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results. There are lots of people who have seen large amounts of tritium. In very quickly perusing the copy I just got of the ERAB [the DOE Energy Research Advisory Board] report, it appears to me that that committee didn't pay much attention to the tritium observations. . . . They seem to pay much more attention to neutrons, which are evidently not that important. If you believe the tritium results, you've got to believe that something nuclear is happening.

EIR: So, that's a whole new ball game. It looks very exciting for the future.
Huggins: We think it's certainly very, very interesting and potentially could be very important. . . . It's a big surprise to us as well as to a lot of other people. And, I believe, that anybody who feels that the whole thing is an experimental artifact has got his head in the sand.

Interview: Nigel Packham

'Something is producing tritium and excess heat'

Nigel Packham is part of the Texas A&M team, working under John Bockris and Kevin Wolf at the Department of Chemistry and Cyclotron Institute, that reproduced part of the Fleischmann-Pons cold fusion experiment soon after the initial Utah announcement. The Texas A&M group was also the first to announce the detection of large amounts of tritium in a cold fusion cell. Packham was interviewed by 21st Century *managing editor Marjorie Mazel Hecht on Dec. 5, 1989.*

EIR: What's new in cold fusion at Texas A&M?
Packham: Recently we've had a cell in which we saw both heat and tritium at the same time. It shows that the tritium we have found can only really account for about 0.1% of the heat that we see at the same time. . . .

EIR: Can you explain that in a little more detail?
Packham: If you take into account all of the energy that could have been produced by the tritium evolution, where each act of tritium production gives you 4.02 MeV (megaelectron volts), and you know the rate at which the tritium is being evolved, then you can calculate the power that is produced in that time.

If all the heat was being produced from, for example, a deuterium-deuterium fusion reaction producing only tritium, for example, and if you take into account at the same time the amount of heat (or excess heat) that is being produced and integrate that and find the total power produced during the same time, it should be able to be accounted for totally by the tritium energy.

Well, when we do the calculation, it comes out that it isn't, in fact; the tritium accounts for only about 0.1% of the heat produced.

EIR: That's very low!
Packham: Yes. So really what it shows is that there is something else going on. We don't know *what,* but it's something else. . . .

EIR: Has this amount of tritium been seen in one cell or more than one cell?
Packham: The tritium with a direct correlation to the heat has only been seen in one cell. I do know that Dr. Guruswamy at the National Cold Fusion Institute in Utah has obtained a similar result, but not as high tritium values as we have seen. Really, I think our experiment is the first time that tritium and heat have been seen in the same cell. . . .

EIR: What is your thinking about a theoretical explanation for the production of tritium?
Packham: One of the theories that needs to be developed is how to account for the tritium with no neutrons. Apart from the Japanese people that just came out this week saying they had large numbers of neutrons—40,000 a minute—there really aren't that many reports about neutrons from anywhere in the world.

In general, when I was in Utah, the feeling was that this is a so-called aneutronic process. Again, theories abound as to what may be going on, but let's say that it is not deuterium-deuterium (D-D) fusion. Let's say that it's hydrogen-deuterium (H-D) fusion. Now, I'm not enough of a theoretician to know whether that's possible or not. I've got a feeling that it would just form an unstable product and then fall back to H-D.

We've discussed that around somewhat. But it would account certainly for the fact that we usually get large amounts of tritium without neutrons. I think that's another thing that we just have to work on.

A theoretician in our group is working on the nuclear structure of the deuteron. Perhaps, just perhaps, when a deuterium becomes adsorbed on the surface of an electrode, the nuclear distances which are normally present may be extended because of the field that they are in, up to maybe 20 fermi. In that case, the structure or the tightness with which the neutron and the proton are bound together is lessened or weakened.

In that respect it may be able to direct the reaction toward tritium, rather than neutrons. But that is still something *very* speculative. I would love to be able to tell you that we have a theory that can account for all of this, and prove that theory, but I don't think anyone really can. . . .

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