

Professor Leah Jamieson, PhD
Dean
College of Engineering
ENAD
Purdue University

September 5, 2006

Dear Dean Jamieson,

A plethora of evidence points to research misconduct in sonofusion-related research activities at Purdue. I strongly believe that the misconduct is well within the meaning of Purdue University's Policy on Integrity and Research (Executive Memorandum C-22) and therefore warrants appropriate actions as specified by the policy.

In earlier communications with the Dean's Office and the Examination Committee appointed by the Office of the Vice President for Research Examination to look into sonofusion research at Purdue, I have offered information pertaining to the misconduct. A summary of the main points is made below.

While at Oak Ridge National Laboratory, Dr. R. Taleyarkhan and a team of collaborators published in the prestigious journal Science (March 8, 2002) the results of an allegedly new approach to nuclear fusion, known as "sonofusion," where imploding bubbles in selective liquids are reported to generate thermonuclear temperatures and pressures capable of achieving nuclear fusion. Publication of additional results by Dr. Taleyarkhan and his collaborators followed in very prestigious journals that include, but are not limited to, Phys Review E and Phys Review Letters. Dr. Taleyarkhan joined Purdue's faculty in August 2003. Sonofusion has received significant attention in the scientific community but, despite claims to the contrary by Dr. Taleyarkhan, there has been no independent confirmation.

Dr. Taleyarkhan has been involved with two papers published by Purdue researchers in 2005 claiming independent confirmation of sonofusion results. The two papers are:

1. Xu, Y., Butt, A., "Confirmatory Experiments for Nuclear Emissions During Acoustic Cavitation," Journal of Nuclear Engineering and Design, 235, pp 1317-1324, 2005.
2. Xu, Y., Butt, A., Revankar, S., "Bubble Dynamics and Tritium Emission During Bubble Fusion Experiments," Proceedings of the 11th International Topical Meeting on Nuclear Reactor Thermal-Hydraulics (NURETH-11), Avignon, France, October 2-6, 2005 (Publication 548).

Mr. A. Butt was at the time a master's student working under Dr. Taleyarkhan's supervision and Dr. Y. Xu a postdoctoral student also working under Dr. Taleyarkhan's supervision in his lab; Dr. S. Revankar is an Associate Professor of Nuclear Engineering (his name appears as a co-author



School of Nuclear Engineering

Nuclear Engineering Building ■ 400 Central Drive ■ West Lafayette, IN 47907-2017
(765) 494-5739 ■ Fax: (765) 494-9570 ■ <https://engineering.purdue.edu/NE>

only in publication number 2 above). It is important to note that the only sonofusion experimental facilities at Purdue are to be found at Dr. Taleyarkhan's laboratory which has been funded through DARPA and internal funding.

On February 7, 2006 I requested an informal fact-finding committee comprised of three senior and highly respected members of the School's faculty to look into the circumstances of these two papers. A report was generated by the fact-finding committee (which was forwarded to Dr. Peter Dunn with cc to the Dean of Engineering on February 24, 2006). The committee's report raises significant questions as to the honesty of the reported conclusions and the actual authorship of the papers (Mr. A. Butt claimed that he did not contribute; Dr. Xu was not willing to confirm authorship; Dr. Revankar refused to respond).


Dr. Taleyarkhan's work published in Physical Review Letters entitled "Nuclear Emissions During Self-Nucleated Acoustic Cavitation," (PRL, 96, 034301, 27 January 2006) proclaims that publication number 1 above constitutes independent confirmation of his sonofusion claims. It should be also noted that in this publication no acknowledgment is made of DARPA's support, although Dr. Taleyarkhan's activities were supported by this federal agency in the months prior to submission.

A two-year research effort undertaken by students, faculty, and staff at the School of Nuclear Engineering, and supported by Dr. Taleyarkhan, failed to confirm sonofusion claims (see Tsoukalas, L.H., Clikeman, F., Bertodano, M., Jevremovic, T., Walter J., Bougaev, A., Merritt E., "Tritium Measurements in Neutron-Induced Cavitation of Deuterated Acetone," Nuclear Technology, Vol. 155, pp 248-251, 2006).

I believe that the two publications listed in the previous page are nothing but a contrived and hurried attempt to stage the appearance of "independent confirmation" of sonofusion claims. Regrettably, vulnerable individuals (students, junior faculty, postdoc) were used to stage this effort and the reputation of innocent people may have been damaged.

The activities of Dr. Taleyarkhan regarding confirmation of sonofusion research at Purdue appear to seriously deviate from practices that are commonly accepted by the scientific and academic community for conducting and reporting research. The said activities, therefore, are quite likely not in compliance with Purdue University's Policy on Integrity in Research (Executive Memorandum C-22).

Sincerely,



Lefteri H. Tsoukalas, PhD
Head of Nuclear Engineering

cc: Charles O. Rutledge, Vice President for Research
Peter E. Dunn, Assoc. Vice President for Research