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## **Neutrons, Polyneutrons, Composition of Polyneutrons: Low Energy Nuclear Reactions (LET), Alchemy, Chemistry.**

### **Abstract.**

We show how, in our opinion, Low Energy Transmutations (LET), Alchemy, Chemistry, can be understood in terms of : Neutrons, Polyneutrons, Composition of Polyneutrons.

We show then the Experimental Method and the results of:

- 1) Transmutation of Mercury into Gold by means of Acetic Acid.
- 2) Transmutation of Lead into Silver through ignition of Metallic Salts.
- 3) Transmutation of Thorium and Uranium into Stable Elements through ignition of Metallic Salts.

These experiments, in our opinion, show that:

- 1) The Principle of Lavoisier is experimentally groundless.
- 2) Alchemy is an Experimental Science.
- 3) It is possible to dispose of the Nuclear Waste.

## Introduction

Let us introduce the hallmarks of the Alpha Extended Model of the Atom (1).

The first step is the definition of : what is a Neutron.

According to our point of view, the Neutron (n) is the sum of a Proton (p) and an Electron (e).

Consequently, in our Periodic Table of the Elements, we use the symbol :

P = Protium (p + e)  $\equiv$  H<sub>0</sub> , to designate the Neutral Hydrogen Atom.

We use the symbol: P<sub>0</sub>  $\equiv$  n = neutron (pe), to designate the peculiar isomeric configuration of Hydrogen which is the Neutron.

That is: from our point of view P and P<sub>0</sub> are two different isomeric configurations of the same *thing*: the sum of a Proton and an Electron.

The Neutral Hydrogen Atom, H<sub>0</sub> (p + e) is a peculiar form of the Neutron.

The Neutron is a peculiar form of the Hydrogen Atom.

We suppose that the transition between two isomeric configurations is reversible:

n (pe)  $\xrightleftharpoons{\quad}$  P (p + e).

Neutrons decay in: n  $\rightarrow$  p + e (we neglect the Neutrino).

What about: p + e  $\rightarrow$  n ?

In 1940 Borghi advanced the hypothesis that a Neutron is a peculiar bound state of the Hydrogen Atom.

From 1950 to 1955 Borghi planned and made an experiment to synthesize Neutrons, starting from a Cold Hydrogen Plasma (2).

The Cold Synthesis of the Neutron show that the Neutron is the sum of a Proton and an Electron.

Borghi's paper was handed to R. A. Monti by Camillo Giori, collaborator of Borghi, in 1989.

R. A. Monti was already on his way to Cold Fusion since 1987 (3).

In this period can be traced the first attempts to make some Cold Fusion Experiments (4).

In 1989 R. A. Monti requested CNR to repeat Borghi's experiment. No answer.

Again we ask, today to repeat this experiment.

## Elementary Polyneutrons.

In our Periodic Table of the Elements (1), (5) we introduced 3 Polyneutrons:

The periodic table shows elements from Period 1 to 7, with additional elements below. The groups are labeled as IA, IIA, IIIA, IVA, VA, VIA, VIIA, O, IIB, IB, VIII, IIA, IIB, IIIA, IVA, VA, VIA, VIIA, O, and O. Each element cell contains its symbol and atomic number.

The Dineutron:  $D_0 = (2n)$

The Trineutron:  $T_0 = (3n)$

The Tetra neutron:  $\alpha_0 = (4n)$

Together with the Neutron ( $P_0$ ),  $D_0$ ,  $T_0$  and  $\alpha_0$  constitute the four Elementary Polyneutrons.

According to our point of view we consider as a source of Elementary Polineutrons: Hydrogen, in gaseous, liquid or solid form.

As a source of Dineutrons: Deuterium, in gaseous, liquid or solid form.

As a source of Trineutrons: Tritium and Helium 3, in gaseous, liquid or solid form.

As a source of Tetra neutrons: Helium 4, in gaseous, liquid or solid form.

## Composite Polyneutrons.

Polyneutrons made up of Elementary Polyneutrons are named: Composite Polyneutrons.

For example, as a source of 2 Tetra-neutrons we indicate Berillium 8 ( ${}^8_4\text{Be}$ ).

As a source of 3 Tetra-neutrons: Carbon 12 ( ${}^{12}_6\text{C}$ ).

As a source of 4 Tetra-neutrons: Oxigen 16 ( ${}^{16}_8\text{O}$ ), gaseous, liquid or solid.

And so on...

That is: Atoms are periodic structures made up of Hydrogen Atoms, of period 4. Elements are made of Elementary or Composite Polyneutrons.

As a consequence, the Elements can be ordered following a Periodic Table of Period 4 (1), (5).

The Tetra-neutron:  $\alpha_0 = (4n)$  plays a fundamental role in this Table.

On the contrary, current theoretical model just do not accept Tetra-neutrons.

Consequently we consider the discovery of the Tetra-neutron experimental evidence for the Alpha Extendel Model of the Atom (6), and obviously, in our opinion *the Alpha- cluster model persists through the Periodic Table* (7), (8), (9), (10).

The Tetra-neutron is not *Element Zero* (6), but Element 4.

The name Element Zero is due, properly, to the Neutral Hydrogen Atom (the Neutron):  $P_0 \equiv n$ .

To better understand, on this basis, Low Energy Nuclear Reactions, Alchemical Reactions and Chemical Reactions, the first hint, in our opinion, is the following: there is no Coulomb barrier among Polyneutrons .

## Historical note (introduction to Alchemy).

Alchemists were well acquainted with almost three Acids:

Nitric Acid ( $\text{HNO}_3$ ), Hydrochloric Acid ( $\text{HCl}$ ) and Acetic Acid ( $\text{CH}_3\text{COOH}$ ), used to make Metallic Salts (to dissolve the Metals).

Lavoisier pinpointed erroneously Oxigen ( $4\alpha$ ) as the essential Element to characterize an Acid.

According to the Unitary Theory, Acid is any substance which, in its composition, has one or more Hydrogen Atoms which can be substituted by Metals (11).

The Element which characterizes an Acid is Hydrogen, not Oxigen.

In the Physiocratic France the Principle of the Transmutability of the Elements was an integral part of the Chemical Philosophy (12).

No one doubted seriously about the possibility of the Transmutation of one Element into another, different, Element.

Unfortunately Lavoisier had the idea to show that this *belief* was groundless, notwithstanding the experimental evidence widely shown by Nature and well pinpointed by Newton (12), (13).

The Principle of Lavoisier became a prevailing paradigm: the Intrasmutability of the Elements, first of all the impossibility to transmute Mercury into Gold, became a Scientific Certainty.

On the contrary, consequently to the Periodic Table of the Elements which follows from the Alpha Extended Model of the Atom, any Element is made up of Polyneutrons and can be made by composing properly a certain group of Polyneutrons: Low Energy Transmutations from one Element to another Element are possible.

We shall start just comparing the *Scientific Certainty* of Lavoisier with the experimental evidence of the Alpha Extended Model of the Atom.

### **Transmutation of Mercury into Gold by means of Acetic Acid (First *Filalete's Exercise*).**

Acetic Acid, in the Alchemic Dictionary, is named *Vegetable Acid* (14).

The amount of terms and the References related to Vinegar in Alchemic Literature, show that Vinegar plays an important role in Alchemy.

As a matter of fact in Geber's "Summa Perfectionis" the first step in the preparation of the *Philosophical Mercury* (a peculiar isomeric configuration of Mercury) consists in the: *Purification of Mercury by means of good Vinegar* (15).

In his "Principles", point 7, Filalete states clearly that: *It is necessary to wash Mercury with Vinegar and Sal ammoniac* (16).

Moreover in his "Open Entrance to the Closed Palace of the King", Filalete states that: *From Mercury I can obtain everything, even Gold and Silver, without the Transmutation Elixir* (17).

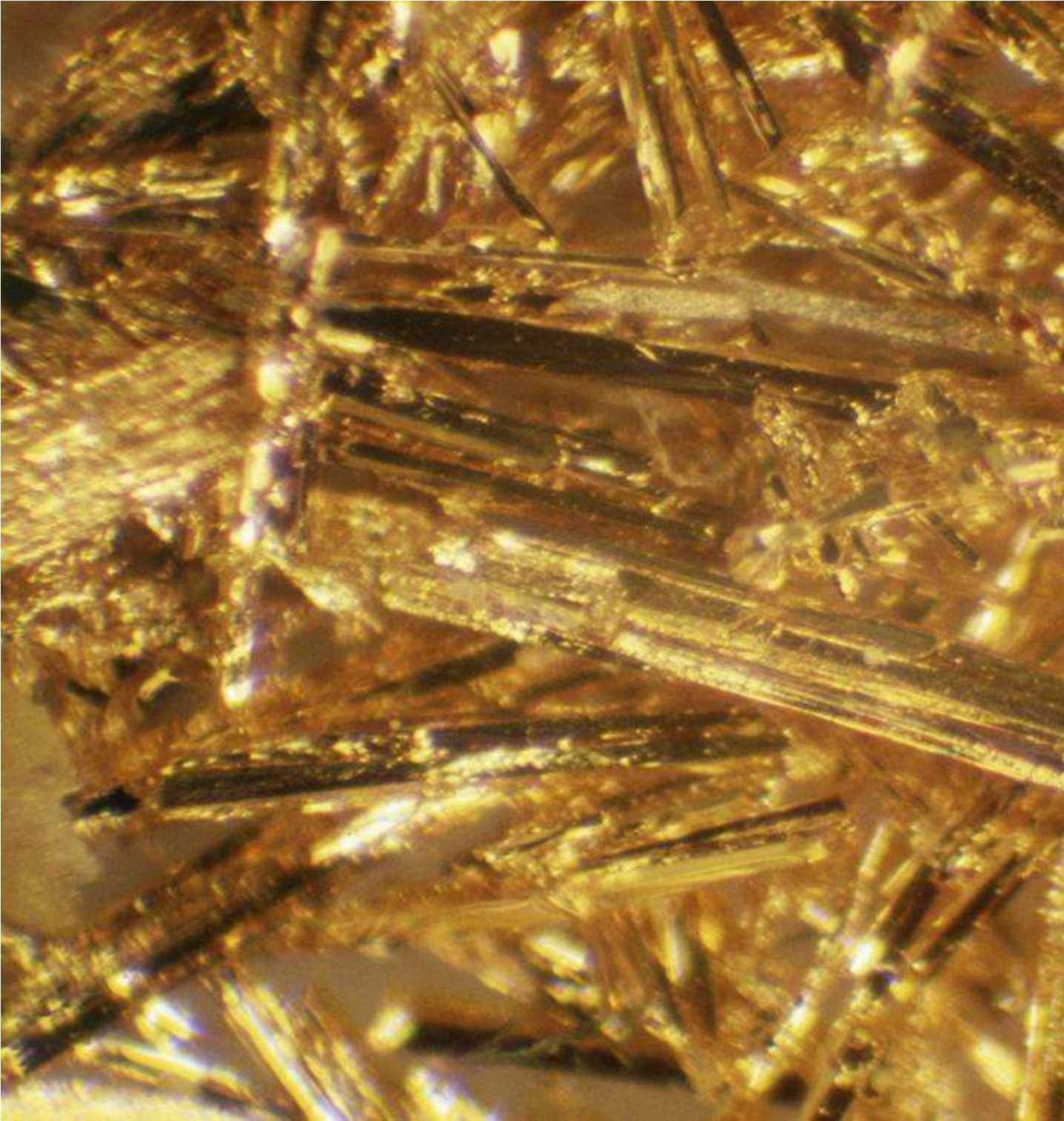
We tried an experimental test, which we called *first Filalete's exercise*, following Geber's and Filalete's hints.

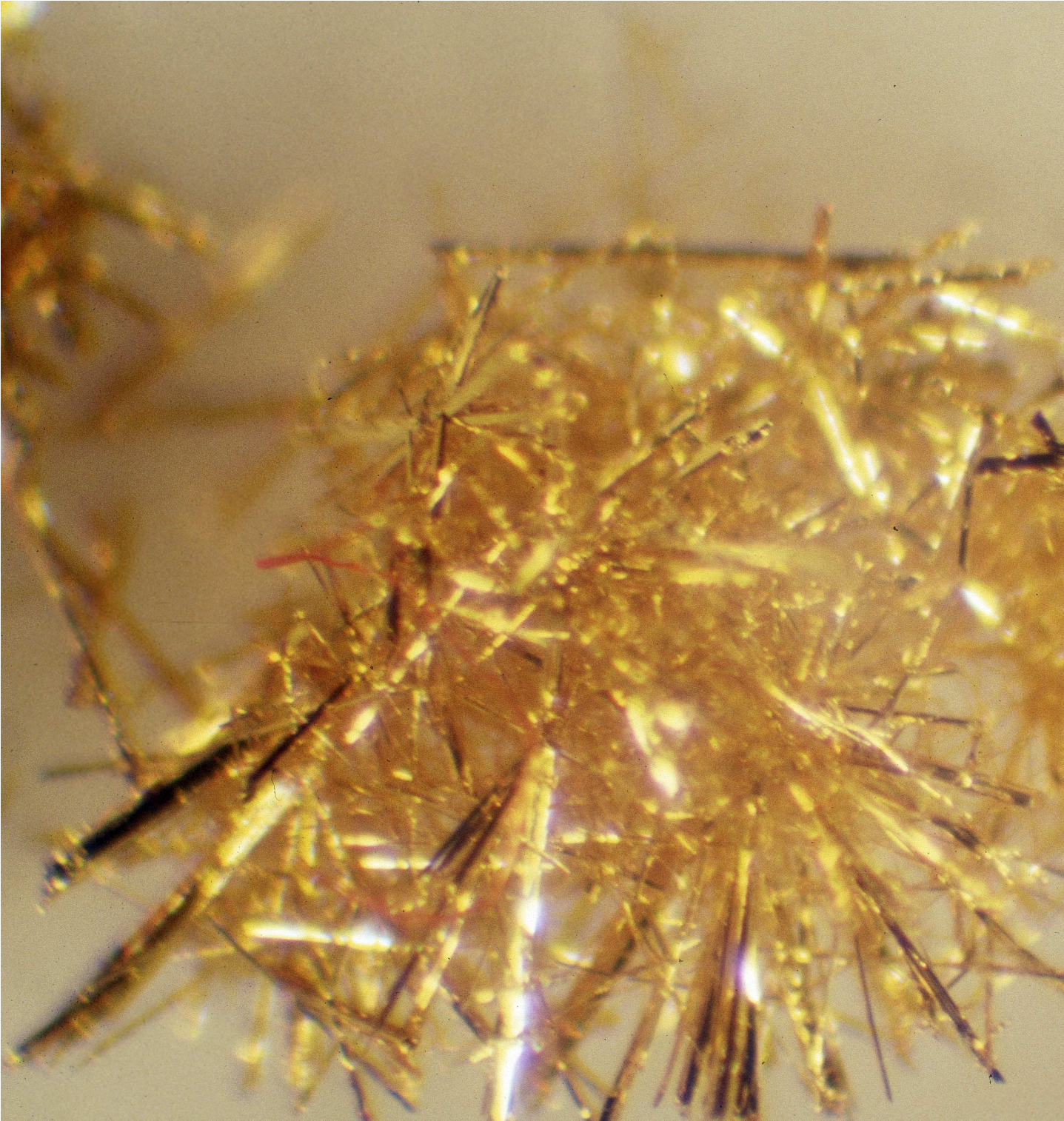
We *washed*, following Geber's instructions, 500g of Mercury in *very good Vinegar*, obtained mixing 1/2 liter of Vinegar with 1/2 liter of Acetic Acid for 2 - 3 months. Then we took 100g of the *washed Mercury* from the 500g.

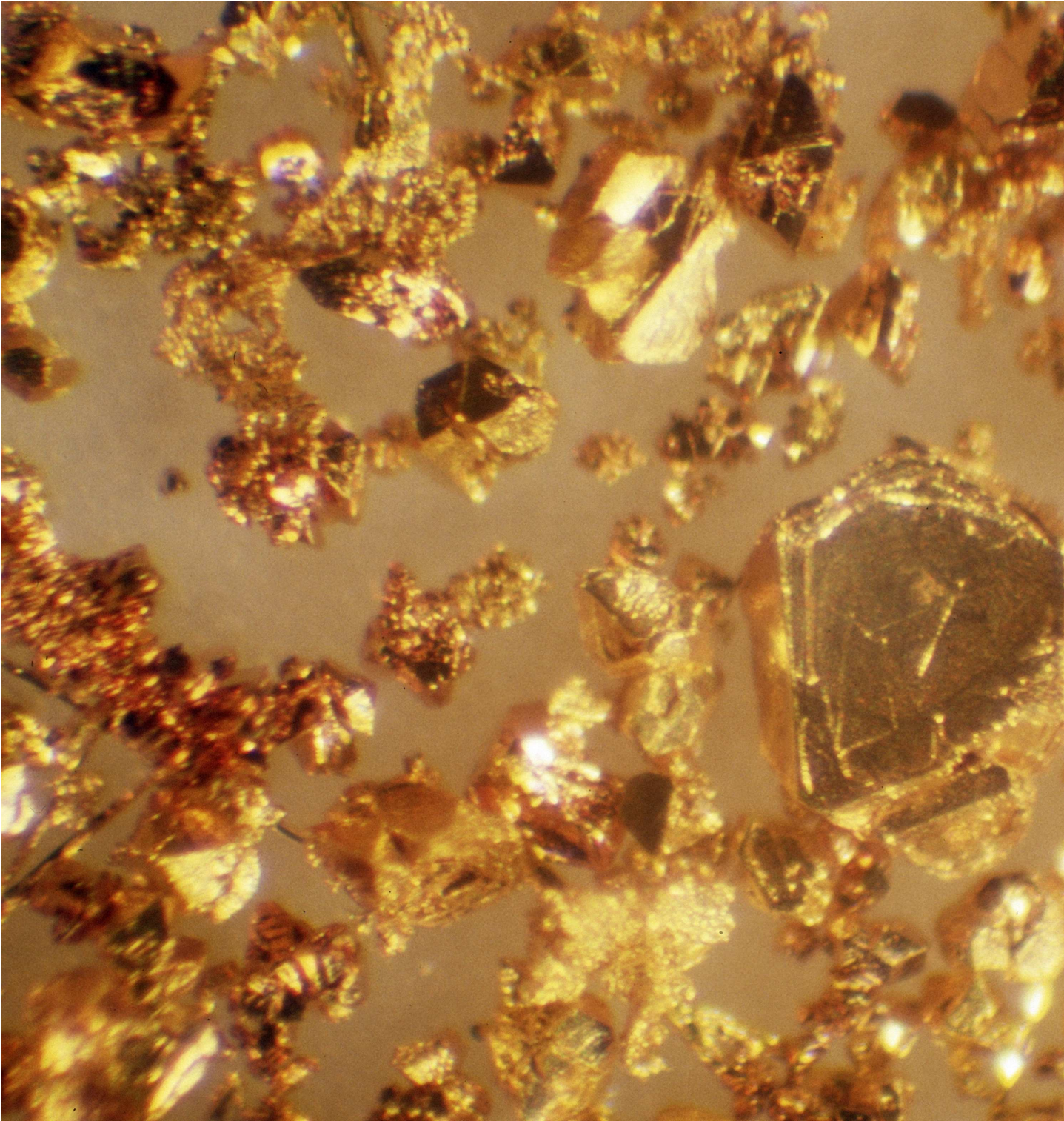
Once dissolved in Nitric Acid 1 to 5, the 100g showed 55mg of Gold crystals.

After 2 more months 100g of the same lot of 500g, dissolved in Nitric, gave 88mg of Gold crystals.

Analyzed by SEM and ICP the Gold crystals showed to be from 100% to 90% Gold. The most beautiful we have ever seen (see photographs) (18).









## **Transmutation of Lead into Silver through ignition of Metallic Salts.**

On April 1992 John Bockris invited R. A. Monti to join and witness experimental tests suggested by Joe Champion (The Philadelphia Project).

The first test showed immediately what was going on: it was clearly an attempt to replicate the *Twelfth Key of the dry way to the Philosopher stone* of Basil Valentine (19).

Bockris and Champion knew very little about Alchemy.

Fortunately April is *the right season* for Transmutations.

Consequently the experiments showed definitely - during April and May - the production of Gold and other Noble Elements from the ignition of a mixture of Metallic Salts and other Elements (20).

In September 1992 the Philadelphia Project finished.

R. A. Monti moved to Prosser (Wa).

During the *Second Window* of 1992 (October, November) experimental test made in Prosser together with Jack Keller showed the possibility of the Transmutation of Lead into Silver and other Noble Metals.

Some experimental details of the process were shown in a paper: Low Energy Transmutations, prepared for ICCF-3 (published in J.N.E.2003) (21).

## **Transmutation of Thorium and Uranium into stable Elements through Ignition of Metallic Salts.**

During 1992 and 1993 R. A. Monti could see that many problems were coming from the attempt to go into industrial production of Noble Metals (Crystal Mountain Corporation).

In 1994 Monti left Crystal Mountain to join Burns Developments (Vancouver, Canada).

The possibility to cause Cold Fusions and Cold Fissions of stable Nuclei, by means of ordinary Chemical Reactions, led Monti to test the effect of similar Chemical Reactions on unstable (radioactive) nuclei.

During early 1993 and in March 1995 experiments were made using Thorium.

The experimental results were summarized (1995) in the paper: "Variation of the half - lives of Radioactive Elements and associated Cold Fusion and Cold Fission Reactions" (22).

After ICCF-5 (Montecarlo, 1995) it was necessary to have similar experiments repeated in independent laboratories for the *validation* of the process .

In 1996 an industrial reactor was built in Canada and sent to Italy for a new series of independent tests at ENEA, Saluggia (Italian National Laboratories).

In these test the production of Silver from Lead was used as a driver of the transmutation of Thorium and Uranium.

Thorium was reduced by 88% . Uranium by 30% (23).

To make a further demonstration of the reality of these experimental results a new series of tests was carried out on May 21 and May 25 1998.

The first experiment (May 21) showed the transmutation of 1.32g (30% of the total) of Uranium (23).

The uncertainty declared by the laboratory was between 5 and 10% .

To avoid any possibility of error we decided to show the possibility to increase this result through a slight change in the proprietary formula used, suggested by the Alpha Extended Model of the Atom (1), (5).

Consequently a second test was carried out on May 25, 1998, with the only addition of 50g of SiO<sub>2</sub> (powder) in the same composition used for the test of May 21.

The result was the transmutation of 2.07g of Uranium (45% of the total).

An increase of 15% (+ 50% compared to the test of May 21).

In 2001 Monti America Corporation made a test in Taiwan, to show once again the reality of the process of transmutation of Thorium and the production of Silver from Lead.

The samples were taken by Jack Coleman and analyzed by Ramon R. Barnes (25).

In 2002 (October 9) we made another demonstration at the Royal Institute of Technology (Stockholm , Sweden).

It was the first time we tried a test, with Thorium, in the second window of the year. 3 ignitions were made (see videotape and History section).

The samples obtained from the first ignition were taken, for analysis, by G. Godowsky . The results never returned (disappeared).

The samples from the second and the third ignition were taken by J. Coleman and analyzed by R. N. Barnes (26).

A very interesting result came out: using the mixture with 50g of SiO<sub>2</sub> also the Thorium in the slag was destroyed (about 100% of the total).

We need, obviously, more tests made in the second window of the year, to verify this experimental result.

## Conclusion.

1) We have shown how, in our opinion, Low Energy Transmutation (LET), Alchemy, Chemistry can be understood in terms of Neutrons, Polyneutrons, Composition of Polyneutrons .

According to the Periodic Table of the Elements which follows from the Alpha Extended Model of the Atom, any element is made up of Polyneutrons and can be made by composing properly a certain group of Polyneutrons.

Low Energy Transmutations from one elements to another are possible.

2) The new Periodic Table is based on the existence of the Alpha - Zero group ( $\alpha_0$ ): the Tetraneutron.

The discovery of the Tetraneutron, in our opinion, is experimental evidence for the Alpha Extended Model of the Atom.

3) The experimental evidence of transmutation of Mercury into Gold, in our opinion, shows that the Principle of Lavoisier is experimentally groundless (18).

This test has been recently repeated by an independent laboratory (Pirelli Labs, Italy), confirming the reality of this transmutation.

4) We have shown experimental evidence for Low Energy Transmutations related to the production of Noble Metals.

The experimental method has been indicated since 1992 (21).

So that this test can be easily repeated.

5) We have shown the possibility of destroying the Nuclear Waste.

A problem of fundamental importance nowadays.

Further Research is, obviously, needed.

But a wide field of Knowledge is open in front of you.

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