MANIPAL
ACADEMY of HIGHER EDUCATION
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Manipal Centre for Natural Sciences

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Invited Lecture on

Conjugated-Carbon Nano-Structures:

Defects, Decorations, Functionalizations

by

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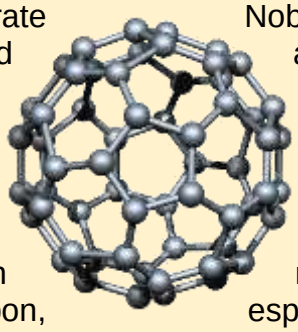
Date: 3rd August 2022 **Venue: Dr. TMA Pai Planetarium** **Time: 5 PM IST**

Abstract

Conjugated-carbon structures (benzenoids, graphite, coal, etc) have long been known – with industrial importance as solvents, dyes, drugs, feed-stocks, & energy sources. Such species are central in photosynthesis, respiration, vision, & more. There have been recent revelatory developments for novel conjugated-carbon nano-species: polyacetylene, buckminsterfullerene, carbon nano-tubes, & single-layer graphene – resulting in 3 seperate Nobel prizes. Multifarious discoveries have been made as to novel nano-effects, and also multifarious speculations have been made as to nanoscale uses,while also sometimes deleterious societal effects have been noted. All this naturally invites extensive experimentation as well as associated formal theoretical development for such novel conjugated-carbon nano-structures. Of particular interest are modifications via functionalizations, or decorations, or defects.Thence here a broad theoretical view is sought concerning such modifications, as based on honey-comb-net patterning of conjugated carbon, especially in extended nano-materials (graphene, buckytubes, polymers, cones, etc). These “defections/functionaliztions” include: boundaries in semi-infinite graphene; graphene strips; the terminating ends of buckytubes (or other benzenoid polymers); local defects in graphene (or buckytubes); and quasi-local topological defects/decorations (both dislocations & disclinations). Attention is directed to general features: combinatorial & geometric curvatures; band (HOMO-LUMO) gaps; states near the Fermi energy; defect localization; and more.



Link for joining the meeting: https://bit.ly/3vq6IES

All are welcome

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