

NANOSTRUCTURES BASED ON HYDROGEN-FUNCTIONALIZED GRAPHENES AS MATERIALS FOR APPLICATIONS IN NANODEVICES

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1. Introduction (pour graphene sheets and graphene nanoribbons [1], , graphane [2], diamane [3])
2. New structures based on graphene, graphane and diamane and their electronic and mechanical properties.
 - 2.1. Quasi- two-dimensional superlattices and electronic waveguids based on graphene lined by chemically bounded hydrogen atom lines or nanopeaces [4-7]. Transactions of semimetal-semiconductor-dielectric phases X-, T- and Y-types of graphene structures.
 - 2.2. "Quasi 1D" superlattices and quantum dots based on graphene ribbons lined by chemically bounded hydrogen atoms.
 - 2.3. Atomic structure, elastic and electronic properties of diamanes based on chemically bound graphene layers covered by hydrogen on both sides and bi-graphane - diamane nanostructures.
3. The possible applications of described structures in nanoelectronics (nanowires, transistors, switchers, rectificators), as sensors, as mechanical elements (vibrators, springs, membranes, cantilever diamane tips) and optical elements.

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References

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