A Model that leads to **new knowledge**

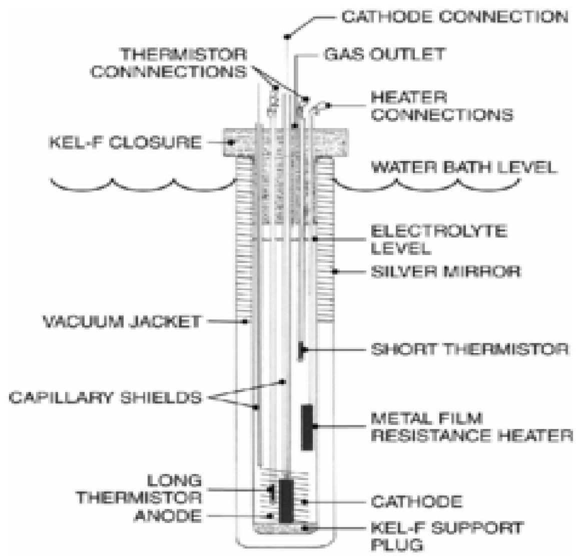
Fourth Module: Fusion?

T/Q **E** **D** **R**	**Theorem-Question** **Explanation** **Determination** **Repetition M2**	**Other activities from the external and internal reaction!**

Text Module = in black, version of present Physics = in red

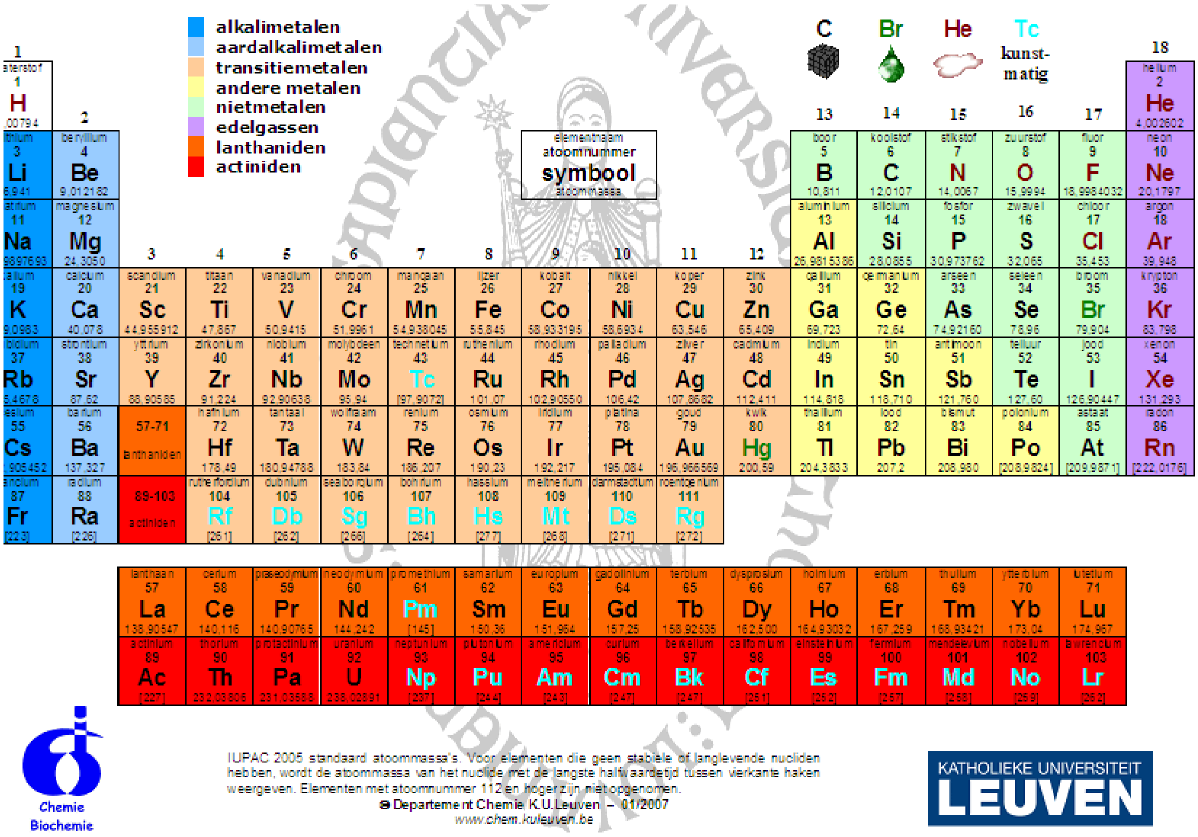
The internet is buzzing with claims related to Cold Fusion or LENR (Low Energy Nuclear Reactions). According to classical Physics, which until now only accepts hot fusion as in the Sun, such reactions cannot occur in everyday circumstances. Yet these claims started with two scientists: **Fleischmann and Pons**. In 1989 they claimed to have tracked a process that caused an energy profit in the form of heat. In all honesty they wrote in their article that they didn't know which phenomenon it was that caused the process. Some authorities pushed them to use the word fusion. Recent claims assert that a strange variety of fusion processes have been found. They are shrouded in a veil of secrecy. Each 'inventor' keeps a piece of his invention secret: his **key** (**Kex**) **that unlocks the mechanism**, his key that opens the treasure. This involves that his invention cannot be controlled. That unfortunately also involves that there is often a lot of deception. Eg sell installations that produce basic energy, ask high advances and never deliver. Just mentioning one example: Keshe.		
Q	Why is there such intense opposition to the findings of Fleischmann and Pons (F&P)?	The hot fusion community criticizes cold fusion and is right in a number of things: * The process only works in 70% of the cases and they do not know when it gets going, immediately, after a few days or even a few weeks. * if it should handle about a pairwise reaction of two deuterium nuclei, as in free space, you should always get the same products as in hot fusion. But, generally, we do not see these types of products. Also, the amount of energy produced is not always the same.
E	For decades scientists ask themselves what's going on with the experiment of F&P.	F&P used three ingredients: a lattice of palladium, heavy water D_2O (D = deuterium) and an electric current. They found that in the narrow spaces of the palladium structure processes take place that generate heat. One can assume that helium is formed but for this event never any evidence is found. Nevertheless more and more groups succeed to get this experiment right such as **Mc Kubre**. Also the Pentagon admits in a 2007 report that the claim of F&P was justified.

A Model that leads to **new knowledge**

<table>
<tr><td></td><td>With this simple installation one can make an energy gain of x 25.</td><td>
</td></tr>
<tr><td>D</td><td>It is sad to see how F&P where rejected from scientific community after their discovery.</td><td>Simply because their discovery did not fit into the theoretical framework of Physics. Physicists do not even know where the Laws of Physics come from. In such a position you must remain humble. There is no reason to vilify fair experimentalists. Certainly not with often worthless and non-scientific arguments such as: "it will be this or it will be that" or under the motto ‘reality doesn’t count, math is more important’.</td></tr>
<tr><td>Q</td><td>Maybe we should change the definition of fusion?</td><td>Mc Kubre 29/8/2012 New Scientist: Fusion simply means the combining of light nuclei to make a bigger nucleus with a mass deficit, and that mass deficit shows up as heat. Today it's quite clear that with F&P there was some sort of fusion going on - but it is a fusion process that hitherto has not been considered by the mainstream physics community.</td></tr>
<tr><td colspan="3">In this Module we go further than Mc Kubre. We are going to throw a light on the whole matter.
In Module 2 a number of keys where brought that can trigger two kinds of reactions: the external and the internal reaction. In Module 3 the existence of these two reactions was confirmed. In this Module we will explore them further. Here are the additional keys much more.
The purpose of this way of revealing is twofold:
* To prove the Model that is the basis of these Modules. It does not meet the standards of the analytically oriented Physics. As stated in Module 1 a completely different approach is needed if we want to unlock the secrets of matter and of the Universe.
* To verify the existence of easy inducible fusion processes. This way of revealing makes this knowledge to become common knowledge. Doing so all the hassle with shielding patenting is objectless. What cannot be verified in this context is not true. It will dispel the myths and prevent a lot of speculation and deception when everyone has to be honest about this.</td></tr>
<tr><td>R
M2</td><td>Can the internal reaction fill the gap?</td><td>With the aid of the Model we drew the following conclusions in Module 2:
Right of Fe the transition metals and the non metals predominantly show a magnetic effect. I.e. that under certain circumstances they can stimulate the release of energy from the courses of space x’, y’, z’ which reduces the mass of the nucleus (for example during fusion processes).</td></tr>
</table>

		This involves that nature is able to choose its own pathways. This pathway depends on the circumstances.

The Periodic Table of elements



D	The existence of the external reaction has been proven with the Black Light experiment (see M2).	Beside the existence of the external reaction we posited in M2 also the existence of the internal reaction (see below repetition). With the watergas in M3 we could detect the existence of the internal reaction as endothermic reaction. The result of such an internal reaction is a ‘cold’ explosion. With the watergas the internal reaction does not result in fusion. The reaction is weakened because the first key is imperfect: the utilized hydrogen is semi-mono atomic instead of mono atomic.
R M2 M3	The non weakened **internal reaction** can cause transmutations. A transmutation means that a chemical element transforms into another element.	A proton exists of two up-quarks (u) and one down-quark (d). The electron of the unstable hydrogen atom gives a small part of its negative charge on to the down-quark of the concerned proton. Thus not only the positive charge of the proton decreases but also the stronger negative charge of the down quark seriously reduces the Coulomb repulsion which means that the repulsion for the other cores reduces: $u(+2/3^e\ e^-)u(+2/3^e\ e^-)d(-1/3^e\ e^-)\nearrow$ and e^- is the elementary charge. The modus operandi are: mono atomic (**Ke1**) and thus electrically instable hydrogen is brought in contact with potassium (**Ke2**) and/or with elements on the right of iron Fe (**Ke4**) the Periodic Table.
D	What have we learned from the	When this reaction occurs there is not only a reduced repulsion from the cores. The hydrogen core also experiencing a serious acceleration

	watergas?	as in the explosion. That's what we learned in M3. A fusion process that is the result of the internal reaction should be fairly violent. That confirms the necessity of **Ke5**&**6**: the occurrence of fusion processes in cavities or under high-pressure and/or at temperatures above 3000°C.
D	Do we have enough energy for a fusion? From cobalt as final result the fusion processes are **endo energetic**.	Elements, on the right of iron (Fe) in the Table, are brought in a condition that makes fusion possible by the instable hydrogen (**Ke4**). Fusion processes that deliver elements up to iron are **exo energetic** processes. This means that energy profit is made. Fusion processes of elements heavier than iron are **endo energetic**. So energy has to be added. This energy has to come from **Ke5** or **Ke6**. These keys are chemical energy so it will be very doubtful whether they are sufficient. Only other possibility is that watergas comes to the rescue with an added external or internal reaction.
Q	Is there any evidence for such an intervention by the watergas?	Yes, **Dan Haley** showed that watergas is able to neutralize radioactivity. It is assumed that the special energy of watergas stimulates transmutations by accelerating ongoing decay processes. (G. Wiseman). Haley managed to largely neutralize radioactive cobalt 60 (^{60}Co) with watergas. He reduced the radioactivity from a reading of 1000 to 40 on the Geiger counter. He did this by letting watergas interact with the cobalt at a temperature of 3000 ° C in a thermite reaction (exothermic reaction of iron and aluminum).
D	Also Haley couldn't do anything right.	Also this rejection happened with often worthless and non-scientific arguments such as: "it will be this or it will be that". Any kind of verification stayed away because theoretical Physics said that it was impossible.
D	Are there more legitimate claims?	When under elevated pressure water is propelled through a cavity with an aluminum foil then cavitation bubbles emerge. In these bubbles several kinds of transmutations occur: **Mark LeClair** in his experiment with aluminum veneer. This is a first indication that cavitation bubbles create watergas. Without the presence of semi-mono atomic hydrogen (**Ke1**) fusion processes surely will not occur. Later on, we will see that in nature there are other examples of watergas produced in cavitation bubbles.
Q	Are there other possibilities?	We are sure that some claims are misleading and motivated by profit. Which claims seem fair? We mention some of them without a judgment on their validity. The keys that are given in this Module should allow to verify some of these claims.
D	**Rossi** with his E-Cat	Rossi claims to convert nickel (Ni) in copper (Cu) with release of energy. He himself doesn't reveal his key but from the above it is clear that he works with hydrides to obtain **Ke1** and **Ke2** while nickel itself is **Ke4**. With Randell Mills in M2 strontium, an alkaline earth metal, is a possible alternative for potassium. This way magnesium seems to be a

<table>
<tr><td></td><td></td><td>possibility to as Ke2. We can work with a mixture of magnesium hydride (MgH_2), potassium hydride (KH), lithium hydride (LiH) and/or boron hydride (BH_3).

From the isotopes table below it shows that if he works with a hydride from ordinary hydrogen he surely does not obtain a conversion into copper. There would always remain a very low relative presence of basic copper. If ^{62}Ni becomes stable ^{63}Cu then there is only 3.6% present, if ^{65}Cu becomes stable ^{64}Ni then there is only 0.9% present.</td></tr>
<tr><td>E</td><td>Table of Isotopes from
Ni with 28 protons. With the isotope a number is mentioned. When the number of protons is deduced from the number the number of neutrons remains.

RP is the relative presence of the isotopes in normal nickel.
DF = decay form
DE = decay energy
DP = decay product
syn = only by synthesis</td><td>Most stable isotopes Ni Nickel 28
<table>
<tr><th>Iso</th><th>RP (%)</th><th>Half-life</th><th>VV</th><th>DE (MeV)</th><th>DP</th></tr>
<tr><td>^{58}Ni</td><td>68,077</td><td colspan="4">stable with 30 neutrons</td></tr>
<tr><td>^{59}Ni</td><td>syn</td><td>$7{,}6\times10^4$ y</td><td>ß+</td><td>1,072</td><td>^{59}Co</td></tr>
<tr><td>^{60}Ni</td><td>26,223</td><td colspan="4">stable with 32 neutrons</td></tr>
<tr><td>^{61}Ni</td><td>1,140</td><td colspan="4">stable with 33 neutrons</td></tr>
<tr><td>^{62}Ni</td><td>3,634</td><td colspan="4">stable with 34 neutrons</td></tr>
<tr><td>^{63}Ni</td><td>syn</td><td>100,1 y</td><td>β-</td><td>3,672</td><td>^{63}Cu</td></tr>
<tr><td>^{64}Ni</td><td>0,926</td><td colspan="4">stable with 36 neutrons</td></tr>
</table>
Most stable isotopes Cu Copper 29
<table>
<tr><th>Iso</th><th>RP (%)</th><th>Half-life</th><th>DF</th><th>DE (MeV)</th><th>DP</th></tr>
<tr><td>^{63}Cu</td><td>69,17</td><td colspan="4">stable with 34 neutrons</td></tr>
<tr><td>^{64}Cu</td><td>syn</td><td>12,7 h</td><td>ß+
β-</td><td>1,675
0,597</td><td>^{64}Ni
^{64}Zn</td></tr>
<tr><td>^{65}Cu</td><td>30,83</td><td colspan="4">stable with 36 neutrons</td></tr>
<tr><td>^{67}Cu</td><td>syn</td><td>61,83 h</td><td>β-</td><td>3,558</td><td>^{67}Zn</td></tr>
</table></td></tr>
<tr><td>D</td><td>Is the reaction of Rossi able to deliver energy?</td><td>There is also the argument that the conversion of nickel into copper is a endo energetic process which doesn't deliver energy. When there is a conversion then it has to be that from the isotope of nickel with a high relative presence into the instable isotope of copper making this final product immediately to decay. That has to be ^{58}Ni that converts into an isotope of copper that immediately splits into smaller atoms. Problem: ^{59}Cu normally decays after 81,5 seconds into ^{59}Ni and that doesn't deliver energy.</td></tr>
<tr><td>D</td><td>Conclusion</td><td>The reaction of Rossi is not a fusion process even if he uses hydrides! Also Ke5 and/or Ke6 are missing.</td></tr>
<tr><td>E</td><td>Rossi is in the same situation as F1P.</td><td>During the reaction of F&P one or more from the keys above can occur by coincidence. Also with their reaction Ke5 and/or Ke6 is missing. It even becomes worse when we look at the Table of isotopes.</td></tr>
</table>

Table of isotopes

Most stable isotopes Pd Palladium 46

Iso	RP (%)	Half-life	DP	DE (MeV)	DP
^{102}Pd	1,02	stable with 56 neutrons			
^{103}Pd	syn	16,991 d	EV	0,543	^{103}Rh
^{104}Pd	11,14	stable with 58 neutrons			
^{105}Pd	22,33	stable with 59 neutrons			
^{106}Pd	27,33	stable with 60 neutrons			
^{107}Pd	syn	$6{,}5 \cdot 10^6$ y	β-	1,511	^{107}Ag
^{108}Pd	26,46	stable with 62 neutrons			
^{110}Pd	11,72	stable with 64 neutrons			

Most stable isotopes Ag Silver 47

Iso	RP (%)	Half-life	DF	DE (MeV)	DP
^{107}Ag	51,84	stable with 60 neutrons			
^{108}Ag	syn	418 y	EC	2,027	^{108}Pd
^{109}Ag					

EC = electron capture

The Table of isotopes tell that there are no possibilities for the conversion of palladium in silver. Here too, the endo-energetic rule applies. No stable silver can be formed in these circumstances because there is not enough energy. The final product must decay to obtain an exothermic process.

Q

Yet we have seen that at least the claim of F&P is justified. What is going on here?

The conditions are not favorable for the occurrence of the internal reaction. Could it be that the external reaction occurs as an alternative?

(Semi-) mono atomic and thus electrically unstable hydrogen (**Ke1**) must be created. This can be done by the production of watergas with the weak current that flows through the device.

Sometimes these electrolytes are added:
$FeSO_4$
$NiCl_2$
$PdCl_2$
$CaCO_3$
$LiSO_4$
$NaSO_4$
$TiOSO_4$ = Titanium(IV) oxysulfate solution.
(Jones, Palmer,… & Rafelski 23 march 1989

It is titanium in the last solution, which can provoke an external reaction.

F&P used D_2O (hydrogen H is replaced by deuterium D = hydrogen nucleus + extra neutron). As electrolyte they used LiOD or lithium hydroxide with deuterium. This meets the conditions for making watergas.
That watergas does not have to come in contact with sodium or potassium, that function is taken by lithium. In order to provoke the external reaction, the watergas should still have come into contact with the other elements that are located on **the left of iron** (**Ke2** & **4**) in the Table. When repeating the F&P experiment the electrolytes listed beside are added to obtain better results. Only the titanium can make a positive contribution, the electrolytes with chlorine can be highly counterproductive.
When a conversion takes place from the internal to the external reaction an **inert phase** may occur. We know this from M3. The process of F&P is intermittent because during the experiments only accidental switching from one reaction to the other takes place. It may take a while before the balance leans in one direction or the other. For example, in F&P the element left of iron is only by coincidence present in the solution. In the experiment described by Jones, Palmer, … & Rafelski the presence of chlorine is inhibiting. Presumably it must first

T	In principle repeatable with H_2O. There are installation that have exploded. So the internal reaction occurs sometimes. The consequences are never investigated thoroughly. It may be that there a fusion takes place.	vaporize before the process starts. When one wants to achieve an efficient and controllable process **Ke4** will have to be taken into account. When using plain water the nucleus of the hydrogen atom will only be driven two-dimensionally. This because only two of the quarks participate in the dynamics. in M3 we called this non-orientated erratic kinetic energy. When deuterium is used then also the quarks of the neutron participate in the process. Then more genuine warmth is created because it is a three-dimensional motion. With the use of heavy water more warmth will be released than with the use of plain water. Also watch out with exhaustion of the hydrogen or deuterium atoms. Once involved in a process they deliver a portion of their charge and they will not be inclined to deliver again soon.
Q	Are there other credible claims?	We will discuss two of them here. First we will give some keys.
T	How to make hydrogen and other elements mono atomic? Do other keys exist? How much mono atomic hydrogen has to be available?	* Above 1200 °C most diatomic molecules become mono atomic (**Ke1**). This way it is possible that other diatoms also are electrically unstable, and can both undergo the external and the internal reaction. Besides H_2 that can be nitrogen N_2, oxygen O_2, fluorine F_2, chlorine Cl_2 and iodine I_2. * Below 1200°C we work with the hydride form KH or another metal hydride to obtain mono atomic hydrogen (**Ke1**). * Cavitation bubbles (**Ke5**) provide sufficient pressure and let watergas emerge. With the mantis shrimp one sees at the of the stroke electrical discharges that cause an implosion and provoke a temperature of 6000°C. Also with the pistol shrimp such phenomena show. * The presence of enough mono atomic hydrogen is **Ke7**. We can deduce that from the experiment of Dan Haley. A heavier nucleus is surrounded by a dense layer of electrons. Its electron shells have to be be destabilized. This is done by means of electrically unstable hydrogen. If there is sufficient of that unstable hydrogen atoms present, the peel suddenly leaves an opening for one of the unstable hydrogen nuclei. Only then a fusion can occur between the nucleus of the unstable hydrogen and the heavier nucleus. * The necessary energy for the endo energetic process to take place can also come from the charge of the other electrons (**Ke8**). When this happens also the protons from the nucleus have to set free a part of their charge. This occurs, as with the external reaction, as kinetic and so as thermal energy. In the end a stable final product can be delivered but a **charge debt** is build. When there is a sufficient amount of electrical current this debt can proportionally be distributed amongst the surrounding electrons. What triggers this key is not exactly known. Presumably, it is an element from the vicinity of sodium and potassium.

<table>
<tr><td></td><td></td><td>The most suitable candidate is the presence of magnesium so we seem to deal with Ke2 again. Just like strontium form Randell Mills in M2 magnesium is an alkaline earth metal.</td></tr>
<tr><td>D</td><td>A first claim is Focus Fusion: working with an arc discharge that makes the hydrogen mono atomic (SI1) and at the same time producing a huge squeeze (SI5).</td><td>Aneutronic fusion. They use electrically unstable hydrogen nuclei (SI1), which have been subjected to the internal reaction by means of an arc discharge. Then they are doped with boron ^{11}B and brought under extremely high pressure (SI5). Boron will not convert into carbon (^{12}C) but fall apart into three Helium atoms.

Very important for this claim is that no harmful neutron radiation is set free. Also it is useful to read from the table of isotopes that normally stable carbon (^{12}C) can be formed. Why this should fall apart is not clear seen the process itself already is exo-energetic.

Most stable isotope B Boron 5
<table>
<tr><th>Iso</th><th>RP (%)</th><th>Half-life</th><th>DF</th><th>DE (MeV)</th><th>DP</th></tr>
<tr><td>^{10}B</td><td>19,9</td><td>stable with 5 neutrons</td><td></td><td></td><td></td></tr>
<tr><td>^{11}B</td><td>80,1</td><td>stable with 6 neutrons</td><td></td><td></td><td></td></tr>
</table>
Most stable isotopes C Carbon 6
<table>
<tr><th>Iso</th><th>RP (%)</th><th>Half-life</th><th>DF</th><th>DE (MeV)</th><th>DP</th></tr>
<tr><td>^{11}C</td><td>syn</td><td>20,39 min</td><td>β+</td><td>1,982</td><td>^{11}B</td></tr>
<tr><td>^{12}C</td><td>98,89</td><td>stable with 6 neutrons</td><td></td><td></td><td></td></tr>
<tr><td>^{13}C</td><td>1,11</td><td>stable with 7 neutrons</td><td></td><td></td><td></td></tr>
<tr><td>^{14}C</td><td>syn</td><td>5730 y</td><td>β-</td><td>0,156</td><td>^{14}N</td></tr>
</table>
We keep a problem: why the conversion into three helium atoms? Is it caused by the absence of magnesium?</td></tr>
<tr><td>T</td><td>Fusion without cavities, high pressure or elevated temperature.</td><td>We can ask ourselves whether ordinary circumstances exist where unstable deuterium nuclei undergo a transmutation into helium Possibly this can happen with a combination of a number of the above keys. Many indications for this phenomenon exist in biology.</td></tr>
<tr><td>D</td><td>A second claim is that of the biological transmutations.</td><td>In biology magnesium seems to take the role of potassium as Ke2. Mono-atomic hydrogen, oxygen and/or nitrogen (SI1) are necessary keys for most of the processes mentioned by Louis Kervran (see added article from Robert A. Nelson).</td></tr>
<tr><td>D</td><td>Reports from the conversion of nitrogen into carbondioxide:
$N_2 \rightarrow CO$</td><td>There have been reports of welders in France, England and Germany. These welders, who worked with acetylene on steel, deceased from carbon monoxide poisoning. However, no source of carbon monoxide was found. Louis Kervran reasoned that at the point of the red hot iron, where the torch touches the iron, nitrogen from the air is transmuted into carbon (^{12}C) and oxygen (^{16}O).

It is important here to note that the nitrogen does not appear to become mono atomic. Nitrogen can only be converted into carbon and oxygen when a proton and a neutron from one nitrogen atom transfers to the other nitrogen atom. Nevertheless it concerns mono atomic</td></tr>
</table>

		nitrogen because this occurs at temperatures above 1200 ° C. Recombination of nitrogen (2x ^{14}N) to carbon monoxide ($^{12}C^{16}O$) should, according to Kervran, take place in the cells of the welders .... Therefore yet another key must be present there. Presumably **Ke8**.
E	Indications exist for transmutations in biological environments: the **nuclido biological reactions** from Kervran That some things should not be examined in biology is known. A friend in the U.S. wanted to get a PhD on speciation of fruit flies. She was stopped to do that by her supervisor because "acausal connections" were found in the occurrence of the required mutations.	In the article by Robert A. Nelson many biological observations are put in a row. These observations are systematically ignored because in many cases they do not understand the energy balance of the reactions. From Module 1 we know that charges can release energy like mass can. This results in **Ke8** and that opens many perspectives. An endo energetic process in a cell can make an exo-energetic process to be possible elsewhere in the cell or vice versa. The charge debt is then extinguished by a surplus of charge. **Fusion** (merging): $^{23}Na + ^{1}H = ^{24}Mg$ build-up of Mg and K-precipitation in rock salt $^{23}Na + ^{16}O = ^{39}K$ f.e. by penicilium chrysogenum (induction by enzymes) $^{24}Mg + ^{16}O = ^{40}Ca$, Mg and O from grass with cows $^{28}Si + ^{12}C = ^{40}Ca$, sandstone changes in lime by actinomycete bacteria $^{40}Ca = ^{24}Mg + ^{16}O$, with cows, Ca from the ground through grass $^{55}Mn + ^{1}H = ^{56}Fe$, by ferro-bacteria in lab experiment $^{16}O + ^{16}O = ^{32}S$, in the creation of oil, Vogel 1844 **Fission** (parting): $^{56}Fe – ^{1}H = ^{55}Mn$, manganese nodules by actinomycetebacteria $^{40}Ca – ^{16}O = ^{24}Mg$, build-up of lime in limestone by microbes Additional reactions from which we do not know the circumstances: **Fusion** (merging): $^{39}K + ^{1}H = ^{40}Ca$ $^{14}N + ^{24}Mg = 2^{19}K$ $^{24}Mg + ^{7}Li = ^{31}P$ $^{31}P + ^{1}H = ^{32}S$, $^{19}F + ^{16}O = ^{35}Cl$ $^{12}C + ^{7}Li = ^{19}F$ **Fission** (parting): $^{23}Na - ^{16}O = ^{7}Li$ $2^{16}O - ^{1}H = ^{31}P$ $^{35}Cl - ^{12}C = ^{23}Na$ $2^{14}N - ^{12}C = ^{16}O$
D	Diatomic elements.	H_2 , N_2 and O_2 are regularly encountered in this perspective and F_2 Cl_2 Br_2 I_2 provisionally remain undiscussed.
E	From an egg to a chicken. What is exo energetic with fusion, is endo energetic with fission and vice versa.	With the hatching of an egg a lot of potassium converts into calcium: $^{39}K + ^{1}H = ^{40}Ca$. Main argument of opponents is that a tremendous amount of energy must be released so that a chicken egg should be a small nuclear bomb. This problem can be elegantly solved now. The question we must ask ourselves now is what endo energetic reaction serves as a compensation for this exo energetic reaction. In this context, the endo energetic reaction almost always be a fission because we are dealing with elements lighter than iron. The following candidates seem to be obvious:

		* $^{40}Ca - ^{16}O = ^{24}Mg$ * $2^{16}O - ^{1}H = ^{31}P$ Magnesium and phosphor are elements that are very useful in the cell metabolism.
M1 M2 M3 M4	**Conclusion** Over and done with: 'reality doesn't count, math is more important'.	That energy can be gained from charges is the conclusion of Module 1. This theorem is a result of the Model. This makes it clear that charges result from the course of space **e**'. The existence of the external and the internal reaction is also the result of the existence of the course of space **e**'. A single course of space causes displacement. That's why the conversion of the energy of a charge occurs as kinetic energy. This is done **in the erratic way** by the external reaction. Heat is created without much warmth. It is heat because the third dimension, which is required for the creation of warmth, is missing. This takes place **in the linear form** by the internal reaction causing an explosion. All this makes the basis of the Model even more credible. This means that current quantum mechanics is outdated and that with the Model a deterministic quantum mechanics can be designed.

In Module 5 we will discuss the structure of matter. According to the Model, she is built with the course of time and several courses of space. The existence of courses of space are amply demonstrated in this and in the previous Modules.
In Module 6 we discuss why matter strives for coherence and what are the consequences thereof.

