

Adams, Holly

From: Adams, Holly
Sent: Friday, February 09, 2007 11:35 AM
To: Walker, Jan; 'Coblentz, William'; Schmidt, Peter
Subject: FW: Sonofusion in the news; complete article from the Tribune

Today's news story:

Tabletop fusion claims ignite a furor at Purdue

By Jeremy Manier
Tribune staff reporter
Published February 9, 2007

Accusations of research misconduct have roiled the school of nuclear engineering at Purdue University over the last year, stemming from one professor's claims to have discovered a potential source of cheap energy through tabletop nuclear fusion.

The target of the allegations was exonerated this week in an academic report. But the inquiry's end is unlikely to quell the rivalries and professional trash-talking spurred by Purdue engineering professor Rusi Taleyarkhan's work.

Taleyarkhan, who led the controversial research while he was at Oak Ridge National Laboratory, co-authored a paper in 2002 purporting to show "bubble fusion" brought about by intense implosions of bubbles in a liquid bombarded with sound waves. Others have struggled without success to replicate the results, though Taleyarkhan says two little-recognized groups have done so.

The controversy escalated in March, when the journal Nature published a news report quoting scientists at Purdue and the University of Illinois at Urbana-Champaign who questioned the authenticity of the bubble fusion results.

That Nature report led Purdue officials to appoint a scholarly committee to investigate claims of wrongdoing. The university on Wednesday announced the panel's finding that "the evidence does not support the allegations of research misconduct."

But the committee's conclusions are unlikely to allay some doubters.

Ken Suslick, a professor of chemistry at the U. of I., said the panel appeared not to have considered an analysis by a UCLA physics team that suggested some of the fusion data may have been manipulated.

Neither Suslick nor other outside experts have directly accused Taleyarkhan of fraud. In an interview Thursday, Taleyarkhan said he considers himself vindicated.

"It was an extremely thorough review of the allegations," Taleyarkhan said of the inquiry. Of his own methods, Taleyarkhan said, "We reported our data just the way it came out."

But Purdue nuclear engineering professor Lefteri Tsoukalas, who recruited Taleyarkhan when Tsoukalas headed Purdue's school of nuclear engineering, still has questions.

Tsoukalas said he resigned in October as head of the nuclear engineering school so he could speak freely about his concerns over the research. That marked a turnaround for Tsoukalas, who in 2002 had directed graduate students to begin bubble fusion research to entice Taleyarkhan to join his faculty.

But then problems started cropping up.

"The more we got into the technique, the more elusive it became, more mysterious, like quicksand," Tsoukalas said.

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Tsoukalas said Taleyarkhan claimed in 2005 that Tsoukalas' team had confirmed the fusion findings. In fact, Tsoukalas said, his team had failed to replicate the results.

Some of the strongest claims against Taleyarkhan's work came from a team at UCLA led by physicist Seth Putterman. The UCLA group analyzed the claim that the tabletop fusion device had emitted neutrons--a potential signature of a fusion reaction.

But Putterman's group concluded that the neutrons' properties indicated they were not produced by fusion. Instead, the neutrons had a similar energy spectrum to what would result from the decay of a radioactive substance called californium-252.

In essence, the UCLA team was proposing that the neutron readings had come from a stray piece of radioactive material in Taleyarkhan's lab. It's a charge Taleyarkhan fervently denies.

"We've said this over and over again," Taleyarkhan said. "It's a big 'No.'"

Although Taleyarkhan considers himself exonerated, Suslick said the physics community has rejected the research.

"I'm unaware of any reputable scientist" who believes the fusion claim, Suslick said.

Taleyarkhan said he respects Suslick's work on the chemistry of bubble implosions, but the U. of I. professor "has no expertise in nuclear particle detection."

For Tsoukalas, the idea that Taleyarkhan's work was a mirage is painful.

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Subject:

FW: Washington Post; Today's Article on Bubble Fusion Determination (BFD)

Panel Clears Nuclear Engineer
Associated Press
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WEST LAFAYETTE, Ind., Feb. 8 -- A panel has rejected allegations that a Purdue University nuclear engineer interfered with efforts to verify his claims of producing "tabletop fusion."

The internal university committee investigating the work of professor Rusi Taleyarkhan determined that the evidence does not support allegations of research misconduct and that no further investigation is needed, Purdue said Wednesday.

The university's vice president for research, Charles O. Rutledge, appointed the committee last March after the British research journal Nature reported that researchers had raised questions about Taleyarkhan's work.

Taleyarkhan led a team at Oak Ridge National Laboratory in Tennessee that reported in March 2002 in the journal Science that they had achieved nuclear fusion by collapsing bubbles in a solvent with powerful ultrasound vibrations.

Their simple experiment stood in contrast to experimental fusion reactors that have to date required large, multibillion-dollar machines.

Since the 2002 report, however, scientists working in other laboratories have been unable to reproduce those findings.

"Taleyarkhan is engaged in very promising, significant research, and we hope he will now be able to give his full attention to this important work," Purdue spokesman Joseph L. Bennett said in a statement.

Taleyarkhan said in an e-mail that he and his colleagues were unfairly accused. "The inquiry offers vindication for what we've stood for and have stated all along about the science, our research, and the integrity with which we conduct, report and stand by our results and findings -- despite the intense attacks from detractors," he said.