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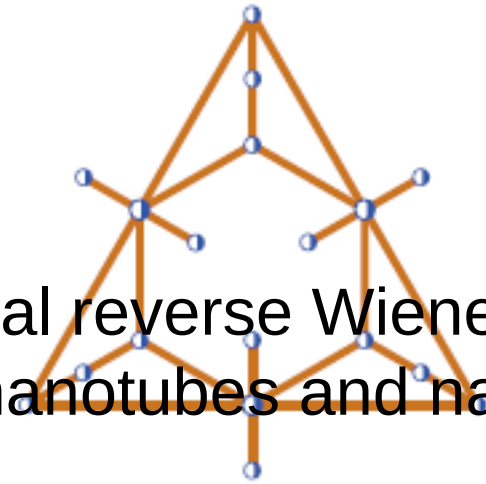

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Reciprocal reverse Wiener index of some nanotubes and nanotorus

Content :

Let G be a connected simple graph with the vertex-set V(G)={u_1, ..., u_n}. The distance matrix D(G)=(d_ij) of G is defined by d_ij= the distance between the vertices u_i and u_j, i.e. the number of edges in the shortest path connecting these vertices in G. The diameter of G is the maximum d_ij in the matrix D(G). We will show it by d(G) or d. The distance matrix is a rich source of many graph topological indices that have been found useful in structure property/activity modeling of chemical compounds .
The reciprocal reverse Wiener matrix RRW of G is an n*n matrix (rr_ij) such as rr_ij=1/(d-d_ij) if i not equal to j and 0 otherwise [1]. The topological indices of graphs attract the attention of chemists as a tool for compact and effective description of structural formulas which allows one to study and predict the structure- property correlations (QSPR) of organic compounds.
Similar to the Wiener index,W(G), here we consider the topological index introduced recently, which is of interest for theoretical chemistry. It is called the reciprocal reverse Wiener (RCW) and for a graph G is denoted by RRW(G)and is equal to 1/2 summation ((rr_ij) over all of i and j from 1 to n [2].

This quantity and some other structural descriptors derived from the matrix RRW were used to produce QSPR models for the alkane molar heat capacity in [1].
In this paper we compute this index for some nanotubes and nanotorus.

References

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