

## Methods of Inducing Magnetism into Graphene Monolayer

H N S Peiris, W W P De Silva

*Department of Physics, University of Sri Jayewardenepura*  
*\*wasanthidesilva@sjp.ac.lk*

### ABSTRACT

Graphene has made a revolution in the material industry after the demonstration of the ability to successful isolation of graphene thin layers in 2004, due to its exclusive characteristics of electronic, optical, and mechanical properties. However, ideal graphene has no net magnetic moment due to a delocalized  $\pi$ -bonding in nature and have a zero bandgap which limits the practical applications in the world. Many studies have shown that by inducing magnetism into graphene, the mentioned limit can be overpowered which enables to apply especially in spintronics and memory storage devices. Therefore, this review paper discusses four possible techniques in improving magnetic properties on graphene monolayer, which are surface doping with adatoms, vacancy creation, substitutional doping, and edge modification, by providing the experimental, theoretical evidence and as well as their limitations, future research, and applications.

**Keywords:** Graphene, spintronics, Magnetism

*Editorial Note: The full paper of this work is transferred to the Sri Lanka Journal of Physics.*