

Séminaire du CETHIL

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FULLERENE-LIKE STRUCTURES: FROM MATHEMATICS TO CHEMISTRY

E. A. Katz

Affiliation :

Department of Solar Energy and Environmental Physics, J. Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Sede Boqer, 84990 Israel

Ilse-Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, Be'er-Sheva 84105, Israel

Résumé du séminaire

The discovery of C_{60} , a third variety of carbon, in addition to the more familiar diamond and graphite forms, has generated enormous interest in many areas of physics, chemistry and material science. Furthermore, it turns out that C_{60} is only the first of an entire class of closed-cage polyhedral molecules consisting of only carbon atoms - the fullerenes (C_{20} , C_{24} , C_{26} , ... C_{60} , ... C_{70} , ... $C_{1000000}$ -carbon nanotubes). This talk presents main mathematical principles for engineering fullerene-like structures (based on symmetry considerations and Euler theorem on the relation between the numbers of faces, vertices and edges in polyhedra). I will discuss how Nature, using fullerene-like structures, minimizes energy and matter resources in molecules and nanoclusters, viruses and living organisms. Examples of achievement of such goals in architecture are also presented.

Contacts pour le séminaire du CETHIL : Mohamed AMARA et Abdelkrim TRABELSI