conferenceseries.com SciTechnol

Mohsen Adeli, J Nanomater Mol Nanotechnol 2017, 6:7(Suppl)
DOI: 10.4172/2324-8777-C1-017

2nd World Congress and Expo on

GRAPHENE & 2D MATERIALS

November 06-07, 2017 | Frankfurt, Germany

Mohsen Adeli

Freie Universität Berlin, Germany

Synthesis of well-defined 2D nanomaterials to study the mechanism of graphene-pathogen interactions

Understanding the mechanism of interactions between 2D nanomaterials and pathogens is vital to develop and control their antimicrobial properties1-3. This is possible when the system is well-defined. In this work, a stimuli responsive graphene derivative with defined structure and properties is designed and synthesized and the mechanism of its interactions with E.coli is investigated. Polyethyleneglycol-block-(poly-N-isopropylacrylamide) copolymer (PEG-b-PNIPAM) with the triazine joint point was attached to the surface of graphene by [2+1] cycloaddition reaction and a photothermo responsive nanomaterial was obtained. It was found that hydrophobic interactions is one of the most important driving forces in the graphene-*E.coli* interface. Transformation of the functionalized graphene sheets from a hydrophilic to hydrophobic state by photo- or thermos- stimuli factors influenced their interactions with the bacteria membrane, dramatically. This study shows that interactions between graphene and pathogens could be controlled by manipulation of the hydrophobicity of their surface.

Biography

Mohsen Adeli received his Undergraduate Degree from Lorestan University (Iran) in 1996. He obtained his MS and PhD degrees from Tabriz University in 1998 and 2005, respectively. After joining Lorestan University in 2005, he added a Postdoctoral stage from the Institute for Nanoscience and Nanotechnology of Sharif University of Technology in 2007. He was promoted to the rank of Full Professor in 2013. One of his research interests is synthesis, functionalization and applications of 2D nanomaterials.

adeli@fu-berlin.de

Notes: