Global Educational Journal of Library and Information Science

Extended Abstract OpenAccess

Carbon synthesis of 12C from 4He nuclei in space and in a Polish-Russian laboratory

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Introduction

The element compositions of synthesized particles and objects, also because the surface structure of elements of the deuterium high chamber (DHPC), are studied using samples of metals like Al, V, Cu, Pd, Sn, Re, YMn2 alloy and chrome steel within the shape of rods and wires which were placed in molecular deuterium gas under high and acted on by braking γ-rays of 10MeV and 23MeV energy. Analogous investigations aimed to review the chances of nuclear reactions were performed using hydrogen high chambers (HHPC) with Pd-rods inside and within the presence of hydrogen with none metallic samples within the chamber under irradiation by 10MeV braking γ-rays. Possible phenomenological modeling approaches for fission reactions within the liquid-drop model and for fusion are discussed. The goal of this paper is to present some interesting physical properties and possible crystallographic structure of the chosen graphite-like elements which were found within the PC fulfilled before gamma irradiation only by pure gaseous helium struggling (1 – 3)kbar observed earlier by authors and first described. The mechanism of production of “foreign” chemical elements in condensed gases especially within the case of helium, basing on LENR theory.

Modified high chamber crammed with helium (HeHPC) whose pressure was adequate to 1092±5 bar at the beginning of the irradiation with γ-rays. Helium of specific spectral purification had 99.999 at.% purity laid out in its data sheet. The filling of the HeHPC chamber with helium was administered by iterations of the subsequent operation: filling of the chamber of volume with helium up to a pressure of 0.2kbar, releasing the pressure up to atmospheric one, repeating this procedure then filling the chamber with helium up to the 2kbar pressure. The degree of purification from atmospheric gases was approximately estimated as some ppm. The initial pressure within the HeHPC, measured before irradiation employing a strain sensor and Model P3 measuring module, was found to be 1092bar.At helium pressure of about 1.1kbar, its atomic density is evaluated as being approximately 1.5×1022 at.He/ cm3. Irradiation of the HeHPC was performed during 27 hours and 51 minutes (or 1.02×105 s) using the MT-25 collider of the G.N. Flerov Laboratory of Nuclear Reactions of JINR, Dubna, RF. The energy of the beam was 10MeV, and therefore the beam current ranged from 21 to 23μA. The braking γ-rays of continuous spectrums, with threshold energy of about 10MeV, were obtained employing a braking target within the shape of a tungsten foil of two .5mm thickness and an aluminum absorber of electrons with 25mm thickness. During the irradiation, the temperature inside the outer protective steel cylinder of HeHPC increased to about 600 C at the steady-state regime of the chamber’s irradiation. The pressure within the chamber increased at the beginning of irradiation from 1092bar to 1242bar, i.e. by 150bar, which seems to be a pure temperature effect. Before opening of the chamber it had been the foremost objective and precise measurement of its inside pressure which was registered to be (426.0 ± 2.0)bar. Thus, it had dropped down by 666bar.

Upon opening the chamber, a couple of oily (see explanation below) black foils of shape were observed in its inside area.

Abstract

Prominent English astronomer and cosmologist Sir Hoyle , born in 1915, the creator of the many theories explaining the principles of the existence of matter within the universe wrote a piece of writing about the straightforward thanks to excite the energy of two 4He helium nuclei which caused the collision creation of the boron nuclei 8B. He went on to elucidate the 8B and 4He connection at 12C. He wrote, however, that the efficiency of such a process should be slim and that we know that the carbon abundance within the universe are considerably. That's why Sir Hoyle suggested that the 12C nuclei must therefore have an energized energy state , as if specifically matched, to extend the intensity of carbon synthesis and its energy to satisfy its role had to be adequate to 7,654MeV. Indeed, Caltech experimenters have proven within a couple of weeks that such an energy state exists in nature. it had been within the spring of 1953. Such processes happen and now in giant stars in temperatures of many K degrees and in pressures of many bar. Sir Hoyle continued to figure on the topic and eventually explained that there must be another coincidence, because of which we've very large amounts of carbon. He showed that things with carbon isn't repeated within the case of the 16O nucleus, because carbon would go easily into oxygen then alittle amount of carbon would remain in nature and therefore the situation is different. it had been only after decades that postscript emerged when the anthropological principle began to be speculated. For this reason, the idea was born among cosmologists that a lot of worlds arose, among them ours, where life arose as a results of favorable conditions. Here we enter into our Polish-Russian experiments, taken on the initiative of the primary author of this work along side prof. A.Yu. Didyk2. We used of bronze-beryllium chambers (V ≈ 0.8 cm3) crammed with pure gaseous helium at a high of 1.1-3kbar, which were irradiated by braking gamma rays with a maximum energy of 10MeV at the MT-25 collider at the FLNR JINR. The electron intensity was 1014e/s. Irradiation lasted for 28 h (1x105s). As a result, a replacement macroscopic, graphito-similar objects with a density of 1,2 g/cm3 (close to water density), highly paramagnetic, high resistivity (>1010μΩm) were synthesized. The experience was repeated 3 times at different helium pressure values within the chamber. After Sir Fred Hoyle's predictions, it might take 65 years to prove the increase of carbon 12C from 4·4He under laboratory conditions. Therefore, as we've received, the joint experimental data, G.V. Mishinsky tried to elucidate the resulting carbon 12C (4·4He→12C+4He+7.3MeV) and not only. His hypothesis suggests the looks of multinuclear molecules consisting of helium nuclei that are located at a nuclear distance from one another and have a standard group (new state of matter). an immediate combination of them, presumably, would end in a robust separation of high energy with the likelihood of easy control. In our chamber of such 12C nuclei tons is made , because they need to be formed successively during the bombardment of gamma rays helium chamber. However, the ultimate condition is that the results of low energy nuclear reactions (LENR) leading to stable 12C but also 16O nuclei and other heavier nuclei during a smaller amount. Our investigations are continued. for instance , D2-D-Li-LiDx is currently being studied at 2kbar deuterium with precise energy selection and γ radiation intensity.

Conclusion

Atoms of other chemical elements within the ultrastrong alternating magnetic flux of the transmolecule “8 Be”, “12C” et al are often transformed into transatoms that enter into low energy nuclear reactions. In experiments with other gases: hydrogen, deuterium, xenon, also as for helium, it should be assumed that their ionization within the condensed medium leads to formation of “capsules” with a robust magnetic flux inside, which results in low energy multinuclear reactions.