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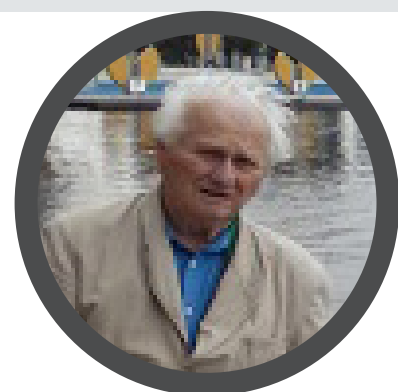
NEW CARBON BASED MATERIAL OBTAINED BY γ QUANTA IRRADIATION WITH THRESHOLD ENERGY OF 10MEV OF PURE GASEOUS HE, UNDER HIGH PRESSURE, IN CUBE2 APPARATUS, PHYSICAL PROPERTIES AND ASPECTS OF NEW NANOTECHNOLOGY

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The paper presents, observed by authors, some physical properties and possible crystallographic structure of the carbon rich (graphite-like) elements which were found in the high pressure chamber (HPC) fulfilled before gamma irradiation only by pure gaseous helium under pressure (1 – 3) kbar. A helium HPC filled up with pure gaseous helium at initial pressure about 1.1 kbar was irradiated by braking γ -rays of 10 MeV threshold energy during $1.0 \cdot 10^5$ s at the electron beam current (22-24) μ A. After irradiation, the residual pressure inside was much lower and equal to 430 bar. Synthesized of macroscopic amount foils of black color and of 0.22 mm thickness and other multiple objects were found inside the HeHPC. The element analysis, using scanning electron microscopy (SEM) and microprobe roentgen analysis (MPRA), allowed us to establish that the foils consist predominantly of carbon and oxygen and smaller quantities of other elements (tentative weight % content: 60% C, 30% O, 3% Mg, 2% N, 0.14% Si...). Two years later some physical properties such as low density (1.20 ± 0.20 g/cm³), high resistivity (more than E5 micro ohm m), high paramagnetic properties and medium dielectric relative constant were determined. Mechanical compressive strength to be of order of 10 MPa was noted. Temperature investigation pointed out its melting temperature to be no higher than 4000C. A new carbon-reach structure (graphite-like, with typical carbon graphite planes and with oxygen, magnesium and so on atoms between) was also postulated based on obtained diffractometer data (using Siemens D500 powder diffractometer, equipped with high-resolution Si semiconductor detector). Also the second method for element content determination (EDX), in principle, has confirmed the previous one. The theory of observed phenomenon was based on postulated so called transnucleus phenomenon which took place in dense helium irradiated by proper gamma rays. Multinuclear reaction in irradiated condensed helium seems to be a new macro, micro technology.

Biography

Roland Wiśniewski has received his AB degree, in Mechanical Construction from Warsaw University of Technology (WUT), in 1956. Has started to work at WUT in 1952, has completed his PhD at the Electronics Faculty of WUT in 1964. He was Deputy Professor from 1974 and Full Professor from 1983 in Physics Faculty of WUT, Retired Professor since 2001. He headed a research group on High Pressure Physics and Technology (from 1956) and in Nuclear Physics (2000 - 2014) as Professor at National Center for Nuclear Research (PL), cooperating with Joint Institute for Nuclear Research (Dubna, RF). He has been Author (or Co-author) of over 250 published papers in scientific and technology journals, has 30 applied patents, has presented in 50 international Conferences and was Supervisor of 9 thesis (PhD degree). He was awarded by the Cavalier Cross of the Rebirth of Polish Order, by the National Education Commission Medal and by others.

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