

# Graphene based materials for EMI shielding – A review

**Pai Peng**

Aravind Vijayaraghavan

University of Manchester, M13 9PL, Manchester, UK

[pai.peng@postgrad.manchester.ac.uk](mailto:pai.peng@postgrad.manchester.ac.uk)

Graphene is a novel material used for electromagnetic interference shielding, due to its high electrical conductivity and specific surface area. Currently, there are two main types of graphene-based composite structures under investigation: the thin film-like structure and the foam-like structure [1,2]. Although the structures are very different between them, the mechanisms are similar. The electromagnetic waves will induce the current inside the material and convert it into heat, meanwhile, according to the microstructure of the material, multiple reflection will occur inside the material which will extend the total path of the EM waves and consume more energy; this explains why the designing of the graphene based material is very important. The performance of graphene enhanced composites for EMI shielding can be further enhanced by including additional fillers such as conductive or magnetic nanoparticles. In this poster, some advanced EMI shielding graphene based materials will be introduced, and their design mentality will also be discussed.

## References

[1] Yao C., Jinzhe L., Tian L., Likui Z., Fanbin M. (2021) 'Recent advances in graphene-based films for electromagnetic interference shielding: Review and future prospects', Carbon, 180(2021), pp. 163-184.

[2] Zhenxin J., Mingfa Z., Bin L., Fucheng W., Gang W., Zhiqiang S. (2020) 'Graphene Foams for Electromagnetic Interference Shielding: A Review', ACS Applied Nano, 3(2020), pp. 6140-6252.

[3] Xiao-Yun W., Si-Yuan L., Yan-Jun W., Peng-Li Z., You-Gen H., Tao Z., Rong S., Ching-Ping W. (2022) 'Electromagnetic interference shielding materials: recent progress, structure design, and future perspective', Journal of Materials Chemistry C, 10(2022), pp. 44-67.

## Figures

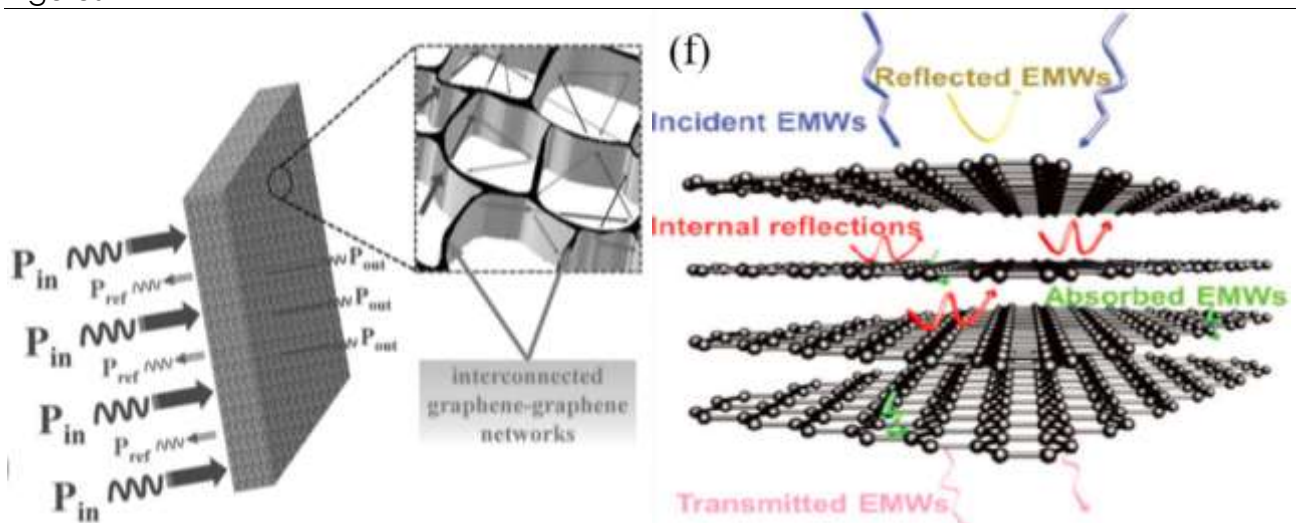


Figure 1: shielding mechanisms between foam like material and thin film material [3,1].