DISTANCE BASED TOPOLOGICAL INDICES ON GRAPHENE AND MWCNT SAMPLES OBTAINED BY ELECTROLYSIS IN MOLTEN SALTS

Beti Andonovic[1]*, Tatjana Atanasova Pacemska[2], Vesna Andova[3],
Perica Paunovic[1] and Aleksandar T. Dimitrov[1]

[1]Faculty of Technology and Metallurgy, SS Cyril and Methodius University, 1000 Skopje

[2]Faculty of Computer Science, Goce Delcev State University, 2000 Stip

[3]Faculty of Electrical Engineering and Information Technologies,
SS Cyril and Methodius University, 1000 Skopje

beti@tmf.ukim.edu.mk (*corresponding author), tatjana.pacemska@ugd.edu.mk,
vesna.andova@gmail.com, pericap@tmf.ukim.edu.mk, aco@tmf.ukim.edu.mk

The interest for the very intensive studies and methods of structural characterization of graphene and MWCNT to date has resulted in many valuable contributions and amazingly wide application area. This work includes graph representation of these nanotubical structures obtained by electrolysis in molten salts using non-stationary current regimes, based on their low frequency region Raman spectra and XRD data. The spectroscopic data enables precise determination of the graphene samples mean crystallite sizes, both vertical and in-plane, their number of layers, as well as studying the walls diameters and performing an (n,m) assignment of nanotube samples. Using the graph representation and the chirality of the studied samples, different distance based topological indices (Wiener index, Balaban index, Sum-Balaban index, Haray index, etc.) have been evaluated in order to predict some index-related properties of the molecules. [1] [2] [3]

References

[1] B. Andonovic, A. Grozdanov, P. Paunovic, and A.T. Dimitrov (2015). *X-ray diffraction analysis on layers in graphene samples obtained by electrolysis in molten salts: A new perspective*. Micro & Nano Letters, 10(12), 683–685.

[2] V. Andova, M. Knor, R. Skrekovski (2016). *Distances on nanotubical graphs*. J. Math. Chem, 54(8), 1575–1584.

[3] J.M. Benoit, J.P. Buisson, O. Chauvet, C. Godon, and S. Lefrant (2002). *Low-frequency Raman studies of multiwalled carbon nanotubes: Experiments and theory*. Phys. Rev. B, 66(7), 073417.