Cold fusion causes frenzy but lacks confirmation

- Worldwide attempts to reproduce results
- \$5 million may be given for US research

Washington, Tokyo & London

REMARKABLE reports of "nuclear fusion in a test-tube" achieved by two laboratories in Utah have prompted a frenzy of activity in laboratories around the world as others try to replicate the experiment.

First news of the reported breakthrough in 'cold fusion' came from a press conference on Thursday, 23 March, at the University of Utah in Salt Lake City. Stanley Pons, a professor of chemistry at Utah, and his colleague Martin Fleischmann from the University of Southampton reported that they had achieved fusion by passing a current through a palladium electrode in an electrolyte solution in deuterated water. By the next day, on the basis only of newspaper accounts of the experiment, laboratories around the world were scrambling to copy the experimental design.

At the same time, traffic started flying across computer networks as interested chemists and physicists sought details of the experiment. By the end of last week, preprints of papers prepared for publication by both Pons and a second Utah group, led by Steven E. Jones of Brigham Young University in Provo, were available on electronic bulletin boards.

Numerous laboratories in the United States have attempted to replicate the findings. Los Alamos National Laboratory, Lawrence Livermore National Laboratory, IBM in Yorktown Heights, New York, AT&T Bell Laboratories in New Jersey and the University of Illinois at Champaign-Urbana are just some of the institutions that are said to be looking into the Utah claims, although none has reported unequivocal confirmation. The price of palladium has reached new heights on commodity markets.

Professor Noboru Koyama of the Tokyo University of Agriculture and Chemistry reported at a meeting of the Chemical Society of Japan on 1 April that his team had detected very large amounts of heat and gamma rays in an experiment two days earlier when they passed an electric current between palladium and platinum electrodes in an insulated tube filled with heavy water. However, Japanese experts who have seen Koyama's results expressed scepticism about the validity of the claim because no measurements of neutron yield were made. Koyama says he will try to duplicate the experiment with the Japan Atomic Energy Research Institute to determine neutron yield.

In Britain, teams from the University of

Birmingham and the Rutherford Appleton Laboratory and the UK Atomic Energy Authority at Harwell are attempting to confirm the results, and two scientists at the University of Debrecen in Hungary, Gyula Csikai and Tibor Staricskoi, claim to have obtained the same results as Fleischmann and Pons, but no details of their experiment are yet available.

In Italy, the Ettore Majorana Centre for Scientific Culture has announced a

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AP Laser Photo.

Pons and Fleischmann: handling it carefully. world conference for next week (12 April) in Erice to discuss the cold-fusion experiments. Europe, the Soviet Union and the United States are about to launch a ten-year, \$1,000-million project to study the viability of fusion by inertial confinement using X-ray lasers, but all may change pending the conclusions of the conference.

Press interest, as well as interest from the scientific community, remains at a fever pitch. At a seminar last week at the Salt Lake City campus, Pons presented additional details of the experiments to a packed lecture hall. He reported that his laboratory had achieved even greater energy efficiency from the experimental apparatus, although he joked that it would be 100 years before the technology could be made commercially available. Pons warned those trying to replicate the experiment to be extremely careful, as his own early attempts had led to heat generation that had run out of control.

The Brigham Young group has been less forthcoming in public about their results. They believe they are seeing a signal indicating that the deuterium atoms are fusing inside the palladium lattice, although they have not seen the same energy output recorded by Pons and his colleagues.

The US Department of Energy (DoE) has been interested in research in cold fusion for some time. According to a DoE

spokesman, the agency has spent some \$9 million in this field, with \$1.9 million going to Jones. A proposal from Pons submitted last fall for DoE support for a project to "further explore nuclear fusion reactions in deuterium-charged palladium" was approved by DoE's Advanced Energy Projects Division, and \$322,000 is expected to be released for the project later this spring.

The state of Utah has shown even greater enthusiasm. The day after the University of Utah press conference, Governor Norm Bangerter announced he would convene a special session of the state legislature for the sole purpose of considering a supplementary budget request of \$5 million for a new institute to pursue research in cold fusion. National Aeronautics and Space Administrator James Fletcher has agreed to sit on an advisory panel for the new institute once it is created. A spokesman for Bangerter says the new money is contingent upon confirmation of the Pons experiment, but it is unclear whether that will come before the legislature holds its session tomorrow (7 April). □

AUSTRALIA

Human embryo experiment banned

Sydney

THE state government in Victoria has overturned a decision to permit a controversial experiment on human embryos and one member of the committee to regulate *in vitro* fertilization (IVF) has resigned in protest. The experiment, designed to test human embryos for birth defects before implanting them in patients, would have been the first to involve embryos older than 22 hours. Dr John Henley, who resigned, is a theologian and master of one of Melbourne University's colleges. He has been a member of the Standing Review and Advisory Committee on Fertility, chaired by Monash University's Professor Louis Waller, from its inception.

The experiment was to have been carried out by the IVF research group at Monash University, headed by Dr Alan Trounson. It would have involved the biopsy of 11 embryos that had been slow to grow. Trounson says that the experiment was approved unanimously by the committee. "It even passed without comment from Father Harmon (the representative of the Roman Catholic Church), who is not allowed to approve of anything."

According to Trounson, the government's intervention came in response to public pressure, provoked by newspaper reports saying that the experiment would lead to genetic engineering and cloning. He says that "the government's action is an unfortunate politicization of the whole exercise".

Charles Morgan