TOR VERGATA
UNIVERSITÀ DEGLI STUDI DI ROMA

Dipartimento di Scienze e Tecnologie Chimiche

AVVISO DI SEMINARIO

Progetto X-CHEM

Dip. Eccellenza 2023-2027

Il giorno 10/05/2024 alle ore 10.00

nell'aula Magna Gismondi

Il Prof. ***Dirk Guldi***

Friedrich-Alexander-Universität Erlangen-Nürnberg
Department of Chemistry and Pharmacy
Interdisciplinary Center for Molecular Materials (ICMM)

terrà un seminario dal titolo

"Charge management in molecular electronics"

Proponente: Prof.ssa Valeria Conte

Via della Ricerca Scientifica, 1
www.stc.uniroma2.it

Tel. 06 72594337
Email: chimica@uniroma2.it

Charge management in *molecular* electronics

Dirk M. Guldi

Friedrich-Alexander-Universität Erlangen-Nürnberg

Department of Chemistry and Pharmacy

Interdisciplinary Center for Molecular Materials (ICMM)

Egerlandstr. 3

91058 Erlangen

Germany

Carbon is the key to many technological applications that have become indispensable in our daily life. Altering the periodic binding motifs in networks of sp^3-, sp^2-, and sp-hybridized C-atoms is the conceptual starting point for a wide palette of carbon allotropes. To this end, the past two decades have served as a test-bed for measuring the physico-chemical properties of low-dimensional carbon with the advent of fullerenes (0D), followed in chronological order by carbon nanotubes (1D), carbon nanohorns, and, most recently, by graphene (2D). These species are now poised for use in catalysis.

Expanding global needs for energy have led to a significant effort to develop alternatives to fossil fuels. While alternative sources for energy are already in use, they comprise a small percentage of the energy demands needed to carry us through the 21st century. No single source will solve the global needs, but the development of photocatalysis has vast potential as a point-of-use power source.

I report on our efforts regarding a unifying strategy to use the unprecedented charge transfer chemistry of 0D fullerenes, the ballistic conductance of 1D carbon nanotubes, and the high mobility of charge carriers in 2D graphene, together in a groundbreaking approach to solving a far-reaching challenge, that is, the efficient use of the abundant light energy around us. For example, hybrid materials based on nanocarbons and metaloxides are the ideal design for realizing breakthroughs in high photon conversion efficiencies suitable for the catalysis of water.