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Sommario/riassunto

The expansion of carbon materials is multidisciplinary and is related to physics, chemistry, biology, applied sciences and engineering. The research on carbon materials has mostly focused on aspects of fundamental physics as they unique electrical, thermal and mechanical properties applicable for the range of applications. The electrons in graphene and other derived carbon materials behave as dirac fermions due to their interaction with the ions of the lattice. This direction has led to the discovery of new phenomena such as Klein tunneling in carbon based solid state systems and the so-called