

8<sup>th</sup> Edition of International Conference on

## Chemistry Education and Research

August 27-28, 2018 Zurich, Switzerland

Ronojoy Sen Gupta et al., J Org Inorg Chem 2018, Volume 4 DOI: 10.21767/2472-1123-C5-015

## INVESTIGATION OF THE ANTIBACTERIAL ACTIVITY OF MODIFIED REDUCED GRAPHENE OXIDE (MRGO) NANOSHEETS AGAINST *S. AUREUS*

Ronojoy Sen Gupta<sup>1</sup> and Alok Chattopadhyay<sup>2</sup>

<sup>1</sup>Genobiotek, India <sup>2</sup>Harimohan Ghose College, India

arbon-based nanotechnology is a promising field of research ✓ for its potential application in the fields of bio-sensors, health care and biomedical sciences. Graphene nanosheets due to their one atom thickness are the ideal candidate for trapping the bacteria for transmission and scanning electron microscopy imaging. In this paper, we report on the antibacterial activity of reduced graphene oxide nanosheets synthesized by modified Hummer's method. MRGO nanosheets were characterized using scanning electron microscopy (SEM), transmission electron microscopy (TEM) and atomic force microscopy (AFM) along with disc diffusion technique, which was employed to evaluate anti-bacterial activity of nanosheets using S. aureus as model microorganism. The cell viability of S. aureus decreased significantly when it was exposed to MRGO nanosheets as revealed in the spectrophotometric study of bacterial growth. A clear zone of inhibition was also observed in the cultured plates treated with MRGO, revealing its antibacterial property. AFM study revealed that structural defects of MRGO were probably responsible for membrane integrity disruption leading to bacterial cell death. To elucidate the bactericidal activity, SEM and TEM studies were carried out. Studies showed that the defects formed in the MRGO synthesis is the main factor for the effective antibacterial activity. Further molecular studies are required to completely reveal the antibacterial property of MRGO nanosheets.

## Biography

Ronojoy Sen Gupta, has completely his PhD degree in Physiology from the Department of Physiology, University of Calcutta, Kolkata, India. He has worked as Postdoctoral fellow in Molecular Endocrinology laboratory, Hormone Research Center, Chonnam National University and Department of Life Sciences, Gwangju Institute of Science and Technology, Gwangju, South Korea. He has worked as faculty in Department of Biotechnology and Bioinformatics, SMMTR, Sikkim Manipal University, India. At present he is working as Director, Genobiotek, Kolkata, India. Alok Chattopadhyay, has completed his PhD degree in Physiology from the Department of Physiology, University of Calcutta, Kolkata, India. He is now working as Assistant Professor, Department of Physiology, Harimohon Ghosh College, University of Calcutta, India.

> ronojoysengupta@yahoo.com alokc1972@gmail.com

Chemistry Education 2018