H2 Plus Ltd.

From Jacques Saint-Just, Director

Subject: nomination proposal

Professor Sara Snogerup Linse
Chairman of the Nobel Committee for Chemistry
The Royal Swedish Academy of Sciences
Box 50005
SE-104 05 Stockholm, Sweden

info@kva.se
reception@kva.se
Sara.Linse@biochemistry.lu.se

Dear Dr. Linse,

It is an honor for me to propose the names of Drs. D.V. Schur, S.Yu. Zaginaichenko and T.N. Veziroglu as candidates for the 2016 Nobel Prize in Chemistry. I do not know of any research group more worthy of this award than these scientists from the Ukraine and USA. Their work has provided remarkable insight into the physical chemistry of the important carbon polymers known as fullerenes.

Their experimental work indicates that a pentatomic configuration is the basic chemically active center (molecule, radical) on the three-dimensional spherical surface of the polymer frame. This conclusion originates from the following experimental results:

a) The blue-violet color of the solution of fullerene C60 molecules in hydrocarbons is an indicator that the dicyclopentadiene, consisting of two pentagons in the frame of the C60 molecule, is the main chemically active unit of this molecule frame and is responsible for its chemical reactivity with various reagents.

b) The number of hydrogen atoms in the stable hydride phases (C60H12, C60H24, C60H36, C60H48, C60H60) is a multiple of twelve pentagons in the frame of the C60 molecule. Computer simulation of the hydrogenation process of the C60 molecule shows that the five-atomic cycles in the frame of the C60 molecule behave as molecules forming the spherical polymer and that the hexatomic cycles behave as intermolecular spaces.

c) Phase transformations in fullerite, can be explained by consideration of three major isomers of the C60 molecule whose properties are determined by the state of pentatomic cycles.

d) The number of five-atomic cycles in a spherical molecule is a constant value equal to 12, whereas the relation between pentatomic and hexatomic cycles affects the chemical activity of spherical molecules. This relation indicates that five atomic cycles are perfect molecular structures in the form of chemically active centers on the surface of the frame of the fullerene molecule.

The behavior of the fullerene molecules in solutions has been examined. The methods and research approaches have been presented and the temperature dependence of C60 solubility has been clarified.

H2 Plus Ltd.

The existence of only three modifications of fullerene molecule has been demonstrated. They differ in the number of double bonds in their pentatomic cycles, and they are denoted as α-, β- and γ- modifications of molecules C60. The existence of each modification corresponds to a specific crystal structure in fullerite and a specific state of the fullerene molecules in solution.

The most important aspects of their research include a presentation of the foundations of the theory of the existence and transformation of spherical molecules. After consideration of the geometric features of carbon nanostructures, the hydrogenation processes of fullerene C60, and the color of their solutions, it has been concluded that three stable resonance structures have a real and specific spherical conformation with differing thermodynamic properties and that these structures represent three isomers of the fullerene C60 molecule.

These results, which are presented in the scientific paper, “The hydrogenation process as a method of investigation of fullerene C60 molecule” by D.V. Schur, S.Yu Zaginaichenko and T.N. Veziroglu (IJHE, 2015, 40(6): 2742-62), compose a complete body of scientific research. New scientifically grounded results have been obtained, and they make a truly significant contribution to the development of the physical chemistry of the fullerenes. This work presents the principles and theory of formation and transformation of the spherical C60 molecules.

Very truly yours

Jacques Saint-Just, Ph.D.

H2 Plus Ltd, AWM, Old Chambers, 93-94 West Street, Farnham, Surrey, GU9 7EB
Registered in England # 4482871, Intercommunity (EU) VAT #: 823403951
Tel: +33 674930116, jacques.saint-just@h2plus.net