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A Tentative New Hope for Discredited Cold Fusion

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Cold fusion is the dream that won't die for some nuclear physicists. If they could replicate the nuclear reaction that powers our sun under room temperature conditions, the thinking goes, humanity would gain a clean source of nearly limitless energy. Work on cold fusion has been relegated to the margins of science since a much-hyped experiment 20 years ago was discredited, but now a new team of researchers says they've conducted experiments that should reinstate the field. "We have compelling evidence that fusion reactions are occurring" at room temperature [EE Times], said lead researcher Pamela Mosier-Boss, of the Space and Naval Warfare Systems Center in San Diego.

On March 23, 1989, physicists Stanley Pons and Martin Fleischmann claimed to have created fusion reactions in a tabletop experiment, at room temperature. [Watch a video of the announcement here.] Their claims of producing small amounts of excess heat – energy – in their experiments were at first met with excitement, then skepticism and finally derision as other scientists were unable to reproduce the results [Houston Chronicle]. Most physicists eventually concluded that the extra energy was either a fluke or the product of an experimental error.

Mosier-Boss announced her team's new findings at a meeting of the American Chemical Society yesterday, twenty years to the day since the earlier declaration. She has also published the work in the journal *Naturwissenschaften*.

The theoretical underpinnings of cold fusion have yet to be adequately explained. The hypothesis is that when electrolysis is performed on [the heavy hydrogen isotope deuterium], molecules are fused into helium, releasing a high-energy neutron. While excess heat has been detected by researchers, no group had yet been able to detect the missing neutrons [*EE Times*]. But Mosier-Boss says that earlier experiments simply lacked the instruments to detect such a small number of neutrons.

Mosier-Boss says her team found the “tracks” left behind by high-energy neutrons, which, they suggest, emerge from the fusion of a deuterium and tritium atom [*New Scientist*]. In their experiment, researchers exposed a special type of plastic to the reaction, and they say the excited neutrons carved three minute grooves in the material. However, the team didn't prove conclusively that the neutrons were the product of fusion, and other researchers say the subatomic particles could have been created in some other, unknown nuclear reaction. For now, the debate over cold fusion will continue.

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