George Egely, Maria Balint, Farkas Rosko (Hungary)

Changes of Isotope Ratios in Transmutations

ICCF-21, Abstract

Transmutation in a low energy environment is a complex, unexplored phenomena. Its inner mechanisms are hotly debated and even its existence is denied by some ultra-conservative nuclear physicists. Although there are numerous test results to prove it, this phenomenon is not widely accepted, due to the difficulty in reproducing it.

The aim of the paper is twofold:

-To describe transmutation in transient dusty plasma, where reproducibility is guaranteed,

-To examine shifts in isotope ratios of different elements, which may help theoreticians to further elaborate on the mechanism of LENR.

ICP-MS is a well-known tool in research but recently the high sensitivity mass spectrometers have become available.

Further: laser-ablation is also available and it helps to get test results without solvents; thus the reliability of transmutation tests is further improved.

There are some strange conclusions of these tests.

- It is possible to transmute lighter mass elements, like carbon, oxygen and nitrogen via one or two fusion steps into medium mass elements, like iron, zinc, copper.

- There is no major energy release in this process, contrary to expectations.

- The daughter elements are usually neutron-rich.

Most probably this is the consequence of additional synthesis of neutrons, which is an energy consuming endotherm process. Thus the net energy balance is nearly around zero. Excess energy of fusion is spent on excess neutron generation.

Isotope shift analysis thus helps to figure out the fusion processes in nature.

Our test results support this idea; the paper will present several of these ones.

Mainstream science considers transmutation as a rare event, taking place inside stellar interiors supernova explosions, and neutron star mergers. Our test results prove otherwise.In our table top, 1 KW input reactor, such fusions are commonplace. Heavier than iron elements have been made with fusion as well, like Zr40, Sn50, Nd60, W74, and even Pb82, Th90.

The low energy transmutation/fusion may account for some excess heat of the Earth, and also for the geysirs of Enceladus (Saturn's tiny moon).

Nature is rich in these natural transmutation processes but they are usually ignored or explained away.

Transmutation is far more frequent in nature than expected by recent mainstream science. So apart from slow neutron capture and rapid neutron capture, there is a low energy transmutation in nature at modest energy levels.