in that journal.

[Reply to this comment](#)

Comment by [Remy](#)

2009-03-26 13:31:15


I'm torn.

On the one hand, I want to believe that cold fusion is possible.

On the other hand, I want to understand your skepticism of the scientists who presented the information. As you said, "Should I believe a scientist who doesn't understand...?"

How about, should I believe a nuclear chemistry PhD student who hasn't yet grasped the concept of "then" vs. "than"?


[Reply to this comment](#)

Comment by [mitch](#) 

2009-03-26 13:35:50

Woops, I corrected the grammar mistakes.

[Reply to this comment](#)

Comment by [Ralph](#) 

2009-03-26 22:57:40

The energy barrier to fusion of nuclei of hydrogen isotopes is way beyond anything in the furthest-out energy tail of thermal atoms at laboratory temperatures... correct?

But can anything analogous to catalysis occur in nuclear reactions? Is there some entity which could help move nuclear reactions to completion, as platinum and other catalysts do in ordinary chemistry? If there were such a nuclear catalyst, could it be used to help move fusion to completion?

Well, there must not be anything like that, because we would already have cold fusion, or something like it, if such a nuclear catalyst existed. Nevertheless, is there still a possibility that someone might someday find such an entity?

[Reply to this comment](#)

Comment by [Maz](#)

2009-03-27 00:18:08

Their journalist-lawyer needs to be silenced so that these "scientists" have to answer their colleague's questions from a scientific perspective. One of the people did try to explain away the absence of an observed gamma ray by saying that it could be some new, unforeseen condensed matter effects. He carefully avoided saying that the gamma was absorbed by the solution (a claim previously made by the assembled group). It was good he didn't say that, or else everyone would have started laughing.

Also, they claimed to detect neutrons. This would be around a 2.4MeV particle...seriously non-trivial to detect. After talking with a colleague of mine about it (he does neutron detection for a living at LLNL), track detection would be the *WRONG* way to detect a neutron of that energy. It sounds, although I don't think they said it explicitly, as though they were using Cr39 detectors.

[Reply to this comment](#)

Name (required)



E-mail (required - never shown publicly)



URI



Your Comment ([smaller size](#) | [larger size](#))