Detour Index of Zig-zag Polyhex Nanotubes

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The distance matrix D is constructed for any graph on n vertices by setting $n \times n$ array. Each entry d_{ij} is equal to the minimum number of edges in the graph connecting vertex i to vertex j. When there is no connection at all the distance d_{ij} is equal to infinite.

The matrix elements d_{ij} allow one to define a topological parameter, Wiener index, with the symbol W:

$$W = \frac{1}{2}\sum_{i,j} d_{ij}.$$

An interesting alternative to the definition of matrix D is to resort to the construction of the maximum distance matrix D^* (detour matrix), replacing the entries d_{ij} (minimal lengths) by d^*_{ij} (maximum lengths), such that each entry d^*_{ij} is equal to the maximum number of edges in the graph connecting vertex i with vertex j. By the matrix elements d^*_{ij} we can define another topological parameter, detour index. Wiener index of Zig-zag polyhex nanotubes computed in [1].

In this paper we computed the Detour index of Zig-zag polyhex nanotubes and also we computed the Detour index of some nanotubes.

[1] P.E. John and M.V. Diudea, Wiener index of Zig-Zag polyhex nanotubes, *Croat. Chem. Acta* Vol.77 (2004) 127-132.