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Physical characterization and microstructure evaluation of graphite carbon nitride-CuO photocatalytic composite and its application in organic pollutants degradation

Mona E Ossman[1] and **Marwa Abd-Elfattah**[2]
[1]Pharos University, Egypt
[2]City for Scientific Research and Technology Application (SRTA-City), Egypt

Semiconductor photocatalysis technique is a "green" method to completely eliminate most kinds of environmental contaminations. In the past years, the photocatalytic degradation of environmental organic pollutants has attracted extensive attention because of low-cost and nontoxic end products. The development of visible-light-driven (VLD) photocatalysts has been done by more and more researchers. Graphitic carbon nitrides (g-C_3N_4) are recognized as the most stable allotrope of carbon nitride and have an optical band gap of 2.7 eV. It can be synthesized from a simple precursor via a series of polycondensation reactions without any metal involvement. Due to its high nitrogen content and facile synthesis procedure, g-C_3N_4 may provide more active reaction sites than other N-carbon materials. CuO has been applied to improve the photocatalytic efficiency of some wide band gap semiconductors. The novel CuO-g-C_3N_4 composite photocatalyst was prepared. The aim was to further improve the VLD photocatalytic activity of CuO and g-C_3N_4. Also study the application of the prepared composite in photocatalytic degradation of organic pollutants such as phenol and ortho-cresol.

Biography

Mona E Ossman got her BSc and MSc in Chemical Engineering from Faculty of Engineering, Alexandria University, Alexandria, Egypt. She received her PhD from Chemical Engineering Department, Faculty of Engineering, Wayne State University, Detroit, MI, USA. At present, she is working as an Associate Professor at the Petrochemical Engineering Department at Pharos University.

mhr1410@hotmail.com

Modulating transmembrane peptide assembled structure by graphene oxide

Mingdong Dong, Lei Liu and **Qiang Li**
iNANO Center of Aarhus University, Denmark

A better understanding of the self-assembly of highly-ordered protein aggregates of amyloid fibrils is of great importance because it not only helps to uncover the pathogenesis of many neurodegenerative diseases including Alzheimer's disease and Parkinson disease but also provide potential beneficial applications. In recent years, many efforts have been made to study the inhibition of the formation of amyloid fibrils or oligomers. Several types of inhibitors have been tested for modulation of amyloid peptide assembly structures. As a relative new emerging carbon nanomaterial and graphene will be a promising candidate for tuning amyloid protein polymerization. Herein, we have investigated the modulating effects of GO sheets on Aβ33-42 peptide assembly structures by using LS method and AFM. LS results reveal that the presence of GO sheets could considerably delay the assembly process of Aβ33-42 in aqueous solution. AFM images indicate that the large available surface of GO sheets can redirect peptide assembly process by adsorption of peptide monomers. The observations of the present study open up a new facile method to inhibit amyloidosis. Finally, the result also shows that our approach can be beneficial for potential drug designs relating to neurodegenerative diseases.

Biography

Mingdong Dong has completed his PhD in 2006 from Aarhus University and Postdoctoral studies from Nanomechanical Sensing group Rowland Institute at Harvard Harvard University (USA). He has published more than 100 papers in reputed journals, such as *Nature, Nature Nano, and Nature communication, ect*, and was invited to attend the variety of international conferences relevant to chemistry, physics, biophysics and nanoscience. He is the Associate Professor of iNANO Center of Aarhus University Denmark now, and memberships of Biophysical Society and Materials Research Society, USA. He also is the reviewers for international journals such as *Nature Nano, Nature Communication, Journal of the American Chemical Society, Chemical Communications, Small, Nanotechnology, Nano letters, Apply Physics Letters, Physics review letters etc.*

dong@inano.au.dk