

20110118 Chubb Gluck Storms CMNS List.txt

Subj: CMNS: H2 purity in Rossi demonstration; name used to describe the reaction.
Date: 1/18/2011 11:51:11 AM
From: francesco.celani@lnf.infn.it
Reply-to: cmns@googlegroups.com
To: cmns@googlegroups.com

Il 18/01/11 18:32, Scott Chubb ha scritto:
How pure was the H2 gas? Magnetic effects and even a small amount of D2 could initiate the effect. The failure to monitor D2 in these experiments continues to be a question that

has to be resolved.

Scott

On Jan 18, 2011, at 11:02 AM, Edmund Storms wrote:

Dear Peter and all who responded to my question,

First of all, a good description of the demonstration is at <http://lnr-canr.org/acrobat/RothwellJbrieftechn.pdf>.

As for your comment, it is essential to analyze the results in terms of how we know Nature has to behave. By doing this, we can gain increased understanding of what is actually

happening in the Rossi apparatus, information that Rossi has not provided. First, we must accept that the excess power is real and ask what characteristics of the energy-producing

reaction would produce the observed behavior.

If the energy-producing reaction were exothermic with a positive temperature coefficient, the device could not be controlled and the temperature would continue to rise until the

device was destroyed. This would be like mixing H2 and O2 gas and then trying to slow the reaction by removing heat at the correct rate to produce a constant rate and temperature

as the reaction proceeded. This kind of control is simply not possible. Therefore, the energy-producing reaction must be self-controlling, i.e. have a negative feedback mechanism.

How is this possible?

The energy producing reaction for the Rossi and all CF applications has two components. The nuclear reaction requires a structure to be produced in which the nuclear reaction is

initiated and allows the energy to be dissipated. I call this structure the nuclear-active-environment (NAE). Formation of this structure has been observed to be spontaneous,

therefore it is exothermic and the rate of formation increases with temperature. If this were the only process, CF and the Rossi device would heat until the apparatus was

destroyed, a fact that most theories ignore. Fortunately, as temperature is increased, the concentration of the reactant, hydrogen in Rossi's case and deuterium in the other

branch of the effect, is reduced. We all know from basic chemistry that when the concentration of a reactant is reduced, the rate of reaction using that reactant must go down.

Consequently, competition between the rate being increased by temperature and decreased by loss of hydrogen or deuterium, results in a temperature at which the energy-producing

reaction has a maximum rate. In Rossi's case, this temperature is above but near 101° C. If the temperature attempts to go above this value, the rate of energy production

automatically drops and the temperature is prevented from rising higher. This is how all systems containing a negative feed-back mechanism must behave.

Suppose we want to remove energy from such a system. Removing energy causes the temperature to drop, which reduces the rate of energy generation. If we want to maximize the rate

of energy generation, we must hold the temperature constant at the critical value. This can be done by changing the applied energy and matching it with the energy loss caused by

cooling. If this process is done carefully, a source of constant power at constant temperature can be achieved. So far, this is all basic engineering 101.

The behavior of the Rossi device demonstrates that he has achieved this stable condition, which is only possible if the two conditions described above are operating in his

apparatus. These two conditions will operate in ALL CF cells producing energy. We see how the two conditions interact on a small scale in the flashes of light observed by Szpak

et al. when Pd is electrodeposited - energy is produced, temperature rises, D is lost, temperature drops with the cycle repeating as D is taken up by the active region. Rossi has

caused the effect on a large scale while under control.

Consequently, the Rossi effect is consistent with how all CF devices are expected to behave and provides an insight into how they must be designed. Because the critical

temperature might exist only over a small temperature range, failure to cause CF might be partially related to not having entered this critical temperature range. If the

temperature is too low, the formation rate of the NAE is too small to produce detectable heat and if the temperature is too high, the concentration of D is too low to allow a rate

that produces detectable heat. In other words, some cells might have the ability to produce power if the right temperature were used.

Rossi has shown that this insight is important and that his reaction, even though it

uses H₂ and Ni rather than D₂ and Pd, has all the characteristics of what we have identified

as cold fusion. I suspect the heat does not result from transmutation but from formation H-H-e fusion to give deuterium. The small amount of transmutation that results gives

stable isotopes just like such transmutation found in CF cells. Consequently, we need to examine his results using what we know about the deuterium system.

The bottom line is that Rossi is initiating cold fusion and the reactions have all the characteristics observed when deuterium is used. Nature has only one song but with

different words.

Ed

On Jan 17, 2011, at 11:55 PM, Peter Gluck wrote:

Dear Ed,

As all LENR reactions, this one takes probably part in NAE- localized active sites. There is a temperature at which the reaction starts, a plateau -range at which it works; above

this plateau the activity decreases and even stops.

A runaway reaction leads to the melting of the nanometric Ni plus catalyst (?) particles- first locally then globally. I think this vision is consistent with the mode in which the

reaction was controlled. Rossi claims to have reactors operating for months.

I find it strange that you, an real "male Solveig" of Cold Fusion/LENR, like me- (see my blog <http://egooutpeters.blogspot.com>) are focusing on this particular aspect on the

issue, instead of thinking about why this device (and Piantelli's!) works reproducibly - and other LENR systems do NOT. And be happy- within some auto-imposed limits.

Peter

On Tue, Jan 18, 2011 at 6:32 AM, Edmund Storms <storms2@ix.netcom.com> wrote:

While the debate as to whether the Rossi results are real or not rages on, I would like to suggest that the apparatus shows impossible and inconsistent behavior.

Rossi proposes that a reaction is initiated in a material that generates energy. This reaction requires a high temperature to get started. Therefore, like all exothermic

reactions, the rate is increased as temperature is increased. In other words, as the temperature goes up, more energy is released causing the temperature to go up

even more.

Such reactions must be controlled by a negative feedback mechanism to prevent runaway heating. Such reactions in chemical systems are controlled by limiting the amount of one or

more reactants. This is not possible in the proposed system because the H₂ contains essentially an infinite amount of energy that is not limited in any way. Consequently, this is

a potentially an unstable system (i.e. bomb) requiring very fast and effective temperature control. What is the control mechanism used in the Rossi device?

Water is flowed through the device, which removes energy and could prevent runaway heating if the rate of water input were tightly coupled to the temperature of the reaction zone.

This is very difficult to do when the water is converted to steam because such a process is very unstable in the amount of local energy removed. As a result, the local

temperature within the active zone will fluctuate, resulting in unstable behavior. I see no indication that this expected behavior was reported. In fact, the steam temperature was

reported as being constant.

In all systems of this type, the output temperature will fluctuate around the control temperature no matter what control mechanism is used. For the Rossi device to be consistent

with this required behavior, the temperature of the steam would be observed to vary over a range with a time constant characteristic of the apparatus. This was not reported to be

the case. In other words, the device does not show the required behavior. The behavior is only consistent with a source of energy that is not related to the acquired temperature

of the interior parts. This conclusion is at odds with how the apparatus is said to respond to applied power.

In other words, this apparatus may show excess energy but its basic behavior is not consistent with how an energy generator of the proposed type must behave. Why???

Ed

For what I can understand, the Hydrogen used was of standard natural abundance about Deuterium content.

Anyway, I will try to get more accurate information by Rossi.

* Please note: Rossi-Focardi NEVER USED the word COLD FUSION energy/experiment. They used the word "Energy Catalizer".

My opinion is that it can be important about the effective reaction.

Please, remember, the other elements added to Ni are MANDATORY to get energy!

My best,

Francesco CELANI

20110118 Chubb Gluck Storms CMNS List.txt