

PURDUE

UNIVERSITY

OFFICE OF THE VICE PRESIDENT FOR RESEARCH
Office of Research Administration

Personal and Confidential

December 15, 2006

Prof. Rusi Taleyarkhan
c/o Mr. Larry Selander
Duane Morris LLP
227 West Monroe Street
Ste. 3400
Chicago, IL 60606

Leah H. Jamieson, Ph.D.
Dean
College of Engineering
ENAD
Purdue University

Re: Inquiry Committee Proceedings Under Executive Memorandum No. C-22

Dear Prof. Taleyarkhan and Dean Jamieson:

I write on behalf of the Inquiry Committee (IC) to provide the Committee's final conclusions regarding allegations of potential misconduct that have been made against Dr. Rusi Taleyarkhan.

The Inquiry Committee has considered the allegations set forth in the communications dated September 12, 2006 by Dr. Martin Lopez de Bertodano and September 5, 2006 by Dr. Lefteri Tsoukalas. The specific allegations considered by the IC were as follows:

- That the two publications ("Confirmatory Experiments for Nuclear Emissions During Accoustic Cavitation," *Journal of Nuclear Engineering and Design*, 235, pp 1317-1324, 2005, Xu, Y., Butt, A.; "Bubble Dynamics and Tritium Emission During Bubble Fusion Experiments," *Proceedings of the 11th International Tropical Meeting on Nuclear Reactor Thermal-Hydraulics (NURETH-11)*, Avignon, France, October 2-6, 2005) were "...nothing but a contrived and hurried attempt to stage the appearance of 'independent confirmation' of sonofusion claims."
- "... that Dr. Taleyarkhan participated in the Purdue confirmations reported in the two papers of his sonofusion experiment. The Purdue confirmations are not independent because the tritium measurements were performed with his tritium measuring instrument by a student working for him."

The Committee did not interpret these allegations as allegations of fabrication, falsification, or plagiarism.

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The Committee determined that the Bertodano and Tsoukalas allegations undertake to allege a serious deviation from practices "that are commonly accepted within the scientific and academic community for . . . reporting research," within the meaning of the definition of "research misconduct" under Executive Memorandum C-22.

Drs. Bertodano and Tsoukalas submitted no documentary evidence in support of their allegations. The Committee requested and received evidence from Dr. Taleyarkhan, Dr. Xu, and the others named as authors on the referenced publications. The Committee also requested and received evidence from Information Technology at Purdue (ITaP) regarding e-mail communication between Dr. Xu and Dr. Taleyarkhan relating to the manuscripts that are the subject of the allegations. Upon consideration of the evidence received, by unanimous vote, the Committee has concluded that there is insufficient evidence to warrant further pursuit of the Bertodano and Tsoukalas allegations.

As to the first allegation, the IC found no evidence that the scientific process leading to the abovementioned publications was unduly hurried, in light of the potential impact of the work. The IC recognizes that the appearance of Dr. Taleyarkhan's name in the Acknowledgments section of the NED publication undercuts the claim of independence. However, there is no evidence to indicate that Dr. Taleyarkhan played a role in acquiring or analyzing the data. Furthermore, evidence based on computer records shows that the first version of the NED manuscript was indeed authored by Dr. Xu, as reported by the fact-finding committee of the School of Nuclear Engineering. The tritium measurements were made using the Beckman LS6500 system. During the time Dr. Xu made the tritium measurements, he was, in fact, paid by the School of Nuclear Engineering. It is true, however, that Xu received advice from Dr. Taleyarkhan (hence, the Acknowledgement). While these facts may undercut the claim of "independent confirmation," the IC does not believe that the evidence points towards intent to mislead the scientific community.

Having reached this conclusion, the Committee nevertheless desires to convey a number of concerns it has regarding the conduct of Dr. Taleyarkhan (RT) with respect to the Xu papers in question.

1. Dr. Taleyarkhan has displayed what might be characterized most favorably as severe lack of judgment regarding his involvement with the "independent confirmation" experiment performed by Dr. Y. Xu. The IC found no evidence that would contradict Dr. Taleyarkhan's claim that he (Dr. Taleyarkhan) played absolutely no part in setting up or running experiments, nor obtaining data and conducting analyses thereafter, for the experiments documented in the Xu et al. papers. However, his involvement did consist of suggestions for inclusion of various specific technical details, text used to communicate with journal editors, and rebuttal of points made by referees. While one might dismiss the first two examples as providing guidance to an inexperienced junior colleague, the last instance is what would be expected from a co-author. The sum total of this involvement, which goes far beyond Dr. Taleyarkhan's description of "stylistic edits" undermines the claim of independent confirmation. The acknowledgement in the NED paper ("...setup and design...") grossly understates the level of involvement practiced by Dr. Taleyarkhan in the process leading to the published work.

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2. The Committee has difficulty reconciling the inclusion of Adam Butt as a co-author on the Xu publications in light of his contributions, especially when contrasted with the contributions of Dr. Taleyarkhan, which merited only an acknowledgement. This is an inconsistency that any experienced senior researcher would recognize. If Adam Butt deserved to be a co-author, so, too, did Dr. Taleyarkhan.
3. Although it appears that Dr. Taleyarkhan believes that the measurements by Dr. Xu constituted an independent confirmation of his earlier results, it is clear to the members of the committee that the great majority of the scientific community would disagree. Independent confirmation would have the following characteristics:
 - a. The experimental apparatus with which the experiment was performed would be significantly different from that used in the initial experiments. In particular, the critical gamma-ray detector (Beckman Instruments) would not be the very same one (with the same calibration curve) used in the earlier experiment.
 - b. The experiment would be performed by scientists who were not associated with Purdue University, and certainly not by individuals having close relationships to Dr. Taleyarkhan.
 - c. The involvement by Dr. Taleyarkhan would be minimal.

The fact that Dr. Taleyarkhan fails to acknowledge that these characteristics are essential to the credibility of the claim of independent confirmation is deeply troubling to the Committee. There is a clear danger that future such claims by Dr. Taleyarkhan will lack these same characteristics.

4. Dr. Taleyarkhan has placed junior scientists (postdocs, graduate students) in precarious positions in order to promote his research program. It is, of course, natural to mentor and assist junior people as they make the transition from inexperienced researcher to one able to lead an independent program. Dr. Taleyarkhan, however, has abused his privilege as senior scientist. He presented Adam Butt with a manuscript virtually hours before it would be sent to the editor of NED. Butt was told by Dr. Taleyarkhan, not Dr. Xu, that he would be an author. Being a junior researcher, Dr. Xu was in no position to contest this decision by Dr. Taleyarkhan. Such a decision is typically left to the primary author, not an individual named in the Acknowledgements.

The Committee has also taken note of other "independent" confirmatory research on sonofusion promoted by Dr. Taleyarkhan. Dr. Taleyarkhan apparently hosted an external group led by Edward R. Forringer, Assistant Professor of Physics, at Le Tourneau University to perform an experiment using Purdue facilities. A press release from Le Tourneau University dated November 17, 2006 states that "Two students and I went to Purdue University in May to conduct our own research, collecting, analyzing, and interpreting our own data that substantiated his previous work." Forringer published a paper in the Proceedings of the American Nuclear Society International Conference, Albuquerque, NM, Nov. 2006. It is highly doubtful that Forringer's results will be accepted by the scientific community as an independent test of previous results (as stated in the Introduction to their

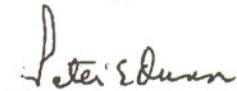
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manuscript). In the opinion of the IC, this is representative of poor judgment by Dr. Taleyarkhan and is unlikely to be accepted as confirmatory evidence by the scientific community.

Upon consideration of the evidence received, the Committee concludes that there is insufficient evidence to warrant the formation of an Investigation Committee to further pursue the allegations that have been made by Drs. Bertodano and Tsoukalas with respect to Dr. Xu's aforementioned publications.

Pursuant to Executive Memorandum C-22, this report will be securely stored in the office of the Research Integrity Officer for as long as required by federal regulations, and will then be destroyed. Evidence received and reviewed by the Inquiry Committee in addressing the Bertodano and Tsoukalas allegations will be maintained as an archive with this report and destroyed when the report is destroyed. In keeping with Executive Memorandum C-22, please keep your copy of this report and its contents confidential.

Sincerely,



Peter E. Dunn, Ph.D.
Associate Vice President for Research
Research Integrity Officer