REMARKS

As an initial matter, please see an Inventor's declaration attached hereto that enclose an affidavit and test report of further examples conducted according to the conditions discussed herein. As illustrated in the declaration, the additional examples illustrate that the radioactivity of Co-60 is reduced, that a new nuclide appears, and that heat is produced. Thus, contrary to the continued assertions of the Office Action, it is clear that the claims are supported and enabled by the original specification and examples, which are further supported by the declaration submitted herewith.

Rejections under 35 USC §112(b)

In the Office Action, claims 32-35, 38, 41, 42, 45, 46, 48 and 49 were rejected under 35 USC §112 as being indefinite. However, Applicant respectfully disagrees.

Nonetheless, in an effort to facilitate production, Applicant has amended claim 32 to recite "container. As previously noted, the second container is a second container in reference to the "chamber", but Applicant has proposed amending the claim as suggested, and therefore requests withdrawal of the rejection.

However, in regards to "at least partially deactivated", Applicant respectfully submits that the term is clear to one having skill in the art. Namely, referring at least to the examples, common measures of a reduction radioactivity are used, such as changes in the gamma ray emission spectrum, loss of gamma emissions, loss of mass, etc. Therefore, as a reduction or removal of radioactivity from a compound is commonly referred to as "deactivation", Applicant respectfully submits that it is clear that this term is used consistently with its usage in the art.

For instance, In Experiment 2, for example, gamma emission measurement has been made before and after treatment, see figure 9, thus showing radioactivity decrease. Simultaneously, heat production was measured. From these two

phenomenon's within the context of the Experiments, the most likely with regard to generally admitted physics is that transmutations have occurred. Namely, when radioactivity decreases, there is no other explanation than deactivation.

Nuclides of 2nd generation can be identified by comparing Figure 7 and Figure 8. For example, around 350 keV, a ray is present on Figure 8, not on Figure 7. It is likely to be Pb-214. The ray above 1750 keV is likely Bi-214. The ray around 300 keV is likely Pb-214. Thus, as illustrated, daughter isotopes of U-235 are present, and the overall radioactivity has strongly decreased. Thus, it is clear that the experiments illustrate a reduction in radioactivity of Co-60, that a new nuclide appears, and that heat is produced. Nonetheless, applicant respectfully submits that the attached declaration further supports the present examples.

Thus, Applicant respectfully submits that one having skill in the art would find the term clear, as it refers to a compound which has a reduction in radioactivity as compared to the starting compound.

In regards to proton emission, while respectfully submitting that the claims and specification are clearly as written, and with the understanding (as based in the examples), that the experiments were shielded with lead as a safety precaution, starting from the general terms the initiation reactions are series of β^-, which come to affect the transition metals. The hypothesis is better sustainable if the fact that, in the presence of radioactive materials of their nature more prone to decay, the process is characterized by a more rapid onset, is considered.

The series of β^- leads to a modification of the charge balances (to weigh mainly on hydrogen) between the particles. The neutron excess which in all probability constitutes the base that favors the frequency of neutron capture becomes explainable with an emission of protons and electrons ($p^+ + e^- \rightarrow n° + v_a$)

and, in tum, explain the frequency of the electronic capture, which constitute the mechanism that guides the initial isotopic transmutations of nickel.

The reason for the start of the neutron capture chain that appears most probable is that the atomic and nuclear voltages determined by the energies administered (charge voltages due to electrostatic fields; geometric voltages due to ultrasounds and voltages energetic due to heat) generate a propensity for isotopic transmutation (the final nuclear transmutation - $^{63}_{28}Ni \longrightarrow {}^{63}_{29}Cu + e^{-} + \bar{\nu}_e$ - occurs with a well-known β^- decay).

Evaluating the emission of protons, it is interesting to underline that the protons involved coming in great prevalence from $^{1}_{1}H$ are particularly available for transmutation ($p^+ + e^- \rightarrow n° + \nu_a$) precisely as a consequence of the modification of the charge equilibrium which took place (due to the β^- series) in hydrogen.

Thus, Applicant continues to respectfully submit that proton emission derives from the above. Further, that the above is clearly not contrary to generally admitted physical theories and is clear in the specification as filed to one having skill in the art.

As to claim 33, nuclear waste is used consistently throughout the specification and claims with its common understanding in the art. There is no requirement to limit to one type of nuclear waste. Instead, at least paragraphs [0027] to [0030] discuss multiple different types of nuclear waste. Thus, it is clear that one having skill in the art would fully understand claim 33. In addition, Experiments 1 to 4 demonstrate exothermic transmutations with different radioactive species. Thus, Applicant respectfully submits that claim 33 is clear as written, and requests withdrawal of the rejection.

As to claim 46, without commenting on the propriety of the rejection, Applicant has cancelled claim 46 in an effort to facilitate prosecution only.

Finally, in regards to claim 48, Applicant has clarified that the heating is in regards to the energizing of the transition metal compound, and therefore requests withdrawal of the rejection.

Therefore, in addition to the above reasons, Applicant respectfully submits that the pending claims are further clear and definite, and requests withdrawal of the rejection.

Rejections under 35 USC §112(a) and Objection to the Specification

In the Office Action, claims 32-35, 38, 40-42, 44-49, and 52 were rejected under 35 USC §112(a), and the specification was objected to, as assertedly lacking enablement or lacking scope of enablement. However, Applicant again respectfully notes that the Office Action has again imported theories and methods that are not relevant to the pending claims. Nonetheless, as requested by the Office Action, Applicant has submitted further examples herewith in support of the pending claims and originally filed examples. Thus, Applicant continues to respectfully submit that, contrary to the limitations read into the claims which are not present, the claims are fully supported and enabled.

Further, contrary to the assertion of the Office Action, working examples are provided with each step used. Thus, it is clear that one having skill in the art would fully appreciate and be able to replicate the method of the pending claims. Thus, as, Applicant respectfully notes that under MPEP 2164.04 " A specification disclosure which contains *a teaching of the manner and process of making and using an invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented* ***must be taken as being in compliance with the enablement requirement***..." Therefore, as the specification clearly teaches a method of exothermic transmutation for at least partially

deactivating radioactive material, and also provides multiple working experiments of the taught method, and as the MPEP does not require any examples, let alone multiple examples when the existing examples support the specification and claims, Applicant respectfully submits that the present disclosure teaches a process in terms which correspond in scope to those used describing and defining the scope of the claims. Thus, Applicant respectfully submits that the specification and claims should be awarded the presumption of compliance as stated by the MPEP, and further, that the present specification clearly describes, and is thus enabling of, the presently pending claims.

In addition, the "how to use" requirement of 35 U.S.C. §112, is concerned with ensuring that the specification sets forth a method from practicing the invention and ensuring that the invention actually can be used as described, i.e., that it has utility. If the specification conveys how to use the invention, or if a person of ordinary skill in the art would be able to discern, without under experimentation, an appropriate use, this prong of the enablement requirement is satisfied. *In re Fisher*, f.2d 833, 166 USPQ 18 (CCPA 1970); MPEP§2164.01(b).

Further, the test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue. MPEP § 2164.01 Consideration of each of the *Wands* factors supports Applicants position that the claimed subject matter is enabled by the specification without any undue experimentation, for instance: the specification is enabling with respect to the claims at issue, there is considerable direction and guidance in the specification; there is an acknowledged high level of skill in the art at the time the application was filed. MPEP § 2164.01(a).

Conversely, the Office relies on no rationale, evidence, case law, or MPEP section in drawing its conclusion that the four Experiments taught in the specification as well as the further examples provided herewith are not "repeatable and successful" by the broad mainstream scientific community. Further, several assertions about the state of the art are made in the rejection without any evidence of the knowledge or skill of one having skill in this particular art.

Instead, as the necessary conditions and theories have been properly set forth and successfully exhibited in the Experiments, Applicant continues to respectfully submit that one having skill in the art would fully understand the specification and claims, as well as understand the repeatability of the examples. Therefore, Applicant continues to respectfully submit that the claims and specification are enabled as filed and as presently pending, as further evidenced by the working Experiments contained in the specification.

Departure from accepted knowledge

In the Office Action, it is several times asserted that the pending claims are contrary to accepted scientific principles. However, referring to US5076971 cited in the International Search Report, it is shown that radioactive decay is strongly accelerated by an electric field. Further, EP236825281 based on WO2010058288 cited in the ISR relates to energy production by adsorption of H ions into clusters of transition metals triggered by an impulsive action comprising an electric field. EP2805330B based on WO2013/108159 cited in the ISR relates to a nuclear reactor for irradiating a colloidal mixture including Ni. EP2805330Bl contains explanations on ultra-low momentum neutrons by weak interactions at paragraphs [0007] and [0008].

Thus, as illustrated, and contrary to the assertions of the Office Action, it is clear that one having skill in the art, would understand that the combination of

electric field, hydrogen and a transition metal is very likely to produce an effect, and is clearly not contradictory to accepted science and technology.

Rejections under 35 USC §101

In the Office Action claims 32-35, 38, 40-42, 44-49, and 52 stand rejected under 35 USC §101 as assertedly being inoperative and therefore lacking utility. However, initially, Applicant respectfully submit that the rejection in regards to enablement has been fully addressed above, and has been overcome. Therefore, Applicant respectfully submits that the disclosure is clearly not inoperative as shown by the multiple examples, and thus, respectfully submits that the Office Action has failed to show or provide any rational underpinning for the assertion that the disclosure is inoperative. Thus, Applicant respectfully submits that the rejection has been overcome, and respectfully requests withdrawal of the rejection.

Conclusion

Based on the remarks above, it is believed that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. The Examiner is invited and encouraged to telephone the undersigned, however, should any issues remain after consideration of this Response.

Please charge any additional fees required by this Amendment to Deposit Account No. 04-1403.Respectfully submitted,

DORITY & MANNING, P.A.

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Date

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