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Experimental Confirmation of Nitrogen Synthesis from Deuterium and Carbon without Harmful Radiations

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In this paper, we present, apparently for the first time, experimental conrmation of the laboratory synthesis of nitrogen from deuterium and carbon without harmful radiations, as predicted by the author in a preceding paper. These first measurements merely deal with the apparent existence *of the synthesis, with more quantitative results being presented at a future time, and are released in the hope of much needed, independent tests due to the notorious need for new clean energies.*

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1. INTRODUCTION

By using standard nuclear symbols (e.g., A, Z, J^p, u denoting the atomic number, the nuclear charge, the nuclear angular momentum, the parity, and the nuclear energy in *amu* units, respectively), the author has suggested in the preceding Ref. [1], Eqs. (9.12), p. 177, to conduct experimental tests on the nitrogen synthesis from deuterium and carbon

$$TR + C(12, 6, 0^+, 12.0000) + H(2, 1, 1^+, 2.0141) \to N(14, 7, 1^+, 14.0030) + \text{Heat}, \quad (1)$$

where TR stabds for trigger and represents an external action identified below, with resulting energy output per nuclear fusion

$$\Delta E = (E_C + E_H) - E_C = 0.0111\, u = 10.339\, MeV \approx 1{:}5 \times 10^{-15}\, BTU. \quad (2)$$

The above test was suggested in Ref. [1] for conduction via a deuterium gas contained at pressure inside a metal vessel traversed by a DC electric arc between graphite electrodes. In this case, the arc separates (some of) the deuterium molecules and ionize their atoms, thus exposing deuterium nuclei as needed for any fusion. Jointly, the DC arc releases and ionizes the carbon isotopes of the electrodes and, at atomic distances, aligns the ionized deuterium and carbon isotopes along a tangent to the arc magnetic force.

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The synthesis was predicted in Ref. [1] via the addition of a *trigger*, namely, an action given by fast variations of the arc, instantaneous increases of pressure, and other means forcing the two nuclei at 1 *fm* mutual distances, at which value nuclear forces are activated by rendering the synthesis unavoidable under all possible conservation laws. Eciency is predicted to increase via a process called *PlasmaArcFlow* (patented and international patents pending) consisting in flowing the gas through the arc.

Ref. [1] called the above setting *Intermediate Controlled Nuclear Syntheses* (ICNS) in the sense that the syntheses are conceived to occur at threshold energy (the, minimal energy needed for the energy conservation law), thus being generally intermediate between the cold (low energy) and the hot (high energy) fusions. Also, the syntheses are truly controlled thanks to the control of the power, the pressure, the ow, the temperature, the trigger and other engineering means.

Synthesis (1) was suggested because having a distinct advantages over other nuclear syntheses currently receiving the majority of interest, for various reasons, such as (see Ref. [1] for details):

1. Since the carbon isotope has null spin, the engineering realization of a truly controlled spin coupling is dramatically simplified, e.g., with respect to the synthesis of the helium;
2. When occurring at threshold energies, and only in that case, the above synthesis cannot possibly release harmful radiation, because of insufficient energy to separate the deuterium or the carbon nucleus with consequential lack of neutron or proton radiations;
3. There are serious reasons to expect that synthesis (1) is realized in nature by lighting and is apparently necessary for a quantitative (rather than qualitative) representation of thunder.

It should be indicated that proposed ICNS cannot possibly be explosive, since they are restricted to a very small cylindrical area surrounding the arc, which area is disrupted by the fusions themselves, thus illustrating the need for the PlasmaArcFlow process because, in its absence, the predicted energy release can be small.

In this paper we report, apparently of the first time, *experimental* evidence conrming the existence of nuclear fusion (1) without harmful radiations and in a truly controlled manner by deferring all other aspects to future papers. *theoretical* interpretations are left to the interested reader.

2. EXPERIMENTAL APPARATUS

The author constructed a reactor consisting of a 1 *ft* diameter and 2 *ft* length Schedule 40 steel pipe with related flanges, tested at 300 *psi* so as to safely operate at 100 *psi* pressure, equipped with internal electrodes composed of commercial grade graphite, the anode being stationary and the position of the cathode being controllable from the outside via a suitable insulated knob allowing the initiation and disconnection of the arc, said reactor being completed by inlet and outlet gaseous ports, pressure and other gauges. On January 7, 2010, a vacuum was first pulled out of said reactor by technicians *Gene West* and *Michael Rodriguez* who subsequently lled up the reactor up to 100 *psi* with deuterium gas 99.99% pure supplied by *Advanced Special Gases* of Reno, Nevada. The original deuterium tank was then disconnected. A two-valves laboratory bottle market *HT*1 was then lled up with the gas in the interior of the reactor following due ushing. Commercially available digital sensors were used for the recording of temperatures.

No PlasmaArcFlow of the deuterium through the arc was activated because the experiment is intended solely to establish the *existence* of nuclear synthesis (3) and the securing of basic numerical data, since the study of various peripheral aspects as well as the achievement of a possible large scale production of energy requires basically different approaches and vast developments in due time.

The electrode terminals of the reactor were connected to a commercially available Miller Electric Dimension 1000 AC-DC converter set to operate at 40 *Kwh*. GeneWest and Michael Rodriguez activated the DC electric arc in the interior of the reactor for two minutes, after which time the arc had to be disconnected because the reactor, originally at 80°F, had reached 300°F and the external paint showed signs of scorching.

A second two-valves laboratory bottle was marked *HT*2 and filled up with the gas in the interior of the reactor following the activation of the arc and due ushing. Under the trail of custody by technicians *Jim Alban*, the two laboratory bottles so obtained were shipped to *ORS Oneda Research Services* of Whitebnodo, New York, for analyses.

Radiation counts during the test were done via:

1. A photon-neutron detector model *PM*1703*GN* manufactured by *Polimaster, Inc.*, with sonic and vibration alarms as well as memory for printouts, with the photon channel activated by *CsI* and the neutron channel activated by *LiI*;

2. A photon-neutron detector SAM 935 manufactured by *Berkeley Nucleonics, Inc.*, with the photon channel activated by NaI and the neutron channel activated by $He - 3$ also equipped with sonic alarm and memory for printouts of all counts;
3. A BF^3 activated neutron detector model 12-4 manufactured by *Ludlum Measurements, Inc.*, without counts memory for printouts but with both visual and sonic means;
4. An alpha, beta, gamma and X-ray detector model 907-palmRAD manufactured by *Berkeley Nucleonics, Inc.*; and
5. Various material suitable for nuclear transmutations.

3. PRELIMINARY EXPERIMENTAL RESULTS

The first and perhaps most important occurrence to report, under the eyewitnessing of gene West, Michael Rodrigues and Jim Alban, is the absence of any measurable massive radiations in the outside of of the reactor, with particular reference to the absence of any detection of neutrons that, in case produced, are predicted to be detectable outside the reactor. Internally produced charged particles are expected to be absorbed by the thick Schedule 40 metal walls of the reactor and not be measurable in the outside. No production of alpha particles is possible due to insucient energies.

The weight of the reactor was measured, resulting in being of 300 $lbs \pm 5\%$. Tabulated data on specic heat of steel yield the need of the following heat energy for the transition from 80°F to 300°F

$$\Delta T_{klystron} = 7404\ BTU \tag{3}$$

obtained from 449J/kg.C$\times$136.077kg$\times$127.77C)/1055.06J/BTU. 1 kwh = 3400 BTU. The use of 40 Kwh for two minujtes yields

$$\Delta T_{arc} = 4533\ BTU. \tag{4}$$

Consequently, the internal reactions produced the net heat in two minutes of

$$\Delta E_{out} = 7, 404 - 4, 533 = 2, 871\ BTU > 0, \tag{5}$$

thus conrming a signicant internal source of energy beyond that of the AC-DC converter. An examination of the deuterium gas in samples $HT1$ and $HT2$ reveals the lack of oxygen in amount sufficient to explain the produced energy via conventional combustion. This leaves, as the sole plausible source of the produced energy, internal nuclear fusions (3) from the deuterium in the gas and the carbon in the electrodes.

The analyses on samples $HT1$ and $HT2$ were conducted by ORS Oneda Research Services, via an Internal Vapor Analyzer, model 110-s which is the latest version of the system. The Analyses were performed per ORS SOP MEL-1070,Gas Analysis of Sealing Chamber Atmosphere. The main results are shown in Fig. 1.

As one can see, the deuterium gas was detected in sample $HT1$ at 4 *amu* with 2, 917, 650 counts corresponding to 93.33%, which is an accurate measurement since the vacuum in the reactor was not perfect prior to the filling up with deuterium gas, and the interior of the reactor had numerous contaminants from preceding tests. This also explains the 304, 901 counts of nitrogen in $HT1$ at 28 *amu* corresponding to 4.90% that originate from air contamination.

The experimental measurement considered most important by the author is the percentage of nitrogen in $HT2$ at 28 *amu* following two minutes of operations of the electric arc, namely, 629, 602 counts corresponding to an increase of 324, 701 counts over the corresponding measurement in $HT1$. The most plausible origination of the produced heat energy (7) is that from nuclear fusions (1) of the nitrogen from deuterium in the gas and carbon in the electrodes evidently released by the arc. Other explanations are possible and, of course, cannot be excluded, provided that they are not considered as having final character or dismissing the above interpretation, because could be inspired by attempts of adapting new experimental evidence to a preferred pre-existing theory.

By keeping in mind that reaction (1) is evidently irreversible over time, following decades of research, the author has achieved its prediction, quantitative study, and engineering realization via the irreversible (Lie-amissible) branch of hadronic mechanics [1] (see also Refs. [1] for related issues). Corresponding quantitative studies and engineering realizations via quantum mechanics are not excluded despite the strictly reversible (Lie) character of the latter theory, and their conduction by interested readers is encourage for comparison with studies [1] and future resolutions.

We should also note a number of unusual chemical species in the remaining measurements of Fig. 1, such as: the increase (rather than the expected decrease) of the deuterium counts at 4 *amu*, the species at 6 *amu* already anomalous in $HT1$ with an anomalous increase in $HT2$; the anomalous species at 19 *amu* (called H_3O because expected to be composed by an anomalous bond of H_2O to H), and others species.

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UNITED STATES

ORS LOT NO : 184443-001
DATE TESTED : 1/18/2010
QUANTITY TESTED : 2
PACKAGE TYPE : CYLINDER
MFG CODE : Date filled: 01/14/10
Filled by: R.S.

PO: XXXX-XXXX-XXXX-7641
Rel. No:

SAMPLE ID	HT1	HT2						
AMU 2	36,749	72,242						
AMU 3	9,638	223,826						
AMU 4	2,917,650	4,757,170						
AMU 5	-	1,258						
AMU 6	5,057	14,612						
AMU 7	-	98						
AMU 12	71	10,412						
AMU 13	-	477						
AMU 14	36,891	70,451						
AMU 15	227	911						
AMU 16	11,953	15,409						
AMU 17	749	17,310						
AMU 18	2,554	114,079						
AMU 19	878	15,911						
AMU 20	2,766	59,218						
AMU 21	-	628						
AMU 22	-	109						
AMU 24	-	616						
AMU 25	-	104						
AMU 26	166	4,603						
AMU 27	169	11,343						
AMU 28	304,901	629,602						
AMU 29	2,304	6,452						
AMU 30	3,587	20,538						
AMU 31	-	2,188						
AMU 32	79,062	31,752						
AMU 33	54	800						
AMU 34	463	2,573						
AMU 35	-	396						
AMU 36	-	3,290						
AMU 37	-	85						
AMU 38	-	100						
AMU 39	185	205						
AMU 40	3,844	6,961						
AMU 41	132	403						

COMMENTS:

Tested per ORS SOP MEL-1070: Gas Analysis of Sealing Chamber Atmosphere.
Mass 3 was not quantitated but is shown in the spectra report.

Figure 1: A View of the the Results of the Analysis of Samples *HT*1 and *HT*2 by ORS Oneda Research Services

Due to the inability of representing these new species as being constituted of ordinary molecules (due to the evident absence of the necessary valence electrons), ionic clusters (because the DC arc produces ions with the same charge that repel, rather than attract each others) and other conventional structures, the author achieved their prediction, quantitative treatment and industrial realization (see *www.magnegas.com*) via the new chemical species of magnecules [5] (see a review in Chapter 4 of Ref. [3]). As a result, the tests here presented provide additional experimental elements on the existence of a new chemical species whose detailed studies is currently under way.

Again, the quantitative treatment and engineering realization of the same anomalous species via conventional quantum chemistry is not excluded, and their study by interested authors is encouraged for comparison with studies [5] and future resolutions. Regrettably, these chemical aspects cannot possibly be studied in this paper solely intended for a specic nuclear aspect, and have to be deferred to subsequent works.

Needless to say, the above results are merely initial and have been released in the hope of stimulating independent experimental vericationsor denials due to the great need by mankind for new clean energies in view of our increasingly alarming environmental problems.

Acknowledgments

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