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Abstract

Synthesis of elements and solid structures in atomic-nuclear reactions in dense gases and dense gas – metal systems as a result of gamma quantum irradiation.

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Abstract:
Many years ago (1964) in Ph. F. WUT, in cooperation with ICPh PAS (prof. B. Baranowski), hydrogen (deuterium) studies under high pressure were conducted. In particular, when R. Wisniewski studied the solubility of deuterium in the palladium foil, using the first world gas H2 apparatus designed by him, an strong explosion, that could not be explained by the chemical reactions or accumulated compression energy, occurred at a deuterium pressure of 22kbar. It was decided to repeat the experiment at high pressures with simultaneous gamma quanta irradiation (□) in order to obtain the atomic state of the deuterium (to increase its chemical activity).

Studies were undertaken in 2004, already in cooperation with JINR Dubna (A. Didyk),with braking □ rays irradiation, with energies up to 10MeV and up to 30MeV, before and in terms of giant dipole nuclear resonance of selected metals and alloys, in the atmosphere of dense gases such as H2, D2. That appears to be very novel, for example, in the form of synthesis of new micro and macro objects, changes in the shape of investigated samples, "protuberance" from surface with original compositions. Subsequent studies with pure gases H2, D2, He and Xe (dirty up to 15ppm) confirmed the unusualness of these studies. The used high pressure apparatus was made of beryllium bronze for reasons of hydrogen brittleness. The research was conducted, despite adverse circumstances (small active cross-sections for nuclear reactions), leading to the formation of new elements (not being in the research specimens at the beginning).

Analysis of composition, surfaces and internal structures of obtained objects in our experiments, was carried out using many methods and in different laboratories. Tests on the following systems have been carried out [1]: 1/ simple systems: Pd-D2 and Pd-H2, 2/ Dual systems: Pd-Re-D2, Al-YMn2-D2 and V-SS-D2, 3/ Complex Systems: Al-YMn2-Al-YMn2-Cu-SS-D2 and Sn-Mo-Fe-Ni-Bi-Ta-Cu-H2 and 4/ Pure gases systems: He, H2, D2 and Xe. The importance of our research, from the point of view of physical theories, is the justification of the formation of additional elements e.g. Pb to Protactinium and Curium inclusive and new physical objects. From the point of

view of applications, these are the foundations of new nano- micro- and macro technologies of new objects and elements e.g. rare earths, maybe gold. Full theoretical study (LENR) for pure He ("burned" on C, O,...) let's be grateful to Prof. G.V. Mishinsky. Investigation of He-D2 system seems to confirm his theory. A situation similar to our experiments (but at very high temperatures and pressures) have place in Space (see works by Sir F. Hoyle). Conducted by Dr. Z. □ukowska studies (Faculty of Chemical Technology WUT.) have shown the presence in our facilities in trace amounts of organic compounds and this can already have cosmological significance. Research is currently being carried out on the D2-D-Li-LiDx system at a 2kbar deuterium pressure with precise energy selection and □ radiation intensity.

In all experiments with metals, in the surface layers, some amount of MeDx or, MeHx were composed.

Biography:
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