

Cold Fusion: Energy Production of the Future?

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 Engineering Physics 6D3
 Saturday November 29, 2003

And Then There Was Heat...

- On March 23, 1989 a press conference was held at the University of Utah in Salt Lake City where two reputable chemists, Drs. Martin Fleischmann and Stanley Pons, claimed an electrochemistry experiment generated a large amount of power in the form of excess heat, an amount that could not be accounted for by science.

Truth or Fiction

- The press release from the conference stated:
 - [They] have...created a sustained nuclear fusion reaction...This generation of heat continues over long periods, and is so large that it can only be attributed to a nuclear process...reactions lead to the generation of neutrons and tritium...The device...produces an energy output higher than the energy input
- ref Excess Heat

Where is Rumpelstilskin When You Need Him?

- The experiment involved creating an electrochemical cell.
- The cell was created by first filling a glass thermos with heavy water (D_2O) with lithium dissolved to form an electrolyte.
- Immersed in the center of the flask is the cathode electrode, a palladium metal rod.

Where is Rumpelstilskin when you need him?

- The anode is a platinum wire that is wrapped against the inside wall of the flask.
- An external direct current is passed between the two electrodes.
- The electric current causes the water to break down into its constituents parts; oxygen gas bubbles off the anode (+), deuterium gas off the cathode (-).

The Cell

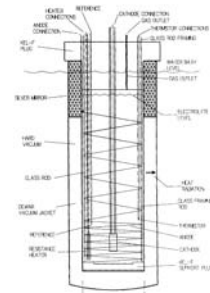


FIGURE 1. A thick-walled and thin-walled tubes to high a thick-walled.

The Results

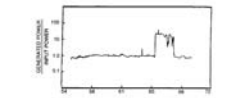
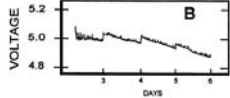
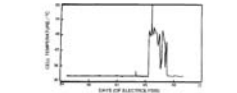
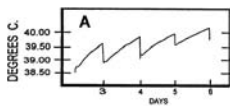


FIGURE 4.1: Fleischmann offers a qualitative display of some test power. When the cell voltage decreases, the cell temperature decreases, but the cell temperature continues to rise.

FIGURE 4.2: Fleischmann reported the temperature of the cell's electrolyte liquid phase against the number of days of continuous electrical excitation.

FIGURE 4.3: Fleischmann reported the energy flow over the time of observation as displayed for days 14 to 21.

Scientific Disbelief

- In the course of several months following the press conference, four prestigious laboratories reportedly failed to replicate the anomalous power claim.
- Orthodox scientists did not look at the heat data and instead demanded that the chemists show evidence of the nuclear products produced by the nuclear reaction.

Perhaps, Perhaps...

- However, during the following summer two independent laboratories finished anomalous heat experiments that corroborated those of Fleischmann and Pons.
- More reports of successful experiments continued to be reported in the months to follow.

Possible Theories...

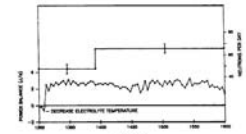
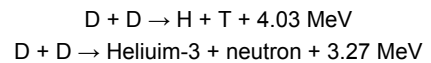


FIGURE 4.4: A plot shows the presence and separation of the 3He and H3He QMS.

FIGURE 4.5: From URSI, reported anomalous power and system. However, we depicted as their average value. Extra energy is shown as the one-trial signal (right).

...Then Again, Maybe

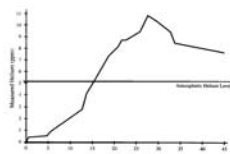
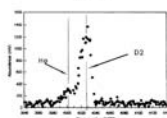
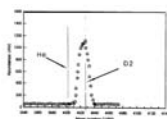
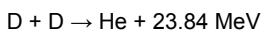


FIGURE 4.6: Mass spectrum of the product of the cell's electrolyte liquid phase using the cell's electrolyte liquid phase.

FIGURE 4.7: The time evolution of the cell's electrolyte liquid phase during the time of observation as displayed for days 14 to 21.

Conclusions

- "Cold Fusion" technology has demonstrated an excess production of energy
- This technology requires further research to fully understand the chemical and nuclear theory
- Great potential for significant energy production in the future