Nabila Haddadine et al., Madridge J Nanotechnol Nanosci. 2016
http://dx.doi.org/10.18689/2638-2075.a1.002

madridge CONFERENCES

International Nanotechnology Conference & Expo

April 4-6, 2016 Baltimore, USA

Preparation of inverse opal crystals films based graphene oxide for photonic application

Nabila Haddadine[1,2]*, Karima Agoudjil[1], Khaled Abouzaid[2], Ahmed Benaboura[1] and **M Samy I-Shall**
[1]Laboratoire de Synthèse Macromoléculaire et Thio-organique Macromoléculaire, USTHB, Algeria
[2]Department of Chemistry, Virginia Commonwealth University, USA

Inverse opal photonic crystals films combine interesting structural and optical properties. In this work (IOFs), were fabricated with graphene oxide nano-sheets as external matrices through cross linking of poly (methyl methacrylate) templates. First mono-dispersed PMMA colloidal crystals templates were prepared. Then a solution of precursor containing graphene oxide nano-sheets was dropped on the surface of the PMMA templates and heated in the oven at 37 C for 24 h. These samples were immersed in toluene to completely remove the PMMA opal template. Finally thin films of GO photonic crystal with and inverse-opal structure were obtained. The resulting structures displayed strong photonic properties due to the high structural order that endow the films with photonic stop bands and structural colors, which are visible to the naked eye. These IOFs exhibited a rapid reversible changes in their structural colors and reflectance peaks like evidenced by optical analyses as a response to alcohol and organic solvent.

Keywords: Inverse opal, photonic crystals, templating, graphene oxide, PMMA nano-spheres.

Biography:

Nabila Haddadine is a Professor of Macromolecular Chemistry at University of Sciences and Technology Houari Boumedienne (USTHB). She received her B.S., M.S. and PhD degrees from the Faculty of Chemistry, USTHB in Algeria. She worked as visitor scholar in Herriot Watt University, Edinburgh U.K and works as a visitor Professor at Virginia Commonwealth University (VCU), USA. Her research interests are on polymer sciences regarding nano-composites, hydrogel, drug delivery and therapy, synthesis and properties of nano-structured materials with photonic and dielectric properties, synthesis of nano-particles and theirs antimicrobial activities. Dr. N. Haddadine has been a member of the Editorial Advisory Boards of the Journal of Physical Chemistry, American Association for Science and Technology (AASCIT), Journal of Naonscience and Polymer International Journal as reviewer.