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VIA VISCONTI DI MODRONE, 14/A

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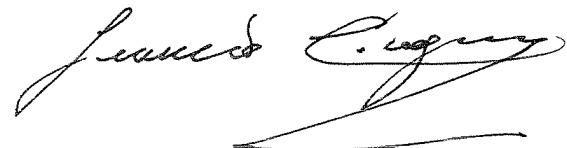
Our Ref.: PASCUCCI 10/11/EST

Re: European Patent Application No. 08873805.9-1270
Regional Phase of PCT/IT2008/000532 filed on 04.08.2008
in the name of PASCUCCI, Maddalena

Dear Sirs,

With reference to the Communication pursuant to Rules 161(1) and 162 EPC of 29.11.2010, please find herewith enclosed our observations for replying to the International Preliminary Examination Report.

Yours faithfully,



Re: European Patent Application No. 08873805.9,
Regional Phase of PCT/IT2008/000532 filed on
04.08.2008 in the name of PASCUCCI, Maddalena

Sir,

This is in response to the International Preliminary Report on Patentability completed on 15.06.2010 during the International Phase.

From Box No. V of said International Preliminary Report, related to the reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, the Applicant has noticed that the Examiner has considered original claims 2, 6, 9-12, 15 as novel; original claims 1, 3-5, 7, 8, 13, 14 as not novel; and has considered all original claims 1-15 as devoid of inventive step, even if all susceptible to industrial applicability.

From item V of the Report, the Applicant has also noticed that the Examiner has considered the document D1 EP-A-1 551 032 (OSAKA IND PROMOTION ORG [JP] ARATA YOSHIKI [JP]) of 6 July 2005 as the most pertinent background art document.

At item 1. of this section V, the Applicant has also noticed that:

"The amendments filed with the letter dated 09.11.2009 introduce subject-matter which extends beyond the contents of the application as filed, contrary to Article 34(2)(b) PCT. The amendments concerned are the following:

Amended claim 1 is directed to a method for carrying out an exothermic reaction of nickel and hydrogen, characterized in that said method comprises the steps of providing a metal tube, introducing into said metal tube a nanometric particle nickel powder and injecting into said metal tube a hydrogen gas having a temperature much greater than 150°C and a pressure much greater than 2 bars.

Amended claim 1 is therefore pointing on performing the reaction between nickel and hydrogen in the domain of very high pressures and very high temperatures. Basis for performing the interaction between hydrogen and nickel at temperatures much greater than 150°C and a pressure much greater than 2 bars could not be found in the description as filed. Description as filed, page 5 lines 1-6 and claims 3 and 4 indicate temperatures between 150° to 500°C and pressures from 2 to 20 bars".

The Applicant does not completely agree with this statement by the Examiner.

In fact, it is respectfully believed that the words "much greater than 150°C" indicate that a value of temperature of 500°C would be proper, since a value of 500°C may be actually considered "much greater" (three times) than 150°C.

That same reasoning can apply to the pressure value, since it is respectfully believed that a pressure value of 20 bars should be considered as much greater than 2 bars.

Notwithstanding the above, the Applicant would refer hereinbelow to original claims 1 to 15 as filed, as required by the Examiner.

In this respect, the Applicant has also noticed the observations by the Examiner related to the term "exothermal" and the term "hexothermal".

This confusion of terms should obviously be considered as a clerical error, since in the whole Applicant's disclosure, and for example in original claim 5, that term was properly written.

From item 2. of this section V, the Applicant has moreover noticed that, in the Examiner's opinion, the Application does not meet the requirements of Article 5 PCT as the description does not disclose in a manner sufficiently clear the invention.

In particular, the Applicant has noticed the Examiner's statement: "As the invention seems, at least at first, to offend against the generally accepted laws of physics and established theories, the disclosure should be detailed enough to prove to a skilled person conversant with mainstream science and technology that the invention is indeed feasible. This implies, inter alia, the provision of all the data which the skilled person would need to carry out the claimed invention, since such a person, not being

able to derive such data from any generally accepted theory, could not be expected to implement the teaching of the invention by trial and error.

In the present case, the invention does not provide experimental evidence (nor any firm theoretical basis) which would enable the skilled person to assess the viability of the invention. The description is essentially based on general statements and speculations which are not apt to provide a clear and exhaustive technical teaching".

In an attempt to overcome the above rejection grounds, a detailed experimental technical evidence has been herein submitted in the accompanying enclosures.

Applicant hopes that the Examiner would be able of evaluating, from these enclosures, the viability of Applicant invention.

With respect to novelty, at items 3. and 3.1. of this section V, the Applicant has noticed that:

"Furthermore, the above-mentioned lack of clarity notwithstanding, the subject-matter of claims 1, 3-5, 7, 8, 13 and 14 is not new in the sense of Article 33(2) PCT, and therefore the criteria of Article 33(1) PCT are not met.

Document D1 discloses a method of generating heat using a hydrogen condensate, wherein the hydrogen condensate comprises metal nano-ultrafine particles containing a plurality of metal atoms and a plurality of hydrogen isotope atoms solid - dissolved among the plurality of metal atoms. At least two of the plurality of hydrogen isotope atoms are condensed so

that an interatomic nuclear distance between the two hydrogen isotope atoms is smaller than or equal to an internuclear spacing of a molecule consisting of the two hydrogen isotope atoms, the heat generation method comprising applying energy to the hydrogen condensate; and generating heat by causing the at least two hydrogen isotope atoms to react with each other due to the energy (claim 1). As metal atoms, nickel and copper are disclosed (claim 2). The pressure of the process is disclosed to be between 10 and 100 atmospheres (§46). By applying an ultrasonic wave (§64), the temperature of the system is raised to very high values, the outer wall temperature being 250°C (Figure 4, §73). D1 discloses that besides microwave heating, the energy might be generated based on high pressure, discharge, etc (§14). It follows that the subject-matter of claims 1, 3-5, 7, 8, 13 and 14 is not new in the sense of Article 33(2) PCT".

Thus, from the above discussion of D1, the Examiner has concluded that:

"The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 2, 6, 9-12 and 15 does not include an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 2. The subject-matter of claim 2 therefore differs from this known D1 in that a catalyst is present. The technical effect is that the presence of the catalyst enhances the reaction between nickel and hydrogen. The problem to be solved may therefore be regarded as enhancing the reaction between nickel and hydrogen.

The solution proposed in claim 2 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) as catalysts in general have the purpose of enhancing chemical reactions and a person skilled in the art would always consider using catalysts in enhancing chemical reactions.

The same reasoning applies, *mutatis mutandis*, to the subject-matter of the corresponding claim 6, which therefore is also considered not inventive.

Dependent claims 9-12 and 15 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step.

The presence of a lead and boron with the function of neutron shielding is known in the art, a neutron shield being disclosed in Figure 2, D3 (relevant for claims 9 and 10 of the application). Water is widely used as cooling agent in various exothermal chemical or nuclear reactions (relevant for claim 11 of the application). Use of a nickel isotope powder instead of nickel powder is merely one of several straightforward possibilities from which the skilled person would select, without the exercise of inventive skill (claim 12 of the application). Existence of various trace elements in little spots or corroded regions of the Ni-H system is disclosed in D2, Figure 9 (relevant for claim 15 of the application)".

For overcoming the above rejection grounds against novelty and inventive step, original claims 1 to 15 have been cancelled, and a new set of claims 1 to 9 has been drafted and herein enclosed.

New claim 1 substantially corresponds to original claim 1, and has not been drafted into the two-part form, since it is respectfully observed that the document D1 does not provide any preamble part therefor.

In this connection, the Applicant desires to draw the Examiner's attention on the fact that new claim 1 has been formulated by using words slightly different from those of original claim 1, but which, however, are all fully supported by the Applicant's disclosure: this has been mainly made for overcoming any "functional matter" rejection ground.

In formulating the new main claim, no matter has been added.

From the new main claim, the gist of the invention should be envisaged in the fact that the Applicant's method comprises the steps of: providing a metal tube; filling said metal tube with a nickel powder, even of nanometric dimensions; heating said nickel powder to a high temperature and injecting pressurized hydrogen gas to provide in said metal tube a high temperature and pressurized hydrogen gas saturated environment, thereby generating energy.

It is respectfully submitted that document D1 does not teach or suggest any of these steps.

At first, D1 does not provide a metal tube: in fact, on column 12 D1 recites that "the heated generating apparatus (200) preferably comprises a nuclear fusion reaction furnace which accommodates a nuclear fusion

reaction material, means for controlling nuclear fusion reaction, means for applying an impact energy and/or stationary energy to the nuclear fusion reaction materials to induce or cause a nuclear fusion reaction, means for removing the generated heat and means of collecting generated helium".

Thus, D1 apparatus is not a simple metal tube: in this connection the Applicant respectfully desires to draw the Examiner's attention on the fact that D1 neither teaches nor suggests that the nuclear fusion reaction furnace would be a metal tube.

Secondly, D1 neither teaches nor suggests the step of: filling said metal tube with a nickel powder ...

Actually, at column 3, lines 2 to 5, D1 recites: "the plurality of metal atoms may be metal atoms of any species selected from the group consisting of palladium, titanium, zirconium, silver, iron, nickel, copper and zinc".

Thus, even if the term "nickel" is used, it is included in a very broad group of metals and, in actual practice, nickel has not been mentioned in any example of D1 as preferred or indispensable material.

In this connection, the Applicant desires moreover to draw the Examiner's attention on the fact that, as disclosed in original claim 1, the nickel powder may be present "even in nanometric dimensions", which means that the nickel may also be present as granules which, as the terms would imply, are not of nanometric dimensions, whereas in D1 the generic

metal must be necessarily present in an actual nanometric size.

With respect to the further pressurized hydrogen gas injection step, the document D1 does not teach or suggest such a step: in fact, as shown on column 3, lines 16 to 20 of D1, "the heat generation method comprises applying energy to the hydrogen condensate and generating heat by causing the at least two hydrogen isotope atoms to react with each other due to the energy".

D1 does not inject hydrogen but uses an hydrogen condensate, the structure of which is, for example, disclosed on column 7, lines 32 to 36, which recite: "the hydrogen condensate 100 comprises a metal nano-ultrafine particle (host) and a plurality of hydrogen isotope atoms (guests) 102 which are solid dissolved in a plurality of metal atoms 101 contained in the metal nano-ultrafine particle".

Such a hydrogen condensate is not a pressurized hydrogen gas.

Thus, D1 does not comprise any of Applicant's method steps as recited in Applicant's method new main claim.

With respect to the apparatus claims, as stated, D1 does not teach or suggest to provide a metal tube but a nuclear reactor.

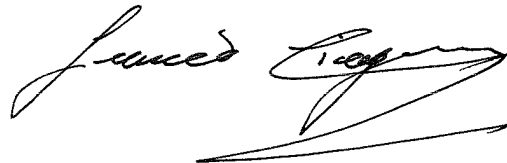
Accordingly, it is respectfully submitted that also all the Applicant's new apparatus claims are actually

novel and inventive.

Thus, in view of the foregoing discussion, the Applicant respectfully requires allowance of both the new method and apparatus claims.

A favorable prosecution of the application is accordingly respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "James C. [unclear]". The signature is written in a cursive style with a long horizontal flourish at the bottom.

Encls.: New claims 1 to 9 pages 16 and 17;

Article by Jacques Dufour "Is the Rossi energy amplifier the first pico-chemical reactor?" for CNAM Laboratoire des sciences nucléaires published on the Journal of Nuclear Physics website on July 18, 2010;

Article by S. Focardi and A. Rossi "A new energy source from nuclear fusion" published on March 22, 2010.