« **Cold nuclear fusion** **A detailed Qualitative Approach to the Cold Fusion Nuclear Reactions of H/Ni** »

Generalized Theory of Bose-Einstein Condensation Nuclear Fusion for Hydrogen-Metal System

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ABSTRACT Generalized theory of Bose-Einstein condensation nuclear fusion (BECNF) is used to carry out theoretical analyses of recent experimental results of Rossi et al. for hydrogen-nickel system. Based on incomplete experimental information currently available, preliminary theoretical explanations of the experimental results are presented in terms of the generalized BECNF theory. Additional accurate experimental data are needed for obtaining more complete theoretical descriptions and predictions, which can be tested by further experiments. **I. Introduction** Over the last two decades, there have been many publications reporting experimental observations of excess heat generation and anomalous nuclear reactions occurring in metals at ultra-low energies, now known as „low-energy nuclear reactions" (LENR). Theoretical explanations of the LENR phenomena have been described based on the theory of Bose-Einstein condensation nuclear fusion (BECNF) in micro/nano-scale metal particles [1-3]. The BECNF theory is based on a single basic assumption capable of explaining the observed LENR phenomena; deuterons in metals undergo Bose-Einstein condensation. While the BECNF theory is able to make general qualitative predictions concerning LENR phenomena it is also a quantitative predictive physical theory. Some of the theoretical predictions have been confirmed by experiments reported recently. The BECNF theory was generalized for the case of two species of Bosons [4]. Recently, there were two positive demonstrations (January and March, 2011) of a heat generating device called “Energy Catalyzer” [5]. The Energy Catalyzer is an apparatus built by inventor Andrea Rossi, Italy. The patent application [5] states that the device transforms energy stored in its fuel (hydrogen and nickel) into heat by means of nuclear reaction of the two fuel components, with a consequent observed production of copper [5,6]. According to Rossi"s patent application [5], heating of the sample is accomplished by an electric resistance heater. Details of March 2011 demonstration were reported by Essen and Kullander [7]. The report [7] also contains references to January 2011 demonstration. In the following, we describe hydrogen-nickel reactions in section II. Other possible reactions are discussed in section III. Conclusions are given in section IV. **II. Hydrogen-Nickel Reactions** The generalized BECNF theory [4] can be applied to the case of hydrogen-nickel fusion reactions observed in Rossi"s device (the energy catalyzer) [5] under the following two conditions: (1) additives used (not disclosed in the patent application) form Ni alloy and/or Ni metal/alloy oxide in the surface regions of nickel nano-scale particles, so that Ni atoms/nuclei become mobile with a sufficiently large diffusion coefficient and (2) local magnetic field is very weak in the surface regions, providing a suitable environment in which two neighboring protons can couple their spins anti-parallel to form spin-zero singlet state (S=0). Relatively low Curie temperature (nickel has the Curie temperature of 631 oK (~358 oC)) is expected to help to maintain the weak magnetic field in the surface regions. If Rossi"s device is operated at temperatures greater than the Curie temperature ~358 oC and with hydrogen pressures of up to ~22 bars, the conditions (1) and (2) may have been achieved in Rossi"s device. The mobility of Ni atoms/nuclei (condition (1)) is enhanced by the use of an electric resistance heater to maintain higher temperatures. This may provide a suitable environment in which more of both Ni atoms/nuclei and protons become mobile, thus creating a favorable environment for the case of two species of Bosons (Ni nuclei and composite Bosons of paired two protons). If the velocities of mobile Ni atoms/nuclei under the condition (1) are sufficiently slow, their de-Broglie wavelengths become sufficiently large and may overlap with neighboring two-proton composite Bosons which are also mobile, thus creating Bose-Einstein condensation of two species of Bosons. The generalized BECNF theory can now be applied to these two-species of Bosons and provides a mechanism for the suppression/cancellation of the Coulomb barrier, as shown in [4]. Once the Coulomb barrier is overcome in the entrance reaction channel, many possible allowed exit reaction channels may become open such as reactions (i) A*Ni*(2p(S=0), p)ˆ*A+1* Cu, with even A=58, 60, 62 and 64. These reactions will produce radioactive isotopes 59*Cu* and 61*Cu* with A = 58 and 60, respectively. 59*Cu* has a half-life of 81.5 seconds and decays by the electron capture to the 59*Ni* ground state (58.1%) which has a half-life of 7.6 x 10ˆ*4* years and to the 59*Ni* excited states (41.9%) which in turn decay to the 59*Ni* ground state by emitting gamma-rays with energies ranging from 310.9 keV to 2682.0 keV [8]. 61*Cu* has a half-life of 3.333 hours and decays by the electron capture to the stable 61*Ni* ground state (67%) and to the 61*Ni* excited states (33%) which in turn decay to the 61*Ni* ground state by emitting

gamma-rays with energies ranging from 67.412 keV to 2123.93 keV [8]. Gamma-rays (and neutrons) have not been observed outside the reactor chamber during the experiment [6]. These gamma-rays may have been present inside the reaction chamber. If no radiations are observed, reactions (i) are ruled out. Focardi and Rossi [6] reported that the experimental results of Rossi et al. indicate the production of stable isotopes 63*Cu* and 65*Cu* with an isotopic ratio of 63*Cu* /65*Cu* ~ 1.6 (natural abundance is 63*Cu*/ 65*Cu* = 2.24). This production of Cu may be due to reactions (i). The production of 63*Cu* and 65*Cu* with isotopic ratio of 63*Cu* /65*Cu* different from the natural isotopic ratio is expected and can be explained by estimating the reaction rates for 62*Ni*(2p(S=0), p)63*Cu* and 64*Ni*(2p(S=0), p)65*Cu*. Reaction rates estimates based on transmission probability calculated from a barrier tunneling model similar to the alpha-decay theory indicate that the reaction rates for stable Cu productions, 62*Ni*(2p(S=0), p)63*Cu* and 64*Ni*(2p(S=0), p)65*Cu*, are expected to be much larger than the reaction rates for production of radioactive Cu, 58*Ni*(2p(S=0), p)59*Cu* and 60*Ni*(2p(S=0), p)61*Cu*. This leads to the prediction that intensities of the gamma-rays from the decays of 59*Cu* and 61*Cu* are expected to be weak and do not commensurate with the observed heat production, which is mostly from stable Cu production reactions 62*Ni*(2p(S=0), p)63*Cu* and 64*Ni*(2p(S=0), p)65*Cu*. There are other exit reaction channels which are (nearly) radiation-less, such as reactions (ii) A*Ni*(2p(S=0), α)ˆ*A-2*Ni, (even A=58, 60, 62, and 64) [9]. For this case, we expect that the natural isotopic ratio of Ni isotopes will be changed in a particular way, which can be checked from the sample after each experiment. Even though reactions (ii) produce radioactive isotope 56*Ni*, it can be shown using the alpha-decay theory that its reaction rate is much slower (by many order of magnitudes) than those of other reactions. Other exit reaction channels, A*Ni*(2p(S=0), d)A*Cu*, A*Ni*(2p(S=0), 3*He*)ˆ*A-1*Ni, and A*Ni*(2p(S=0), t)ˆ*A-1*Cu (all with even A=58, 60, 62, and 64) are ruled out since these reactions all have negative Q-values.

There are possibilities of neutron-emission exit reaction channels, such as reactions (iii) A*Ni*(2p(S=0), n)ˆ*A+1*Zn, (even A= 62, and 64; Q is negative for A = 58 and 60). However, reaction rates for reactions (iii) are expected be substantially smaller than those for reaction (i). Reactions (iii) involve emission of a tightly bound neutron (62*Ni* -> 61*Ni* + n, Q = -10.597MeV or 64*Ni* -> 63*Ni* + n, Q = -9.657MeV) while reactions (i) involve emission of a loosely bound proton from an excited compound nuclear state consisting of A*Ni* (even A) and 2p(S=0). Therefore, the transmission probability of a neutron tunneling through the centrifugal barrier in reactions (iii) is expected to be substantially smaller than that of a proton tunneling through the centrifugal barrier in reactions (i). The branching ratios of reactions (i) and (ii) need to be determined by measurements of gamma-ray energies and changes in isotopic ratios from future Ross-type experiments. Theoretically, the branching ratios can be estimated by calculating transmission probability of an emitted charged particle tunneling through both Coulomb and centrifugal barriers in the exit reaction channel, as done in the alpha-decay theory. **III. Other Possible Reactions** In addition to the above reactions described in II, there are possibilities of reactions involving additives used (not disclosed so far). For an example, if lithium is added as an additive, reaction (iv) 6*Li*(2p(S=0), p 3*He*)4*He* may be possible. As in cases of reactions (i) and (ii), Ni nano-particles would be still playing an important role of providing two-proton singlet composite Bosons for reaction (iv). Reaction (iv) would not change the isotopic ratios of Ni. **VI. Conclusions** In order to explore validity and to test predictions of the generalized BECNF theory for the hydrogen-metal system, it is very important to carry out Rossi-type experiments independently in order to establish what are exact inputs and outputs of each experiment. If the entrance and exit reaction channels are established experimentally, we can investigate selection rules as well as estimates of the reaction rates for different exit reaction channels, based on the generalized BECNF theory [1-4]. Once these experimental results are established, further application of the generalized BECNF theory can be made for the purpose of confirming the theoretical mechanism and making theoretical predictions, which can then be tested experimentally. Basic description of the above theoretical concepts for BECNF in the hydrogen-metal system will be included in an invited talk at a forthcoming nuclear physics conference [10], and will be published in the conference proceedings [10]. **References**

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4. Y. E. Kim and A. L. Zubarev, “Mixtures of Charged Bosons Confined in Harmonic Traps and Bose-Einstein Condensation Mechanism for Low Energy Nuclear Reactions and Transmutation Processes in Condensed Matter”, Condensed Matter Nuclear Science, Proceedings of the 11th International conference on Cold Fusion, Marseilles, France, 31 October – 5 November, 2006, World Scientific Publishing Co., pp. 711-717.
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EXOTHERMAL REACTION", United States Patent Application Publication (Pub. No.: US 2011/0005506 A1, Pub. Date: Jan. 13, 2011); **http://www.wipo.int/patentscope/search/ja/WO2009125444**.
6. S. Focardi and A. Rossi, "A new energy source from nuclear fusion", March 22, 2010. **http://www.nyteknik.se/incoming/article3080659.ece/BINARY/Rossi-Forcardi_paper.pdf** **http://www.journal-of-nuclear-physics.com/?p=66** , February 2010
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8. Table of Isotopes, 8th Edition, Volume I: A = 1-150, edited by R. B. Firestone et al., published by John Wiley and Sons, Inc. (1999), pages 270 and 284.
9. Reactions (ii) were suggested by T. E. Ward, private communication, May 11, 2011.
10. Y. E. Kim, "Deuteron Fusion in Micro/Nano-Scale Metal Particles", an invited talk to be presented at the Fifth Asia Pacific Conference on Few-Body Problems in Physics 2011(APFB2011), August 22-26, 2011, Seoul, Korea. (**http://www.apctp.org/conferences/2011/APFB2011/**)

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693 comments to Generalized Theory of Bose-Einstein Condensation Nuclear Fusion for Hydrogen-Metal System

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nikita alexand.
July 15th, 2011 at 8:28 PM

Dear AR:

Thanks for your answers once again.

I think you may have misunderstood my first 2 questions:

Do you think the new understanding from your technology will allow cheaper chemical reaction catalysts (hydrogenation, etc) to be made?

Do you think in the future, its possible that new understanding from your technology (hydrogen/metal structure interactions) will be used to make a new type of reactor which will split water for hydrogen and oxygen instead of only heat? Have you learned many new things which could be used in electrolysis electrode design?

great work, thanks

Andrea Rossi
July 15th, 2011 at 7:41 PM

Dear Nikita Alexand:
1- The costs of catalizers will remain the same, quantities we use are small
2- We do not use electrolysis
3- The processing of the catalist is proprietary and confidential
Warm Regards,
A.R.

nikita alexand.
July 15th, 2011 at 6:48 PM

Dear AR:

Thank you so much for your answers, your patience with people is amazing after all you had to deal with in your search for world changing technology.

I am amazed by your figure of only 10% cost increase for the powder compared to just nickel.

This seems to imply that once your technology is commonly accepted and the mechanisms studied, traditional non-nuclear chemical catalyst design will make a large leap forward in terms of cost. Do you agree?

You imply that a major facet of your invention is in the way the monatomic hydrogen is produced insitu, can you speculate when your technology is accepted and studied if this will quickly lead to “disruptive” advances in electrolysis, do you agree?

Also, is the catalyst material processed in a way which engineers will be already familiar? Or is there a large capital investment for new machinery and new methods to master?

Thanks so much for your time.

Andrea Rossi
July 15th, 2011 at 2:55 PM

Dear Nikita Alexand:
1- yes
2- yes
Warm Regards,
A.R.

Bhagirath Joshi
July 15th, 2011 at 2:22 PM

The discussions here are quite interesting and candid. I like that. The new theories proposed will definitely shade light on the phenomena. I have submitted a paper on “Excess Neutron Shell model of Nuclei” to Dr. Rossi. When it is published here will shade more light on the phenomena. I am proposing to define excess neutron as Total number of Neutron in the isotope – Zp (total number of proton). Experimentally it is proven that as little as 41 EV energy is enough to perturb the nuclei of an element.

Also, I searched the research articles and came up empty handed on this two topics of Nuclei.

1) There is an upper limit to number of stable isotopes for an element. Also after certain limit one can not build lighter or heavier isotopes of the same element radio active(unstable) or otherwise.

2) The behavior of Half life of radioactive elements: Some how they do not all disintegrate at the same time. So when in bulk solid state the radio active nuclei provides some sort of stability to each other and does not allow the nuclei of an element to disintegrate at the same time. Individual radio active atom behaves differently.

I have not found any theoretical article dealing with these issues so far. May be I have not searched enough.

Bhagirath Joshi (BJ)

Nikita Alexand.
July 15th, 2011 at 1:10 PM

Dear AR:
Its an honor to speak with you.

I believe it was mentioned previously that a module could technically be “ignited” with a bunsen burner if need be.

Theoretically with the proper engineering could you provide the large amount of initial heat as well as the small amount of “control” heat through only thermal means if you could attain proper temperature control and power densities?

Interested in the possibility of “igniting” and “controlling” with a collimated solar heat system or liquid heat transfer materials instead of a resistive heating system.

Also, you mention that the nickel treatment adds about 10% to the cost of the material, does this include the cost of catalyst materials as well as processing to usable form?

Thank you for your work, best of luck.

Andrea Rossi
July 15th, 2011 at 11:07 AM

Dear MABA:
Thank you!
The problem of the Seebeck Effect is the low efficiency.
Warm Regards,
A.R.

MABA
July 15th, 2011 at 10:58 AM

Hi.

For your info:

Panasonic Develops Thermoelectric Tubes for Compact Geothermal Electricity Generation and Waste Heat Recovery

http://www.businesswire.com/news/home/20110630005729/en

“The 10 cm-long fabricated thermoelectric tube using technologies introduced above can generate 1.3 W of electricity by running hot water of 90 °C inside, and cold water of 10 °C outside the tube. The power density corresponds to as high as 10 kW with only 1 m3 of volume”

If what they had said and what do you had said is true, here is the solution for electricity and heating for private owners of your E-Cat.

Families are waiting for a cheap energy solution!

Best regards.

Miguel

Andrea Rossi
July 15th, 2011 at 10:18 AM

Dear Marcia Pires,
Please see the answer I gave to Martin.
Warm Regards,
A.R.

Malcolm
July 15th, 2011 at 9:49 AM

Dear Simon,

Your conclusions about the lead shield are valid. A bit of lateral thinking is required to understand how it works.

Malcolm

Steve Cook
July 15th, 2011 at 9:37 AM

This link is to a recent UK newspaper article you might be interested in
http://www.thesussexnewspaper.com/columnists/3061-cold-fusion-warm-future-a-new-day-dawning.html

Marcia Pires
July 15th, 2011 at 9:35 AM

Dear Andrea Rossi,

How was your meeting with NASA yesterday? Are they ready to collaborate with you?

Best,

Marcia Pires

Koen Vandewalle
July 15th, 2011 at 9:12 AM

Dear Dr. Rossi,
I guess NASA has found something useful in your invention.
Hopefully that your cooperation speeds up the worldwide integration of your invention.
I really hope mainstream picks up now very soon, patents are granted to you and unlimited funding and effort to R&D is given now.
Kind Regards,
Koen

Steve Cook
July 15th, 2011 at 8:50 AM

Here is a link to a press article written by myself recently published in The Sussex Newspaper in the UK

http://www.thesussexnewspaper.com/columnists/3061-cold-fusion-warm-future-a-new-day-dawning.html

Andrea Rossi
July 15th, 2011 at 7:32 AM

Dear Carlo:
As I always said, we do not produce and we do not use radioactive material. We do not produce Tritium.
Warm Regards,
A.R.

Andrea Rossi
July 15th, 2011 at 7:30 AM

Dear Frank Acland:
1- No
2- Not so far
3- Please read the answer to Martin.
Warm Regards,
A.R.

Andrea Rossi
July 15th, 2011 at 7:24 AM

Dear Martin:
I am not authorized to give this information.
I can only say that there is really to learn.
I met extremely high level scientists. I have been really surprised and honoured to discover that they have got indipendently throughly information about this technology. All I can say, so far, is that we will work together.
Warm Regards,
A.R.

Andrea Rossi
July 15th, 2011 at 7:16 AM

Dear4 A.Goumy:
Sorry, I cannot give this “clue”: regards the reactor.
Warm Regards,
A.R.

Andrea Rossi
July 15th, 2011 at 7:15 AM

Dear Simon Knight:
Your insight is right, but to answer I’d have to explain how the reactor is done, which is confidential information.
Warm Regards,
A.R.

Simon Knight
July 15th, 2011 at 1:29 AM

Dear Malcolm,

I have a comment regarding your question July 12th, 2011 at 5:02 AM about heat absorption of the E-Cat lead jacket. Judging from pictures of naked E-Cats it is not possible to enclose an E-Cat in a lead cover that is in good thermal contact with the copper tube.
See e.g. **http://www.nyteknik.se/nyheter/energi_miljo/energi/article3166552.ece**

So if the lead jacket were to absorb a substantial part of several kilowatts the lead would get very warm, the outer plastic foam insulation would melt and so would the lead.

Best regards, Simon Knight

A. Goumy
July 15th, 2011 at 1:19 AM

Mr Rossi,

Thank you for your involvement in giving information (and clues…) to your numerous readers. In a recent interview, you stated that you were “using a particular system to increase the pressure arriving to extremely high pressures… similar to ones that happen to be in the White Dwarf stars”. From this statement of yours, I was wondering if a part of the reaction “secret” could be crystal lattices of hydrogen nuclei appearing locally, with a spacing short enough to explain the overcoming of Coulomb barrier.

Best regards,

A. Goumy

Martin
July 14th, 2011 at 1:57 PM

Dear mr Rossi,

Today there was a meeting with NASA about your invention. Is it possible to give some information about this meeting? If it is not possible no problem!
Im just very curious.

Best regards

Martin

Frank Acland
July 14th, 2011 at 11:40 AM

Dear Mr. Rossi

It was very interesting to read about the interview you made with Ecatreport recently. I have a couple of questions I wonder if you could address.

1. You mention that the E-Cat reactor is small — about the size of a nut. Could you say what kind and size of nut you were referring to?
2. You also mention that these E-Cats could be mass produced very easily — can you estimate how many per year you will be able to produce initially?
3. Are you able to share anything about the purpose of the meeting between NASA, Ampenergo and Defkalion GT?

Thank you very much — wishing you success with this technology!

Frank

Carlo
July 14th, 2011 at 9:45 AM

Dear Koen Vandewalle
I agree on what you said but I was more concerned of the fact that they say Tritium might have been found. As far as I know, and please excuse my ignorance of physics and chemistry, tritium is a radioactive element. I was worried that the supposed presence of a radioactive material, even if not true, may delay the availability of the ecat at least in a few markets.

eernie1
July 13th, 2011 at 7:58 PM

Dear ing. Rossi;
I think you could use a little humor at this time.When I tried to explain your device to my Swedish American wife she said"I know what Rossi's secret ingredient is. It is lutefisk because that is the only material I know strong enough to cause a nuclear transformation"(HA Ha).All Scandinavians will understand the joke.

Koen Vandewalle
July 13th, 2011 at 2:08 PM

Dear Carlo,

As far as I understand, Dr. Brian Ahern uses high voltage gas discharge pulses to ignite a reaction. Dr. Rossi already wrote that Dr. Ahern would be his first and closest competitor.
But it must always be said: the idea is Rossi's.
If one guy comes home with a nugget of gold in his hand, some others will buy shovels and start digging too.

Kind regards,
Koen Vandewalle

Carlo
July 13th, 2011 at 9:49 AM

Dear Mr.Rossi
my most sincere congratulations for your work and the time you spend on answering to our posts.
I read in a recent interview on ecatreport.com that you'll be meeting with NASA tomorrow. That's great news.
Recently in the alleged email Brian Ahern that I post below was mentioned that during a LANL replication of a 'Rossi-like' experiment tritium was found. Do you have any comment on this topic?

Best regards

Jul 12, 2011 at 2:55 AM, Brian Ahern:
Dave,
I just spoke with Tom Claytor at Los Alamos NL after I heard a rumor he was getting tritium from his Rossi-like experiments (omissis).
He is using nanopowder alloys and hydrogen and he was getting 5% excess energy. Now he says he can reliably and repeatedly move between 5% and 16% with the 'movement of a control'.
They are writing up patent applications right now, so I could not press him for details (omissis). I asked him about DOE Headquarters and their attitude. He said their recent proposal was deemd in the top five for the year, so they are getting some funding (omissis).

Andrea Rossi
July 13th, 2011 at 6:51 AM

Dear Luca M:
You have not to apologize, we welcome the fact that Readers intervene with comments regarding other comments, of course.
Answer: since we enrich in Ni 62 and 64 the enrichment compensates the consumption in good measure, I assume. Besides, as you correctly say, I cannot deepen this issue for confidential reasons.
Warm Regards,
A.R.

Luca M
July 13th, 2011 at 6:46 AM

Dear Mr. Rossi, I apologize for intervening in the discussion between you and Mario Voltaggio, but I think there was a misunderstanding relative to the question n. 2. Voltaggio said that he did not understand if the copper isotopic composition is the natural one, and you answered that the Cu produced is 63 and 65. I think that, when he asked about the isotopic composition, he intended the ratio between Cu 63 and 65, which are the only Cu stable isotopes. Actually all the copper (non radioactive) is in any case composed by Cu 63 and 65.
Or may be that your answer was due to the fact this is a confidential information?
Thank you for your attention, best regards.

datura16
July 13th, 2011 at 5:28 AM

everything going on with the e-cat sounds very similar to this page
http://www.hbci.com/~wenonah/new/hudson.htm
it talks about Ni, CU, and other transition elements
it also talks about gamma emission from these elements
also mentioned is low voltage (10 volts) and also mentioned is a high voltage dc arc.

on that page is a link 'David Hudson's " Grand Science Adventure "'
it takes you to another page that explains his discovery, the mp3 links are corrupt on the page, however, here

is a link to the files. 25 or so MB.
http://www.fileden.com/files/2011/4/10/3112785//hudson.zip

Andrea Rossi
July 12th, 2011 at 5:10 PM

Dear Thomas Moore:
I do not think this is the mechanism, but your instinct got a good intuition. Maybe in some case this happens.
Warm Regards,
A.R.

Thomas Moore
July 12th, 2011 at 4:45 PM

Dear Andrea Rossi,

In an answer to a post from July 11 you said:

"The Cu produced is 63 and 65, because only Ni 62 and 64 react in this sense."

At the site **http://www.matpack.de/Info/Nuclear/Nuclids/** you can find lots of interesting information about isotopes. About Cu65 you can read that a possible parent nucleid for it is Ni65, which will beta decay to this stable copper isotope. And Ni65 in its turn you can get by neutron activation of Ni64. A similar chain of events would be possible for the pair Ni62 – Cu63. Is this how you envisage what is happening in the E-Cat?

Andrea Rossi
July 12th, 2011 at 9:20 AM

Dear Amos:
No, it is a completely different thing.
Warm Regards,
A.R.

Andrea Rossi
July 12th, 2011 at 9:20 AM

Dear Malcom:
I will test your suggestion.
Warm Regards,
A.R.

Andrea Rossi
July 12th, 2011 at 9:19 AM

Dear Nick Pourmi:
I never comment the work of my competitors, while I always respect their endeavours.
Warm Regards,
A.R.

Nick Pourmi
July 12th, 2011 at 8:21 AM

Dear Andrea Rossi,

On June 27th, 2011 at 3:18 a.m., I posted a comment on Journal of Nuclear Physics to A detailed Qualitative Approach to the Cold Fusion Nuclear Reactions of H/Ni article in which I pointed to the developments realized

by Brillouin Energy, a Delaware corporation, in the USA. That comment was never answered.

Now it appears that Brillouin Energy is fielding calls from new investors and will be working with Los Alamos National Lab to replicate their work.

http://nextbigfuture.com/2011/07/brillouin-energy-will-replicate-at-los.html
http://nextbigfuture.com/2011/07/robert-e-godes-explains-brillouin.html

Robert E. Godes, the Chief Technical Officer at Brillouin Energy also formulated his views on The Energy Catalyzer, your outstanding, epoch-making invention.

Questions:
1. Do you assess their achievements pose a threat to the advancement of The Energy Catalyzer or should be regarded as a "third party" confirmation that your product is really working?
2. Do you intend to comment their work or method in this blog for your readers?

Keep going on in good faith,
Nick Pourmi

P.S.: "When a thing is new, people say: 'It is not true.' Later, when its truth becomes obvious, they say: 'It is not important.' Finally, when its importance cannot be denied, they say: 'Anyway, it is not new.'" (William James, 1896)

Malcolm
July 12th, 2011 at 7:35 AM

Dear Mr. Rossi

Thank you for your prompt response to my question. I guess that a more efficient way of transferring the heat from the shield to the water/coolant would be to have the shield within the water jacket and allow the coolant to flow around it or is there a problem with this?

Cordial Salute

Amos
July 12th, 2011 at 7:00 AM

Dear Andrea Rossi,

Do you think the E-Cat technology could be applied to Hydrogen fuel cells in order to produce electricity directly without the conversion to heat? I understand Hydrogen fuel cells make use of platinum powder (keeping in mind that Fleicshman-Pons style Cold Fusion makes use of Platinum), perhaps this could be replaced with Nickel.

Regards,
Amos.

Andrea Rossi
July 12th, 2011 at 6:24 AM

Dear Malcom,
Yes, also.
Warm Regards,
A.R.

Malcolm
July 12th, 2011 at 5:02 AM

Dear Mr. Rossi,

Thank you for your detailed reply to Dr. Mario Voltaggio. You mention that the heating effect is due to gamma absorption by the lead. I assume from this that the lead shielding is in fact in direct contact with the copper water jacket and so the water is heated from the outside. Is this correct?

Many Thanks

Andrea Rossi
July 11th, 2011 at 8:45 PM

Dear Luke Mortensen:
A- Working on this.
B- in progress: within one year we should be ready
C- Remarkable progress
Warm Regards,
A.R.

Luke Mortensen
July 11th, 2011 at 8:17 PM

AR,
I hope you are well this week

Three new topics of research have been mentioned in the last few weeks:
A) Developing 30KW ecat modules.
B) Increasing efficiency of steam electricity production
C) Perfecting designs for self sustaining ecats with no input electricity

How fares your progress on these engineering efforts?

(For other readers: The 1 MW does not require these technologies.)

Best,
-Luke Mortensen

Andrea Rossi
July 11th, 2011 at 7:56 PM

Dear Dr. Mario Voltaggio:
The answers to your questions have been given in this blog already, anyway, repeating rapidly:
1- The isotopic composition of Ni after 6 mo is slightly different, but the difference is also compensated from the enrichment we make in the Ni
2- The Cu produced is 63 and 65, because only Ni 62 and 64 react in this sense
3- the heating is due to the gamma radiation, which is contained from the lead shielding. The gamma produced in the reactor have mainly low energy. The reason of this will be clear when I will disclose the theory at the base of the process.
4- the medium by means of which the heat is exchanged with the water is the wall of the reactor, properly designed.
5- The patent of the invention discloses enough information to allow an expert of the matter to replicate the effect. In fact , many persons have replicated the effect using the text of my patent application. A totally different thing is the industrial secret regarding information useful to make a product with best performances.
6- Public demos were opportune for R&D purposes, and also for commercial purposes. Patent processes can take up to 6-7 years, and a private industry, not financed by the taxpayer, cannot wait. Therefore, maintains the industrial secrets, while the production takes place and the patent application is cropped.
7- The Journal Of Nuclear Physics is not dedicated to my process: most of the articles are indipendent from it, sometimes alternative.
Thank you for your sincere critics,
Warm Regards,
Andrea Rossi

Mario Voltaggio
July 11th, 2011 at 6:37 PM

Gentile Dr. Andrea Rossi,
dopo aver letto con attenzione quanto riportato su questo sito, mi sfugge completamente l'utilità di queste discussioni(almeno dal mio punto di vista).
Comprendo che questi commenti possano esserle utili per avere dei contatti che possono aiutarla nella commercializzazione del suo prodotto ma come ricercatore ho letto molte contraddizioni.
Espongo brevemente quali contraddizioni ho rilevato:
1) non si comprende se la composizione isotopica del nichelio prima e dopo il funzionamento prolungato dell'e-cat sia cambiata o sia rimasta la stessa.
2) non si comprende se la composizione isotopica del rame prodotto sia o no uguale a quella naturale
3) non si comprende se il riscaldamento sia dovuto alla radiazione gamma dal momento che la schermatura di piombo dovrebbe essere insufficiente per schermarla completamente
4) non si comprende quale sia il mezzo attraverso il quale il calore viene trasmesso alla parete della cella a contatto con l'acqua immessa con la pompa peristaltica
5)non si comprende perchè la composizione dell'addittivo dovrebbe rimanere segreta se si vuole ottenere un brevetto da tale invenzione.
6)non si comprende perchè se si voleva arrivare al mercato prima dell'ottenimento del brevetto si siano anticipati i risultati con delle dimostrazioni pubbliche.
7) infine non comprendo perchè ha indetto questa specie di ricerca del santo Graal della teoria sul funzionamento della sua cella con questi articoli riportati sul Journal of Nuclear Physiscs che sa tanto di "vediamo chi si avvicina di più alla spiegazione avendo a disposizione pochi dati e ben confusi".
Chiedo perdono per la sincerità, ma questo è ciò che penso (per il momento).
Cari saluti
Dr. Mario Voltaggio

Andrea Rossi
July 11th, 2011 at 5:16 PM

Dear Hans:
Yes.

Warm Regards,
A.R.

Andrea Rossi
July 11th, 2011 at 5:16 PM

Dear Martin:
No, thbeories have not much to do with patents, which are based upon working methods and apparatuses.
Warm Regards,
A.R.

Martin
July 11th, 2011 at 3:43 PM

Dear mr Rossi,

Will this theory be usefull for getting faster patents for the e-cat?

Best regards,

Martin

Hans
July 11th, 2011 at 3:19 PM

Dear Mr. Rossi,
when can we expect your theory about the E-Cat?
Together with the October plant launch?

Thank you!

Andrea Rossi
July 11th, 2011 at 3:10 PM

Dear Carlos:
No more public tests will be made. R&D will be made by the Universities of Bologna and Uppsala, at our expenses,but this research will not be public.
After the start up of our 1 MW plant in October our products will hit the market.
Warm Regards,
A.R.

Carlos
July 11th, 2011 at 8:55 AM

Dear Mr. Rossi
is Yeong E. Kim working on an ecat in order to obtain complete experimental information?

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