

**AFFIDAVIT OF DR. COLIN WEST**

This confidential affidavit of Colin West is made in connection with the investigation currently in process at Purdue University. I, Colin West, being first duly sworn on oath, state that if called upon as a witness, I would be competent to testify as to the following:

1. I am making this affidavit of my own personal knowledge. All of the facts contained in this affidavit are true.
2. I was a co-author with Dr. Rusi P. Taleyarkhan ("Taleyarkhan") of the 2002 publication in *Science* entitled "Evidence of Nuclear Emissions During Acoustic Cavitation." I collaborated with Taleyarkhan as a member of the research team in sonofusion studies.
3. I have known Taleyarkhan since 1988 when he joined Oak Ridge National Laboratory ("ORNL"). I have interacted with Taleyarkhan as a technical supervisor (Director of the Advanced Neutron Source Project) and as a colleague for close to 20 years. I can vouch for Taleyarkhan's integrity and resolve in the face of adversities, and for his persistence in standing firm on pursuing what is right.
4. I obtained my MS degree in Physics in 1963 followed by a Ph.D. in Physics from the University of Liverpool, UK in 1965. I was the first to conduct experiments in a neutron seeded environment for producing bubbles which settled the issue of when the SL flash was emitted. I worked as a scientist at Harwell, UK before relocating to ORNL in the United States more than 30 years ago. I served in various capacities ranging from staff scientist to group leader, and was Director of the \$2.5B Advanced Neutron Source Reactor project, which during the late 1980s was the nation's largest science project. I worked with Taleyarkhan as a colleague pursuing sonoluminescence and bubble fusion research for close to 10 years. My CV is attached.

Since I was personally involved, I can personally attest to the fact that our 2002 Science manuscript underwent an unparalleled level of scrutiny and due diligence checks from ORNL.

5. I also offered review comments for the Yiban Xu ("Xu") confirmatory experiments that were eventually published as his NED 2005 publication.

6. Offering Review Comments and Assistance to Xu. Around August 2004, I received a communication from Taleyarkhan informing me of developments related to what we now know were Xu's experimental studies. In that correspondence neither the author names nor their affiliations were revealed. I was contacted by Taleyarkhan since I was a co-author on the sonofusion paper in *Science*, and I believe Taleyarkhan respects my opinion on scientific issues. He asked me for comments and whether it would be acceptable to transmit such comments to the author, Xu.

7. Offering review comments and advice (if requested) on where to submit an article for publication is the common practice in the scientific community and I was happy to do it on this occasion too.

8. I agreed with Taleyarkhan that a staged approach would be appropriate and I recommended seeking publication in *Science* first, followed by PRL second.

9. Based on my experience in scientific journal writing and scientific standards, I did not see any problems or conflicts with offering feedback to respond to comments from the PRL referees, some of which were off-the-wall. I provided feedback to the PRL referee's comments and gave permission to Taleyarkhan to forward them to the author (Xu) for his use as needed. I understand the Investigation Committee has my email correspondence in this regard.

10. My assistance did not change the already conducted experimental work or the conclusions drawn from the resulting data.

11. Authorship vs Acknowledgment. I concur that helping to write or compose a manuscript does not qualify for co-authorship. Co-authorship requires technical input and/or direct participation in the experimental set up, data acquisition, data processing, data analyses, and for drawing of conclusions.

12. I can testify that it was common practice at the Department of Energy's ("DoE") Oak Ridge National Laboratory ("ORNL"), and one I always followed for my own publications, to have one's draft manuscripts reviewed and corrected as appropriate by the technical editors in the Publications Department. Indeed, our *Science* (2002) manuscript was drafted by an ORNL technical writer named Nestor. Participation in composing the language of a manuscript for publication in journals does not meet the standard for co-authorship.

13. I did not participate in the reported sonofusion experiments conducted by Xu et al. (NED 2005 nor NURETH-11 paper). I also personally know of no one from the original team (Taleyarkhan, et al. (*Science*, 2002; PRE 2004)) that participated in the acquisition or analyses of the reported Xu et al. experiments.

14. Based on published material (e.g., Purdue's July 2007 Press Release and also the Telepolis article from Germany), Xu has repeatedly stated that Taleyarkhan played no role in the published Xu et al. experiments nor did he influence the data or conclusions.

15. It is my opinion that Taleyarkhan and JaeSeon Cho ("Cho") are appropriately acknowledged in the "Acknowledgements" portion of the Xu et al. NED manuscript. The assistance and guidance offered by me, Taleyarkhan and Cho does not rise to the level of co-authorship.

16. Statement on independence made in 1/06 PRL manuscript The only statement made in our joint 1/2006 PRL manuscript (with myself and Xu as co-authors with others) was

“These observations have now been independently confirmed.” This was appropriate for the following reasons: Compared with what we (Taleyarkhan, myself, et al.) did at ORNL, there were many differences with the experiment performed by Xu:

- First and foremost, similar observations were made by people different from the original team of the same observable phenomenon (in an experiment which should have produced the same or statistically similar results to support the premise). *This is the whole point.*

In addition, however:

- Xu et al. performed their experiments in a different experimental configuration,
- the experiments were performed at a different laboratory in a different state and institution,
- the experiments used a different method for nucleation (*e.g.*, Xu et al., used randomly emitted neutrons of various energies from an isotope source versus the use of a microsecond duration pulse of monoenergetic neutrons from an accelerator at ORNL),
- the experiments used different test cells,
- the experiments used different detection systems,
- the scientists performed their own calibrations,
- the scientists obtained their own data, and
- the scientists derived their own “observations” without the participation by me nor influence from any one of the original team.

Therefore, the use of the stated language is appropriate.

17. The Xu et al. NED (2005) manuscript was already published and Purdue’s own Press Release of 7/2005, which I saw, mentions the levels of participation by various entities involved.

18. None of the co-authors (including Xu), nor the referees nor editorial staff of PRL, saw anything wrong with nor challenged the statement on independent observations as documented. It was written, reviewed and agreed upon in a forthright manner.

19. Acknowledgment of sponsorship. Acknowledgment of sponsors by Taleyarkhan, myself, et al. for the 1/2006 PRL publication was in line with expectations. It has been publicly alleged (by Kenneth Suslick, Seth Putterman, and others) that the federal government (*i.e.*,

DARPA) should have been acknowledged, but this allegation has no merit based on evidence provided to me for review by Taleyarkhan. DARPA funding was not available during 2003 to mid-2005 when these experiments reported in 1/2006 PRL were conducted. Several co-authors, including me, worked alongside Taleyarkhan at their own expense to further the science and to answer the last remaining technical question from detractors (e.g., to be able to produce evidence of D-D fusion neutrons without use of external source of neutrons). I was already retired from ORNL during that time frame, but I am aware that it was and is common practice at universities and national laboratories for individuals to use part of their time (beyond the normal 8h workday) to pursue scholarly work. From evidence produced by Taleyarkhan, the gap in funding from DARPA was filled by DoE specifically to derive the technology of this work (and federal funding from DoE was not recognized by Taleyarkhan as agreed upon by DoE – based on email evidence provided by Taleyarkhan).

20. Taleyarkhan has provided details to me of the work that Taleyarkhan et al. performed at Purdue with the newly obtained funds from DARPA (via UCLA) during mid-2005 to 2/2006. The tabulated list of tasks conducted by Taleyarkhan et al. and the funds utilized for that purpose are reasonable. The work for the DARPA-UCLA project was identical to what our group had already published in 2002 (*Science*). For one knowledgeable in the field, this is radically different from the work conducted for the 1/2006 PRL studies. Our first draft was already being prepared for transmittal to journals by the time the DARPA-UCLA funds were put in place in mid-2005 based on the evidence Taleyarkhan produced. This is all consistent with what Taleyarkhan had told me previously.

21. It would be inappropriate to include acknowledgment for DARPA as having supported the research leading to the 1/2006 PRL publication, when, in fact, it was sponsored

from other sources (DoE, internal university and personal effort). It is unusual, to say the least, that DARPA itself has not voiced concern but our well-known detractors are doing so. Brian Josephson has aptly cited this allegation as "Putterman's Flawed Case." Just because a sponsor had provided support in the past does not entitle it to be recognized in the future for research accomplishments for which it did not provide funding. Where DARPA did indeed provide funding, our group acknowledged that support. There is no fabrication, misleading publication, or any wrongdoing whatsoever with regard to acknowledgement of DARPA funding by Taleyarkhan.

22. G60 Data on sonofusion. I have reviewed technical details of a report co-authored by Taleyarkhan, Dr. R. C. Block and others for confidential review purposes. The G60 data obtained at Purdue on 9.19.03 for neutron-gamma emissions during bubble fusion experiments with deuterated benzene mixtures (nucleated with an external Pu-Be neutron source) are in line with expectations upon consideration of interference from the electronic components present in the laboratory at the time. I agree with the assertions by my more experienced colleague Block that such interference issues should cancel themselves when subtracting data taken with cavitation on from cavitation off conditions. The difference data for the relative emission levels for neutrons versus gamma photons are in line with expectations of D-D fusion neutron emission. In short, I have reviewed the technical assessments presented in the report in detail and find it a credible piece of scientific work.

23. I consulted with Taleyarkhan et al. on the set up of neutron-gamma detector data acquisition trains involving well-established techniques and state-of-the-art components from reputable suppliers such as Ortec and Canberra. Indeed, I and separately Block, tutored Taleyarkhan et al. at ORNL and set up the detector system trains which produced the data

presented in the group's various manuscripts. It is my understanding (per discussions with Taleyarkhan) that a similar train was used in the G60 laboratory. If so, Taleyarkhan and Cho used techniques for detection that are well-accepted in the field. Spreading of the light decay signals from gamma and neutron interactions as noted on 9.19.03 is a phenomenon also noted in the experiments of Putterman et al. (PRL, 2007). Any such baseline effects can be reasonably expected to cancel out upon subtraction of nuclear particle signal detection between cavitation on and off conditions. The difference spectra (time decay of light pulses from neutron and gamma photon interactions with NE-213 molecules) clearly indicate that the neutron and gamma peaks are in the expected regions and well separated. The neutron counts are several times that of the gamma counts as would be expected from D-D fusion neutron emission. Furthermore, the difference in pulse-height spectra also show that the neutron energies are largely below 2.5 MeV (once again, as would be expected from D-D fusion).

24. I agree that the specific data of 9/19/03 are not pertinent for publication without conducting control experiments with non-deuterated liquids. From what I am told by Taleyarkhan, such experiments were not conducted. If not, the decision by Taleyarkhan et al. to not offer the limited scoping test data of 9.19.03 taken with deuterated benzene based mixtures *is reasonable* and prudent. Also, it is the prerogative of the persons obtaining the data to decide if and when to publish their work.

25. A credible response by Taleyarkhan et al. was peer-reviewed and published in PRL (10/2006) that convincingly refutes the allegations of fraud or fabrication for production of the results presented in our group's Jan. 2006 manuscript. The Cf-252 related issue is furthermore debunked conclusively as a consequence of the separate reports of confirmation by Forringer et al. (2006) as well as separately, from the June, 2006 report of findings by Prof. W. Bugg.

26. In my close to 20 years of association with Taleyarkhan as technical supervisor, mentor and colleague, I have never witnessed any unethical practice nor research conduct activity of any kind. Taleyarkhan has always shown resolve, high moral ethical standards, and exemplary persistence in reporting results the way they were obtained experimentally in the face of deplorable opposition from detractors and despite the fact that we may not have fully understood them at the time.

27. The above mentioned issues highlighted in the Press and the many allegations against Taleyarkhan, to the extent that I know them, are a tempest in a tea-pot and have no merit.

  
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DR. COLIN WEST,

1-30-2008