



## Comments Regarding the Storms Paper

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The paper, "Cold Fusion from a Chemist's Point of View," is divided in two parts. In the first part, Storms explains the difference between hot fusion and cold fusion. The mechanisms of hot fusion and cold fusion cannot be the same. For example, in fractofusion the mechanism is identical to hot fusion (it is not LENR), and the reaction products are the same as those of hot fusion. Cold fusion operates under a different mechanism. Storms assumes that hot fusion operates under the basic laws of thermodynamics which explain the data observed. On the other hand, cold fusion operates under the laws of statistics. This is the explanation of the different behaviors between hot and cold fusion. Storms assumes that the mechanism of LENR is the same for all isotopes of hydrogen, and should occur in the same type of environment which he calls the nuclear active environment (NAE). This first part of the paper is factual and, according to Storms, all theories should be in accordance with the experimental observations.

In the second part of the paper, Storms makes a proposal. He suggests that the NAE is in fact a crack. The reaction between hydrogen isotopes occurs in the middle of these cracks. They are, according to Storms, sort of floating in the center of the cracks. Because of this special configuration, the nuclei can get closer and closer, losing energy by emission of soft X-rays, which are difficult to detect because they are absorbed by the material. They are the cause of the heat production.

There is not much to criticize in the first part which is observational. However, in the second part, Storms makes a guess, which is not easily proven. The idea that hydrogen nuclei are sitting at equal distance on the walls of the crack is only possible if repulsive forces are acting on these nuclei. If they were attractive, they would immediately stick on one

side or the other. Storms does not say anything about this point. Also, experiments have shown that it is necessary to be in a dynamic state in order to have LENR. Storms does not emphasize this point. The emission of soft X-rays is very appealing, and looks like what is happening in chemical reactions where no photon of the binding energy is emitted during a chemical reaction, but many photons of lower energy are emitted during the reaction process.

I am not a theoretician. However, in order to perform experiments, I need to use a model which is not a theory, but a guideline that will facilitate my experimental options. In my mind, it is necessary to be in a dynamic state. It has to be some condition where diffusion occurs, for example by a gradient in the pressure, by electrical current, or even a temperature gradient.

Any theory, should explain all the experimental observations, be they major or secondary. Obviously, this is very difficult, because of the large variety of experimental observations. It is clear to me that the reaction occurs in a special environment, otherwise LENR would have been discovered long ago. This environment is not necessarily a crack or a void, but is, to my understanding, a surface effect. A crack defining two surfaces is as good as a surface.

### About the Author

Dr. Jean-Paul Biberian was a physics professor at the Aix-Marseille University in France. He has been working for 20 years in the field of LENR, performing experiments by electrolysis and in gas phase. Dr. Biberian is Editor-in-Chief of the *Journal of Condensed Nuclear Science*.

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