To: Taleyarkhan et al.
From: Steve Krivit
Subject: 2002DidenkoY-SuslickK-EnergyEfficiency.pdf
Date: Thu, 13 Nov 2008 18:50:18 -0800

Can anyone please tell me if this paper indicates that Suslick et al. actually measured, or attempted to measure temperatures in SBSL or did they merely measure the temperatures in SBSL and then make a theoretical projection of temperature in MBSL?

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Follow-up questions:

2. Does Suslick indicate in this paper that he uses acetone (experimentally rather than theoretically) or does his expt. use only water?

3. Isn't the significant innovation of Taleyarkhan that he used acetone which provided for the possibility for temperature > 10,000?

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From: "Colin/Suzanne West"
To: [co-author list]
"Steve Krivit"
Subject: Re: 2002DidenkoY-SuslickK-EnergyEfficiency.pdf
Date: Fri, 14 Nov 2008 12:35:20 -0500

The Diderenko/Suslick paper described some very nice experimental work, which I admired as soon as I read about it.

However, in my opinion, it was not directly relevant to the Oak Ridge/ Purdue sonofusion experiments which used different liquids, much larger initial bubble sizes, much less dissolved air content and much higher acoustic pressure amplitudes.

As far as I can tell, the Illinois measurements used only water (aerated water!) whereas from the very beginning Rusi and I agreed, for sound reasons based on prior work on cavitation, that water should be rejected as a possible liquid for sonofusion experiments. And the more we learned, the more we came to appreciate the correctness of that decision.

Indeed, knowing what we know now, even very simple calculations that I made (and shared) indicate that the average temperatures inside the bubbles in our apparatus would be many times lower with water in place of, say, acetone. The much more complete and complicated computer studies by Rusi's other team

members bear that out in considerable detail, I believe.

Also for your information, I attach a scanned copy of some early thoughts on this piece of Diderenko/Suslick work that I sent to Rusi in 2002.

Best regards,

Colin West

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Date: Fri, 14 Nov 2008 16:34:04 -0500
To: Steve Krivit
From: "Dr. Richard T. Lahey"
Subject: Re: 2002DidenkoY-SuslickK-EnergyEfficiency.pdf
Cc: [co-author list]

Steve ,

Suslick did not directly measure the peak gas/plasma temperature , rather, making various assumptions, he inferred it from his measurements (spectra, etc.) In fact, because the region where the temperature is the highest is optically thick (i.e., opaque ,) one can not directly measure the peak temperature (This is something like trying to measure the temperature of the center of our sun. You can measure the surface temperature but, because the sun is opaque, you can not measure the much higher temperatures in the interior.)

Significantly, however, the only time you will measure D-D neutrons is if you go to 100 million Kelvin. Thus, this is the temperature that we have achieved and predicted during Sonofusion.

Finally, his discussion (in his paper that you sent to me,) which was associated with why endothermic chemical reactions will inherently prevent one from ever reaching fusion temperatures in an imploded bubble are wrong (we have clearly explained why in our 2005 Physics of Fluids paper.)

Dick Lahey

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Date: Fri, 14 Nov 2008 16:15:21 -0500
To: Steve Krivit
From: "Dr. Richard T. Lahey"

Subject: Re: Fwd: 2002DidenkoY-SuslickK-EnergyEfficiency.pdf
Cc: [co-author list]

Steve,

Suslick et al. are apparently discussing SBSL experiments in which light water (H2O) was the test liquid.

We have shown both experimentally and analytically (and published these results in peer-reviewed journals) why heavy water (i.e., D2O) is a very poor test liquid if one wants to achieve Sonofusion.

A much better choice is a deuterated hydrocarbon. Rusi chose to use deuterated acetone , however there are other deuterated hydrocarbons (and for that matter other types of deuterated liquids) that may also allow one to achieve D-D fusion conditions. However, to date, the only published Sonofusion results are ours in which D-acetone was used.

Dick Lahey