C0r0n@ 2 Inspect

Review and analysis of scientific articles related to experimental techniques and methods used in vaccines against c0r0n@v|rus, evidence, damage, hypotheses, opinions and challenges.

Friday, July 16, 2021

Graphene oxide and the electromagnetic absorption of 5G

Reference

Chen, Y .; Fu, X .; Liu, L .; Zhang, Y .; Cao, L .; Yuan, D .; Liu, P. (2019). Millimeter wave absorbing property of flexible graphene / acrylonitrile-butadiene rubber composite in 5G frequency band. Polymer-Plastics Technology and Materials, 58 (8), 903-914.
https://doi.org/10.1080/03602559.2018.1542714 [see full text]
https://sci-hub.mksa.top/10.1080/03602559.2018.1542714

Facts

1. The article deals with the absorption tests of the electromagnetic waves of the 5G emitters in materials the reduced graphene oxide "rGO". To this end, the frequency and bandwidth variables were studied, with various variants of the "rGO", highlighting the rGO / NBR type for its better absorption characteristics in a frequency range between 26.5 and 40 GHz. NBR is Nitrile Butadiene Rubber, also known as Perbunan. It is a copolymer, characterized by resisting friction, not degrading due to temperature, acid resistant and with antistatic properties. However, it can be brittle when subjected to ozone or ultraviolet light.

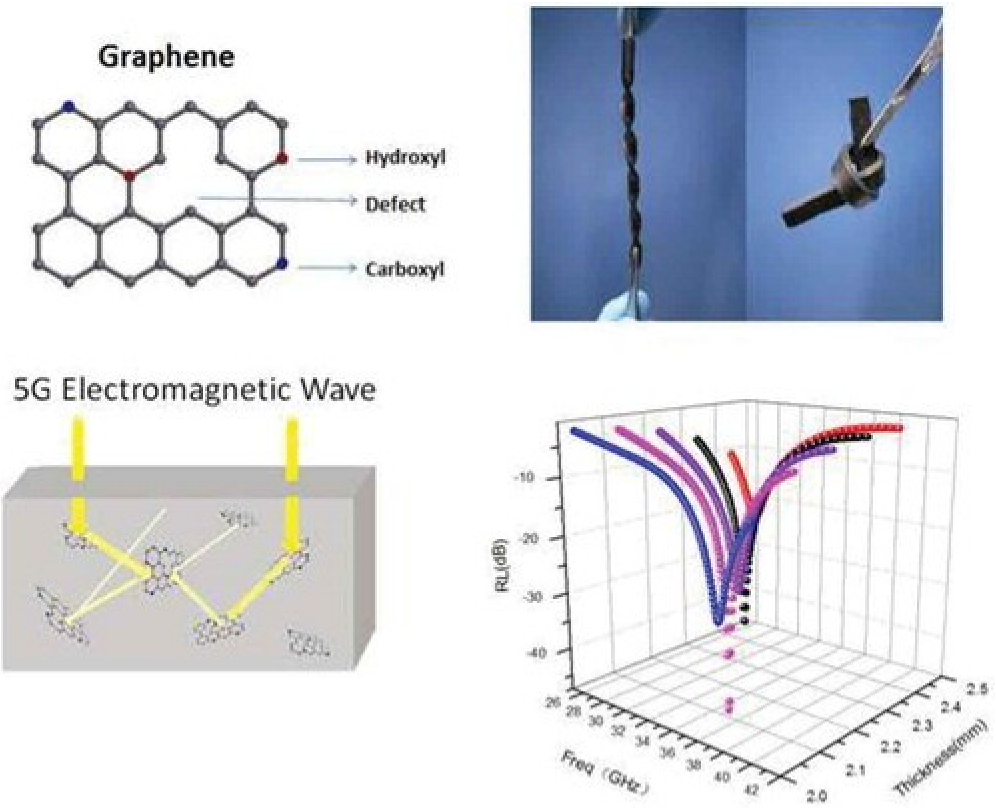

Fig. 1. Absorption of 5G electromagnetic waves

2. The researchers conclude that rGO / NBR is the optimal material because it achieves the lowest reflection index of electromagnetic waves (microwaves), with a value of -45dB at 35.4 GHz, which allows absorption. of almost all 5G broadcast.
3. It is very significant one of the conclusions of the article that states the following " *therefore, the microwave absorption capacity of the compounds could be well regulated by changing the reduction time and the thickness of the sample, which facilitates the customization of the material of Optimal electromagnetic absorption for specific requirements. In addition to the factors mentioned above, the grain size of rGO and its dispersion in NBR are presumably influencing factors affecting the absorption of EM waves* . "This means that there is a very complete knowledge of the factors that determine the absorption of electromagnetic waves depending on the applications and uses that are desired.
4. On the other hand, the images of the rGO / NBR material that are presented in the article, see Figures 2 and 3, are very similar to those obtained by (Campra, P. 2021) available in Figures 4 and 5, which allows us to affirm that there is a potential similarity.

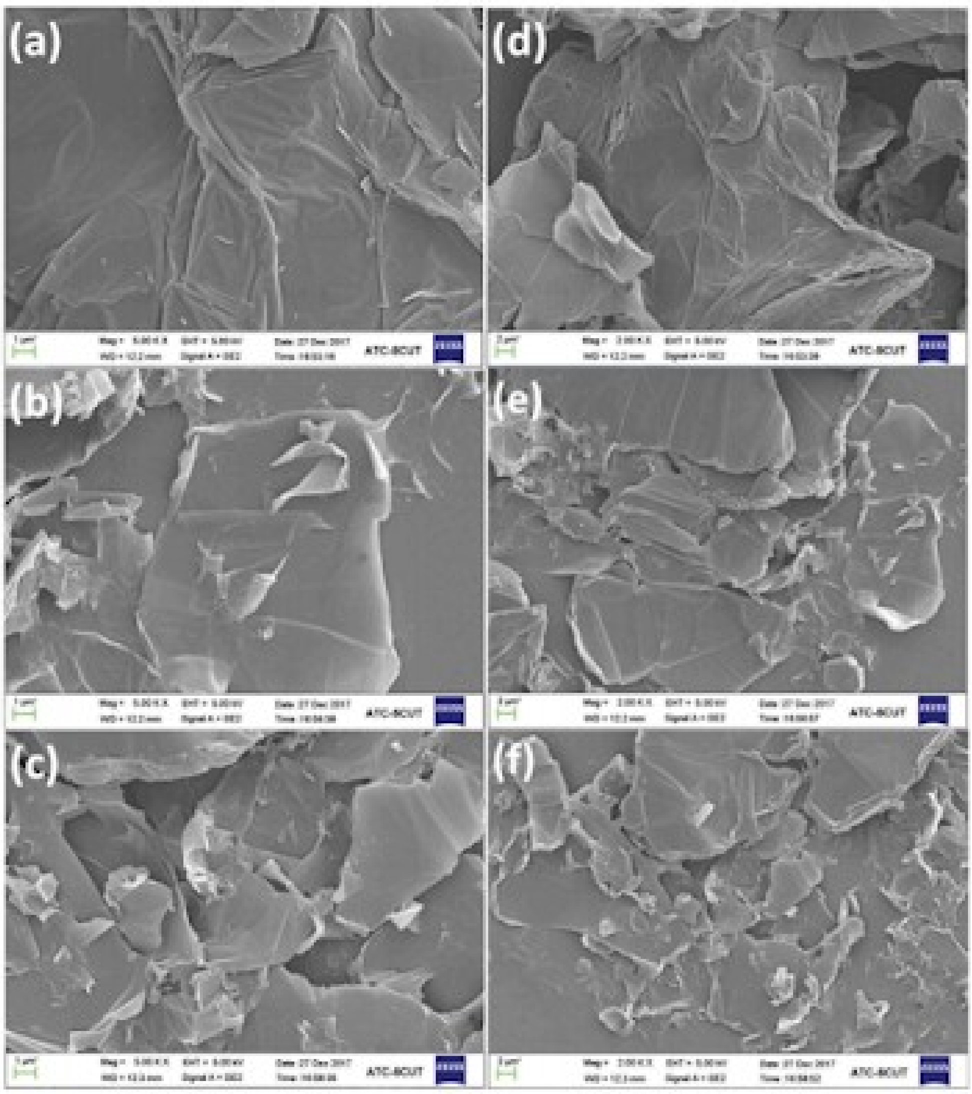

Fig. 2. Scanning electron microscope (SEM) images of the rGO / NBR material discussed in the article

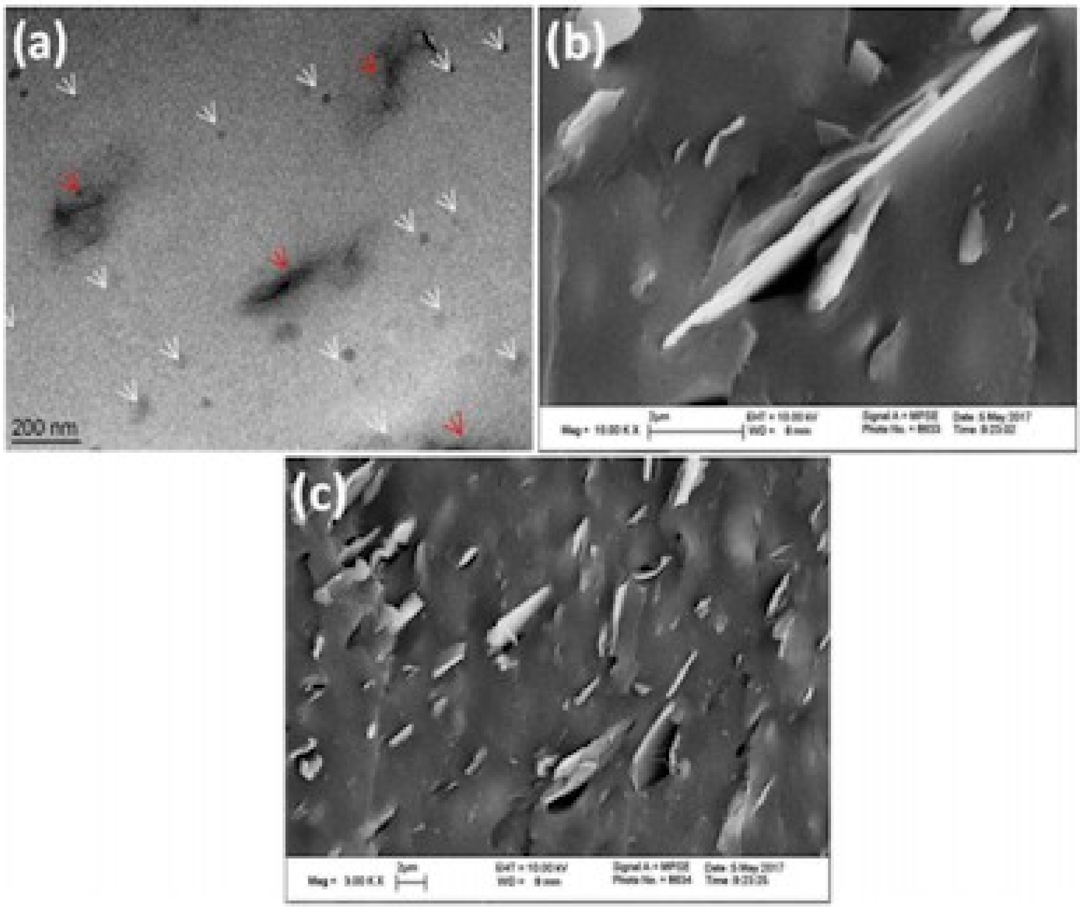

Fig. 3. Micrographs of the 7h-rGO / NBR material

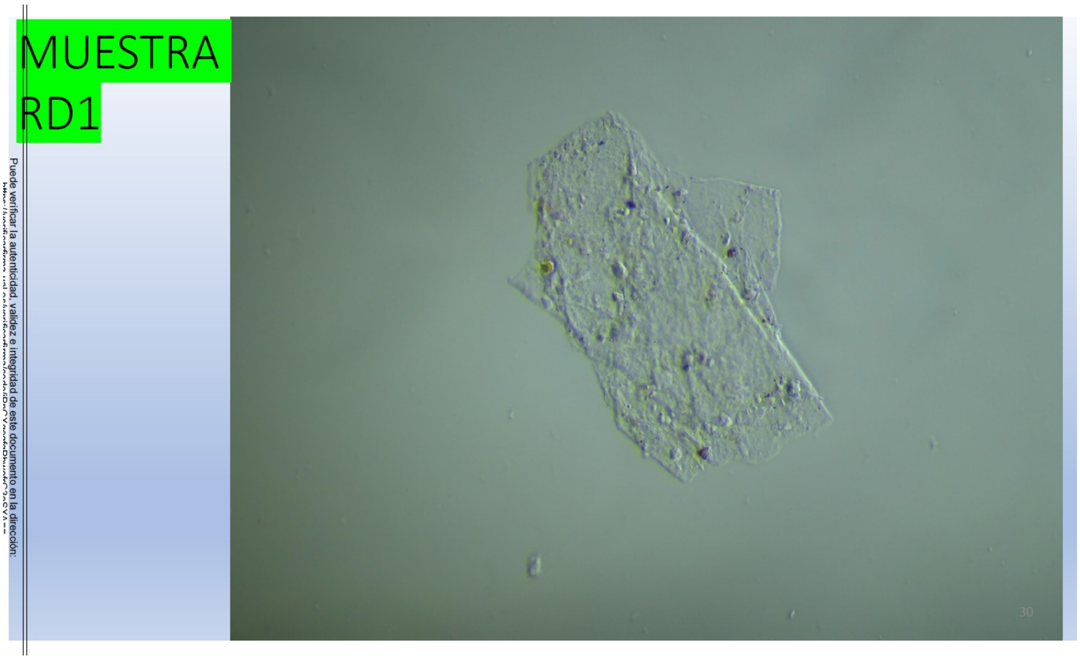

Fig. 4. Optical microscopy of the RD1 sample of the Pfizer vaccine (Campra, P. 2021)

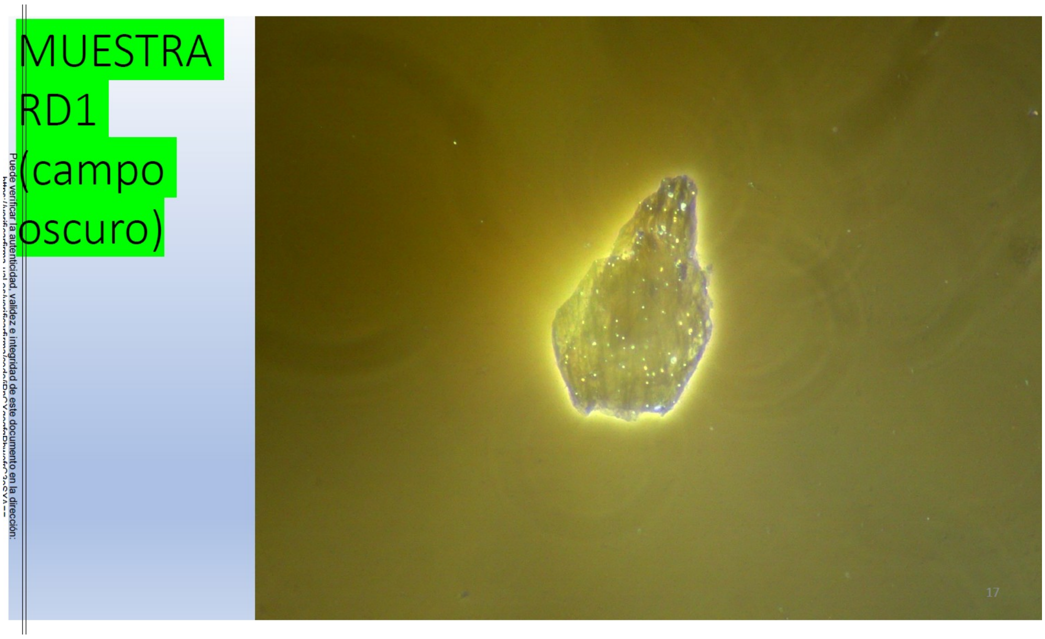

Fig. 5. Dark field microscopy of the RD1 sample of the Pfizer vaccine (Campra, P. 2021)

2. On the other hand, the bibliography cited in the article has been reviewed, paying special attention to the references that specifically refer to graphene oxide GO. Among all, it is worth highlighting the reference of (Chen, D.; Wang, GS; He, S.; Liu, J.; Guo, L.; Cao, MS 2013) regarding the " *Controllable manufacture of rGO-hematite nanocomposites mono-dispersed and their improved wave absorption properties*", which highlights in the title the objective of manufacturing rGO reduced graphene oxide nanomaterials with wave absorption properties that are easily adjustable to frequency ranges. In this case, the material consists of a coated hematite crystal Hematite or hematite is an iron oxide of the trigonal / hexagonal class, which becomes magnetized after being heated or excited by microwaves (Bødker, F.; Hansen, MF; Koch, CB; Lefmann, K.; Mørup, S. 2000 | Wang, WW; Zhu, YJ; Ruan, ML 2007).

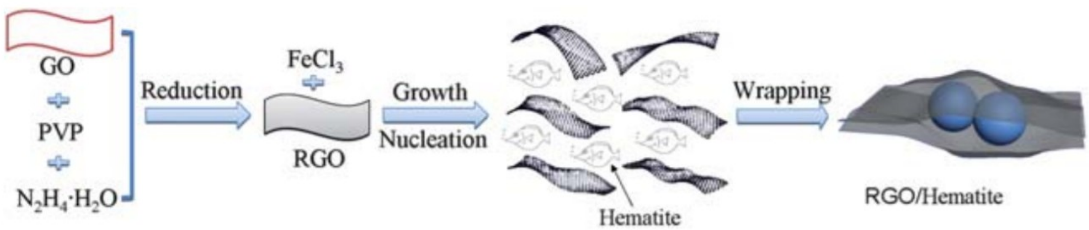

Fig. 6. RGO-hematite formation process

Feedback

1. The article demonstrates that rGO reduced graphene oxide can effectively absorb electromagnetic waves, specifically referring to 5G emissions. The scale of the compounds tested in the experiments matches the scale analyzed by (Campra, P. 2021) in the RD1 sample. There is also a great similarity between the microscope images.
2. Given the wave absorption capacity of graphene oxide "GO" or its derivative reduced graphene oxide "rGO", its inoculation into the human body could pose a health risk. In fact, according to (Tien, HN; Luan, VH; Cuong, TV; Kong, BS; Chung, JS; Kim, EJ; Hur, SH 2012) the application of microwaves on the graphene oxide GO, causes the deoxygenation of the oxide graphene, resulting in reduced graphene oxide rGO and " free radicals ". These free

radicals are directly related to the disruption of homeostasis (normal functioning) of the mitochondria, responsible for cellular respiration, which can lead to significant adverse effects.The microscopy photography of the samples of this study (see figure 7) is very remarkable, which closely resembles those obtained by (Campra, P. 2021) in the analysis of the RD1 sample, see figures 4 and 5. The Literature on the reduction of graphene oxide by microwaves is extensive by direct or indirect reference, the following works by (Jakhar, R.; Yap, JE; Joshi, R. 2020 | Tang, S.; Jin, S.; Zhang, R.; Liu, Y.; Wang, J.; Hu, Z.; Jin, M. 2019), which again confirms the interaction by microwaves, 5G and graphene oxide.

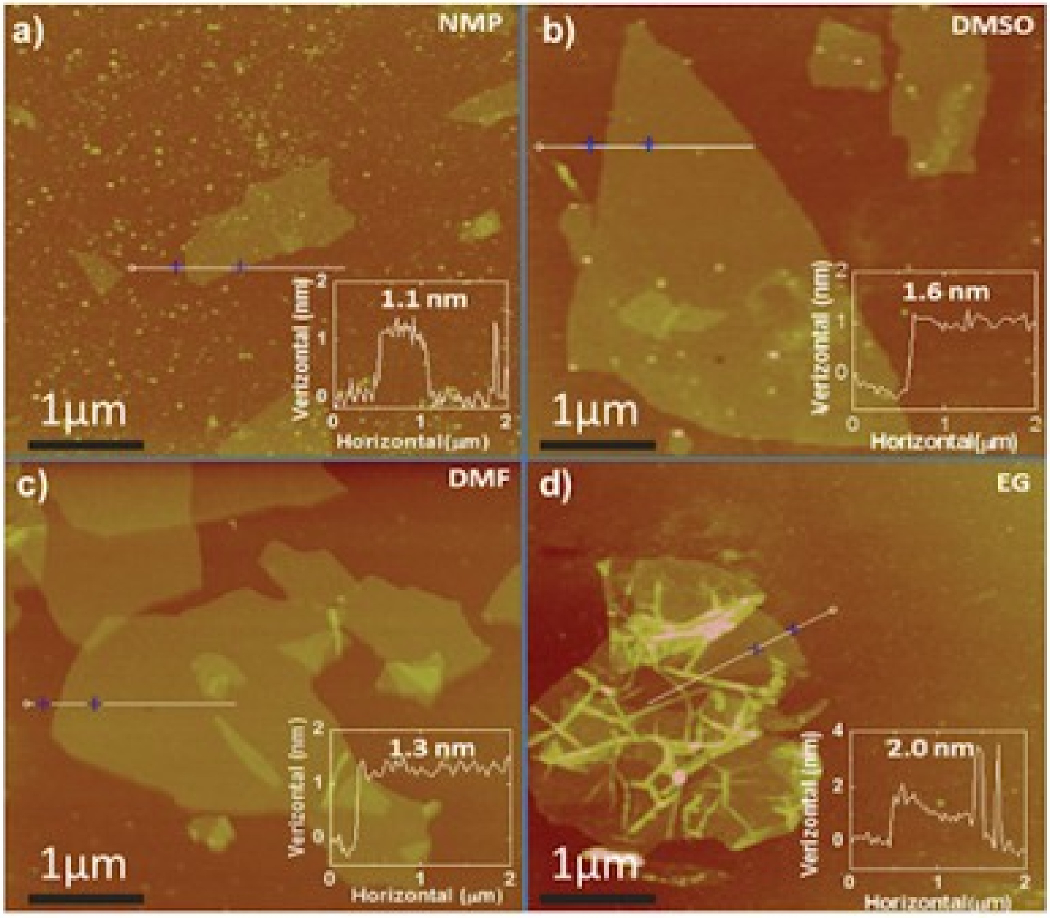

Fig. 7. Images of the graphene oxide reduction process

Bibliography

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