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Researcher Cleared of Misconduct, but Case Is Still Murky

By [KENNETH CHANG](#)

A professor who contends that nuclear fusion can be generated in a tabletop experiment has been cleared of research misconduct by [Purdue University](#). But the refusal of university officials to answer any questions and their lack of detail in a statement released last week has left scientists to pore over the words like Kremlinologists, looking to divine meaning in what was said and what was not.

A committee reviewing the work of the professor, Rusi P. Taleyarkhan, “determined that the evidence does not support the allegations of research misconduct and that no further investigation of the allegations is warranted,” the statement said.

In 2002, Dr. Taleyarkhan, then a senior scientist at Oak Ridge National Laboratory in Tennessee, published his contention that fusion can be achieved simply by bombarding a container of liquid solvent with strong ultrasonic vibrations. The vibrations, Dr. Taleyarkhan and his co-workers said, violently collapsed tiny gas bubbles in the solvent, heating them to temperatures high enough to meld hydrogen atoms together and release energy.

Fusion, the process that generates heat and energy in the sun, has long been dreamed of as an almost infinite energy source, because the hydrogen fuel can be made by breaking apart water. Most scientists do not yet accept Dr. Taleyarkhan’s claims, because the findings have not yet been replicated in other laboratories.

“I certainly feel vindicated, not only for myself but my entire group,” Dr. Taleyarkhan said in an interview last week. “It’s been like a pressure cooker with all the heat on all the time.”

Purdue did not reveal what allegations the committee had considered. It even refused to state the number of inquiries that had been conducted.

The university originally announced last March that it had started a review of Dr. Taleyarkhan’s research, and three months later it said that the committee had finished its work — but that the conclusions, as well as any discipline or follow-up investigations, would be kept confidential.

In Wednesday’s statement, the university said that with Dr. Taleyarkhan’s permission, it was revealing the conclusion of the inquiry “in the interest of ending speculation.”

But the statement did not specify — and a university spokesman declined to answer — whether the conclusions came from the previously confidential inquiry that ended eight months ago or from a new

inquiry.

Critics of Dr. Taleyarkhan said other wording in the statement suggested that the university had disregarded concerns and accusations raised by non-Purdue scientists and instead had concentrated on one seemingly small issue: whether it was improper for the professor to have left his name off two scientific papers.

“The Purdue administration apparently narrowly focused the committee’s charge and avoided the question of whether the research was doctored,” said Kenneth S. Suslick, a chemistry professor at the University of Illinois at Urbana-Champaign.

Dr. Taleyarkhan said, “This has been an extremely thorough review.” Citing confidentiality obligations, he said he could not comment on any details.

Last June, Dr. Suslick sent an e-mail message to Peter E. Dunn, Purdue’s associate vice president for research, saying he believed that Dr. Taleyarkhan’s work might be fraudulent. Dr. Suslick made his accusations based on what he saw during a visit to Dr. Taleyarkhan’s laboratory in March last year as part of a review of a Defense Department grant that Dr. Taleyarkhan was receiving for fusion research.

Dr. Suslick said no one at Purdue responded to his message.

After moving from Oak Ridge to Purdue in 2003, Dr. Taleyarkhan published additional papers about the process, often called sonofusion or bubble fusion. But scientists in other laboratories were unable to reproduce the results.

Colleagues of Dr. Taleyarkhan in the nuclear engineering school, including Lefteri H. Tsoukalas, who was the head of the school at the time and hired Dr. Taleyarkhan, raised concerns about some of Dr. Taleyarkhan’s behavior.

Last week’s statement said that the inquiry was into “internal allegations” — and thus not those from researchers outside Purdue like Dr. Suslick — and that the allegations were “regarding a reported confirmation at Purdue of sonofusion.”

That appears to refer to a July 2005 announcement that two other Purdue scientists had also produced sonofusion. Dr. Taleyarkhan said this represented independent confirmation of his findings.

Others quickly questioned how independent the two scientists — Yiban Xu, a postdoctoral researcher, and Adam Butt, a graduate student — really were. Both were members of Dr. Taleyarkhan’s research group.

Dr. Taleyarkhan maintained that those experiments were performed in early 2004, before the two scientists joined his group, and that he had merely served as a consultant. (Mr. Butt did not join the group until May 2004 and did not participate in the taking of the data reported in the papers.)

Two scientific papers describing the results list Dr. Xu and Mr. Butt as authors, but not Dr. Taleyarkhan.

Dr. Taleyarkhan is thanked in the acknowledgments.

If the scope of the inquiry was limited to whether it was unethical for Dr. Taleyarkhan to have left his name off the list of authors, “I guess I’m not overwhelmingly surprised that the committee decided ‘Not proved,’ ” Dr. Suslick said. “But that’s not the real issue.”

In the Purdue statement, Joseph Bennett, a university spokesman, said, “Purdue believes that vigorous, open debate of the scientific merits of this new technology is the most appropriate focus going forward.”

The latest salvo in that scientific battle appeared last week.

In a paper published in Physical Review Letters, Dr. Suslick and Seth J. Putterman, a professor of physics at the [University of California](#), Los Angeles, and another persistent critic of Dr. Taleyarkhan, said they had precisely repeated the 2002 experiment. They reported that they found none of the neutrons that would be the telltale sign of fusion and put the upper limit at just one-10,000th of what Dr. Taleyarkhan had reported.

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