

Properties and Potential Applications of Graphene

Jorddy N. Cruz^{1,3}, José F. S. Costa², Sebastião M. S. Cordeiro² and Antonio M. J. C. Neto^{1,3}

¹Laboratório de Preparação e Computação de Nanomateriais, Universidade Federal do Pará, Belém, PA, Brasil

²Faculdade de Educação no Campo, Universidade Federal do Pará, Abaetetuba, PA, Brasil

³Instituto de Ciências Exatas e Naturais, Universidade Federal do Pará, Belém, Pará, Brasil

ABSTRACT

O Graphene is a material that consists of a flat sheet of carbon atoms at nanoatomic scale. Its structure is formed by hexagonal cells with carbon atoms hybridized in sp^2 [1]. The structure of this nanomaterial has greater mechanical resistance than steel and due to the existence of a free electron in the orbital p_z graphene is able to conduct electricity, besides it has high capacity of thermal conductivity, good transparency, flexibility and large area of contact surface [2]. The surface of graphene without defects is practically inert, interacting normally with other molecules from π - π type interactions. In order to make the surface of the graphene more reactive, defects are created in its structure. Another possibility is to add functional groups such as carbonyl, carboxyl and amide groups to alter the surface and electronic properties of graphene [3].

REFERENCES

- [1] Ruoff R. Graphene: calling all chemists. *Nat Nano* 2008;3(1):10–1.
[2] Neto AHC, Guinea F, Peres NMR, Novoselov KS, Geim AK. The electronic properties of graphene. *Rev Mod Phys* 2009;81(1):109–62.
[3] Novoselov KS, Geim AK, Morozov SV, Jiang D, Zhang . Electric field effect in atomically thin carbon films. *Science* 2004; 306(5696): 666–9.

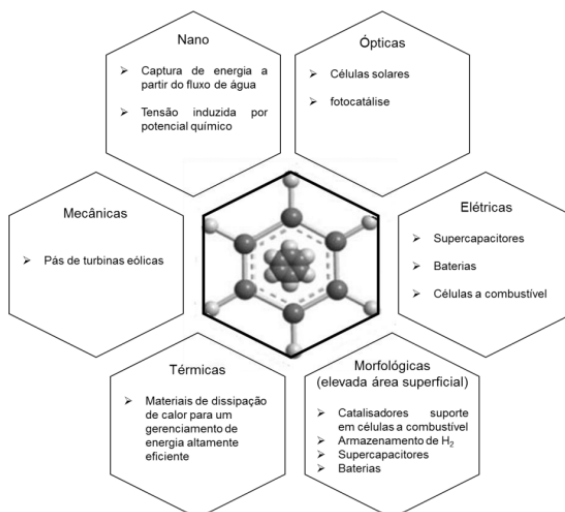


Figure 1 - Different applications for the graphene structure