

Supporting Information

Novel one-pot green synthesis of graphene in aqueous medium under microwave irradiation using regenerative catalyst and study of its electrochemical properties

Badrayyana Subramanya and Denthaje Krishna Bhat*

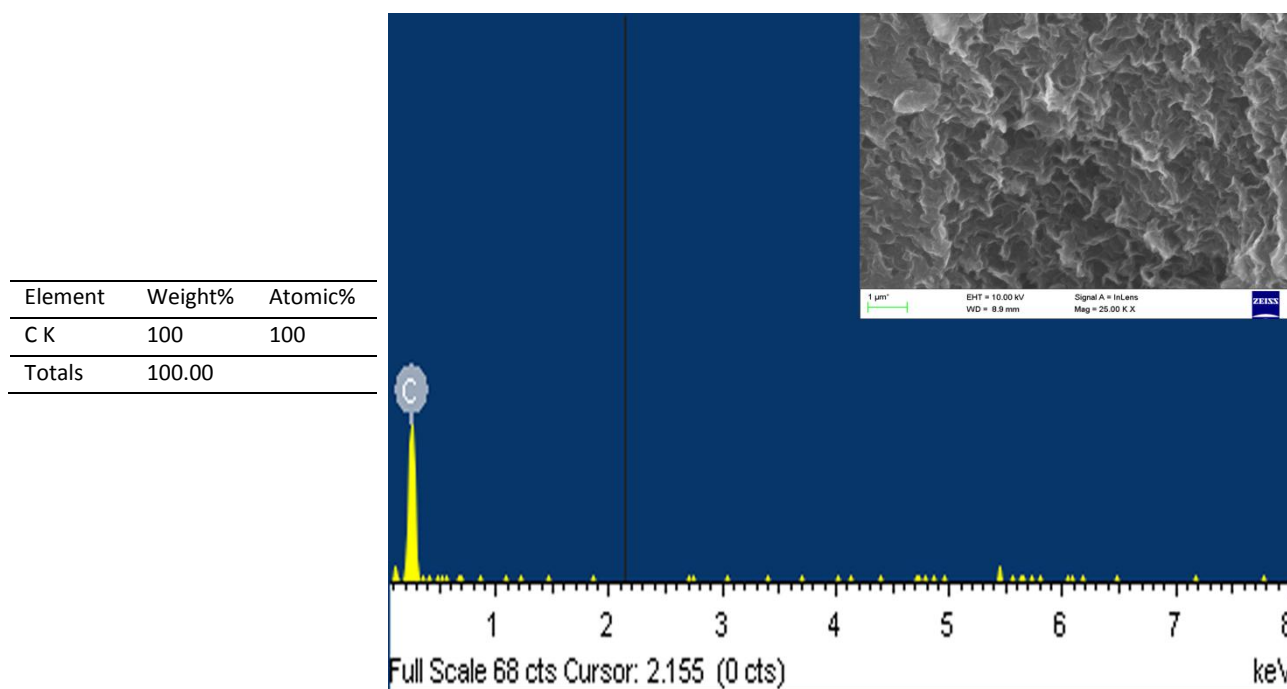
Department of Chemistry

National Institute of Technology Karnataka, Surathkal, Mangalore-575 025, India.

*Corresponding author: Tel: +91-824-2473202; Fax: +91-824-74033/2474082

E-mail: denthajekb@gmail.com, kishan@nitk.edu.in

Energy Dispersive X-ray (EDX) spectrum of graphene nanosheets



Scherrer Equation

The stacking domains whose height (L_c) can be determined from the XRD line broadening using Scherrer's equation¹

$$L_c = \frac{K\lambda}{\beta_c \times \cos \theta}$$

where K is the shape factor which is equal to 0.89, λ is the wave length of the X-ray radiation, β_c is the full width at half height of symmetrical shape of the diffraction peak and θ is the Bragg angle.

The average domain height (L_c) was approximately determined to be 0.89 nm. It is known that the thickness of individual single layer graphene is 0.4 nm.² This suggests that most of the graphene should exist as bilayered nanosheets.

References

1. L. Zhang, F. Zhang, X. Yang, G. Long, Y. Wu, T. Zhang, K. Leng, Y. Huang, Y. Ma, A. Yu and Y. Chen, *Sci Rep*, 2013, 3, 1408.
2. A. K. Geim and K. S. Novoselov, *Nat. Mater.*, 2007, 6, 183-191.