

U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE AND TECHNOLOGY

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March 21, 2007

Dr. Martin C. Jischke, President
Purdue University
1031 Hovde Hall, Room 200
West Lafayette, IN 47907-1031

Dear Dr. Jischke:

Pursuant to Rules X and XI of the United States House of Representatives, the Committee on Science and Technology is delegated "the function of reviewing and studying, on a continuing basis, all laws, programs, and Government activities dealing with or involving nonmilitary research and development." Committee Rule 3(a)(5) authorizes the Subcommittee on Investigations and Oversight to carry out "general and special investigative and oversight authority on all matters within the jurisdiction of the Committee on Science and Technology."

Since 1981, this Subcommittee has examined the processes used by universities to investigate allegations of misconduct by their professors, staff and students in the conduct or representation of their research. Under the terms of the Federal Policy on Research Misconduct, agencies providing federal research funds depend on the recipient institutions to deal with questions raised about the integrity of all institution-conducted research, whether or not it is funded by a federal agency.¹ The credibility and strength of the U.S. research enterprise depends on the willingness of participating universities to assure the maintenance of ethical conduct in all research activities carried out by the faculty, students and other researchers under their jurisdiction. Misconduct in non-funded research will invariably raise questions as to whether the federal government can rely on the results of the institution's federally funded research.

Purdue University has recently looked into a case of alleged research misconduct. Despite the University's statement that no misconduct had occurred, many disturbing questions remain about the scope and adequacy of the investigation. Accordingly, the Subcommittee is seeking information relating to Purdue University's inquiry and/or investigation into allegations concerning the research and publications of Dr. Rusi Taleyarkhan, Purdue's Arden L. Bement Jr. Professor of Nuclear Engineering, and others.

¹ 65 *Fed. Reg.* 76260, 63.

In March 2002, Dr. Taleyarkhan *et al.* reported in *Science* that research he conducted at the Oak Ridge National Laboratory (ORNL) demonstrated that using sound waves to compress bubbles in deuterated liquids until they collapsed produced fusion under laboratory conditions.² If accurate, this work could result in a source of energy free of many of the environmental problems produced by existing energy types. This particular paper was controversial from the start. From 2002 to 2004, teams at both ORNL and Purdue attempted to replicate the earlier research. Neither was successful.³ However, Purdue officials persuaded the Purdue team to postpone publishing its results for a year. Then, in the summer of 2005, two students working in Dr. Taleyarkhan's laboratory published an "independent" verification of Dr. Taleyarkhan's work.⁴

In early 2006, questions raised by other nuclear engineering professors about this work resulted in the head of Purdue's nuclear engineering department conducting an informal investigation about the independent verification publication. That inquiry resulted in one of the students saying that he had nothing to do with the research in the article he supposedly co-authored, and the second student refusing to state who had written the final article, saying it would jeopardize the "confirmatory" nature of the research. In March of 2006, allegations of misconduct became public in *Nature* magazine. These included claims that Dr. Taleyarkhan had refused to share data; removed critical equipment from the laboratory, thereby hampering efforts to replicate his work; blocked publication of negative results by colleagues at Purdue; and manipulated the development and publication of papers asserted to be "independent" verification of his work by papers that were, in fact, from members of his laboratory staff.⁵ Subsequently, a written allegation of fraudulent data was received.⁶

Responding to the concerns raised by other Purdue professors on the team that had been unable to confirm Dr. Taleyarkhan's work and the *Nature* articles, Purdue in March initiated an inquiry "to conduct a thorough review of the work and any concerns expressed about it," according to Provost Sally Mason.⁷ The inquiry committee submitted a report to the vice president for research in June 2006.⁸ In July, Provost Mason stated that a formal investigation would be initiated. Under Purdue's rules, an investigation is initiated only after the initial inquiry finds that "an allegation or apparent

² Taleyarkhan, West, Cho, Lahey, Nigmatulin, and Block, "The Analysis of Bubble Implosion Dynamics," *Science* 295, 1868 (2002).

³ Shapira and Saltmarsh, "Nuclear Fusion in Collapsing Bubbles – Is It There? An Attempt to Repeat the Observation of Nuclear Emissions from Sonoluminescence," *Phy. Rev. Lett.* 89, 10, 104302 (2002); Tsoukalas, Clikeman, Bertodano, Jevremovic, Walter, Bougaev and Merritt, "Tritium Measurements in Neutron-induced Cavitation of Deuterated Acetone," *Nuclear Technology*, Vol. 155, 248, August 2006.

⁴ Xu and Butt, "Confirmatory Experiments for Nuclear Emissions during Acoustic Cavitation," *Nuclear Engineering and Design*, 235, 1317-24 (2005)

⁵ "Is Bubble Fusion Simply Hot Air?" and "Bubble Bursts for Table-Top Fusion," *Nature*, March 6, 2006, doi 10.1038/news 060306-2-3.

⁶ Letter from Dr. Ken Suslick to Dr. Peter Dunn, June 1, 2006.

⁷ "Purdue initiates objective review of 'bubble' fusion," Purdue News Service, March 8, 2006.

⁸ "Sonofusion research examination committee completes review," Purdue News Service, June 20, 2006.

instance of research misconduct warrants an investigation." The University has 90 days to complete such an investigation.⁹ An investigation also requires that the funding agency be informed of the action.¹⁰ But, inexplicably, in September – just as the 90 days were to expire – Charles Rutledge, Purdue's vice president for research, asked one of the complainants to provide a "written allegation of research misconduct" which apparently halted the on-going investigation and was used to trigger the procedures for a second inquiry into research misconduct.¹¹ On February 7, 2007, Purdue issued a statement that "[t]he committee determined that the evidence does not support the allegations of research misconduct and that no further investigation of the allegations is warranted."¹²

In a *Nature* article reporting on Purdue's release of the inquiry's results, Dr. Ken Suslick of the University of Illinois, Urbana-Champaign, criticized Purdue's inquiry for failing to address the concerns he had expressed in writing to your university on June 1, 2006. These included the apparent duplication of data sets in supposedly independent publications and possible manipulation of the neutron spectrum data reported by Dr. Taleyarkhan to avoid comparison to that produced by the standard radiation source californium-252. Dr. Suslick also stated he was never contacted or interviewed by those conducting Purdue's inquiry nor were others who had made allegations, including the author of the written allegations. Further, Dr. Peter Dunn, the associate Vice President for research, who oversaw the inquiry would not confirm that Dr. Suslick's allegations were addressed.¹³

Dr. Taleyarkhan's work has been supported by both the Department of Energy and, more recently, by the Defense Advanced Research Projects Agency (DARPA), according to Dr. Seth Putterman of the University of California at Los Angeles, the principal investigator. Dr. Suslick also worked on the DARPA grant. According to Department of Defense Instruction (DODI) 3210.7, the implementing authority for the Federal Research Policy for Misconduct at the Department of Defense and its component organizations, Purdue, "following an allegation of research misconduct made directly to it, whether related to an ongoing award . . . , the research institution is responsible for response to the allegation. This includes conducting the inquiry, investigation and, if applicable, adjudication of the application."¹⁴ Dr. Suslick's statements argue that Purdue has failed to meet these obligations.

Accordingly, by this letter the Subcommittee on Investigations and Oversight requests copies of any or all reports of inquiry or investigation prepared by any committee or equivalent organization constituted by Purdue University for the purpose of reviewing allegations of misconduct relating to bubble fusion research conducted by Dr. Rusi Taleyarkhan, his laboratory assistants, Purdue students, including post-doctoral

⁹ "Executive Memorandum C-22," Purdue University, Office of the President, Sept. 6, 1991, pp. 2-3.

¹⁰ 65 *Fed.Reg.* 76260, 63.

¹¹ Letter dated Sept. 5, 2006, from Charles Rutledge to Lefteri Tsoukalas.

¹² "Purdue integrity panel completes research inquiry," Purdue News Service, February 7, 2007.

¹³ "Disputed inquiry clears bubble-fusion engineer," *Nature*, February 15, 2007, pp. 690-91.

¹⁴ DODI 3210.7, Enclosure 4, Section E4.1.3, May 14, 2004 (emphasis added).

Dr. Jischke
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students, or any other Purdue faculty members. Please deliver two copies of the requested reports to the offices of the Committee on Science and Technology in Room B-374 of the Rayburn House Office Building by 5 p.m. on Friday, March 30, 2007. If your staff has any questions or needs further information, please contact Edith Holleman, Subcommittee counsel, at (202) 225-8459 or James Paul, Subcommittee professional staff member, at (202) 226-3639.

Thank you for your assistance in this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Brad Miller", written in a cursive style.

BRAD MILLER

Chairman

Investigations and Oversight Subcommittee

cc: Rep. James Sensenbrenner, Jr.
Ranking Member
Investigations and Oversight Subcommittee