

From 1-D to 2-D graphene nanostructures and electronic properties (reality and perspectives)

Chernozatonskii L. A.

*Emanuel Institute of Biochemical Physics of RAS, 119334 Moscow, Kosygin st., Russian Federation.,
e-mail: cherno@sky.chph.ras.ru*

The discovery of freestanding graphene promoted the extensive investigations of the properties of monolayered two-dimensional (2D) structures. However due to the difficulties of usage graphene as an element of semiconducting electronics there are various attempts were made to change the conductivity in graphene. The different variants of these nanostructures and their applications will be considered in this report.

Quasi 1D nanoribbons: electronic properties of different formed GNRs and GNR junctions, fabrication of GNRs using electron lithography method and during the self-organization process of separate aromatic molecular groups.

2D-nanomeshes. a) GNMs: structures and their electronic properties, different variants of their formations and applications. b) biGNMs based on bi-graphene: peculiarities of structures and properties, and process of preparation.

Prototypes of electronic devices based on 1D and 2D graphene materials