OPENING ADDRESS

By

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Welcome to the First Annual Cold Fusion Conference sponsored by the University of Utah National Cold Fusion Institute. My name is Fritz Will and, as director of the Institute, it is my pleasure to open this conference at which more than 200 attendees will have the opportunity to share the results in cold fusion research, as presented by 40 speakers from the United States, India, Italy and Taiwan.

The objectives of this conference are, as in any scientific meeting, to provide a forum for scientists to present the results of their research and to discuss the findings of others, thereby stimulating new ideas and advancing our understanding.

It has now been one year since Drs. Fleischmann and Pons announced that they had observed nuclear fusion at room temperature. They reported that they had observed unusually large amounts of excess heat and evidence for the occurrence of nuclear reactions when applying an electric current between a palladium cathode (negative pole) and a platinum anode immersed into an electrolyte solution of LiOD in heavy water (D_2O).

The announcement evoked euphoria in many, but skepticism in some. The possible technological implications were and are enormous. But, what was originally believed to be simple experiments that could be readily reproduced in other laboratories, turned out to be complex phenomena that defied confirmation in many laboratories and which cannot be explained on the basis of classical nuclear physics.

However, persistent and careful work by recognized experts in the fields of electrochemistry, nuclear measurements and materials science has now led to confirmation of the Fleischmann and Pons results in many laboratories in the United States, Japan, India, Italy, Russia and several other countries.

The papers to be presented during this conference will report on the generation of excess heat, determined in careful calorimetric measurements, observations of tritium levels far in excess of background, and the detection of strong neutron emissions. The multitude of results obtained by so many different groups can no longer be explained away as experimental artifacts. The reality of these effects is further underscored by the absence of such effects in carefully executed control experiments, employing hydrogen instead of deuterium or platinum instead of palladium. At this conference, another significant set of presentations will occur. Theoretical physicists will present novel theoretical models aimed at explaining why nuclear fusion can occur in solids, where classical nuclear physics (applicable to gases) fails to provide explanations.

While the key observations relating to cold fusion have been confirmed by many competent groups, it is also true that the phenomena cannot be reproduced on demand and that an understanding of the underlying mechanisms is not at hand. The phenomena involve surface chemistry and the behavior of a metal loaded with deuterium. Appreciating the complexities and well-known irreproducibilities involved in each of these cases individually, many scientists are not surprised that one year of research and development have not been sufficient to unravel the complexities of cold fusion, which combines both cases.

The history of science and technology has many examples where irreproducibility had been experienced for years. A prominent case is the metaloxide semiconductor. It took years of effort with multi-million dollar expenditures to achieve reproducible performance of such semiconducting devices. What ultimately led to reproducibility was the careful control of the level of impurities, most notably, sodium.

The basis of many critics for rejecting cold fusion out of hand has been that the experimental results violate the predictions of classical nuclear physics and, hence, must be erroneous. It is not the first time in science that a radically new finding has defied traditional thinking and existing theories. Nor is it the first time that a revolutionary discovery has been rejected by a large fraction of the scientific community. A prominent example is Galileo's declaration that the earth circles around the sun rather than vice versa. We recall that Galileo was ultimately forced to swear that his revolutionary new concept was false after all.

We know that we live in much more enlightened times today. We know that experimental results cannot be declared wrong by voting. We know that the reliable results obtained by a minority must not be regarded as wrong only because a majority of others has failed to confirm these results within one year.

Research into the intriguing phenomena of cold fusion must and will continue. It will continue because dedicated scientists will not rest before the phenomena of cold fusion are fully understood and because sponsors with vision will continue to support the progress of science. The scientific process of seeking understanding must not be interfered with. The freedom of science is just as basic as the freedom of speech.

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