

3rd Annual Congress on**Pollution and Global Warming**

&

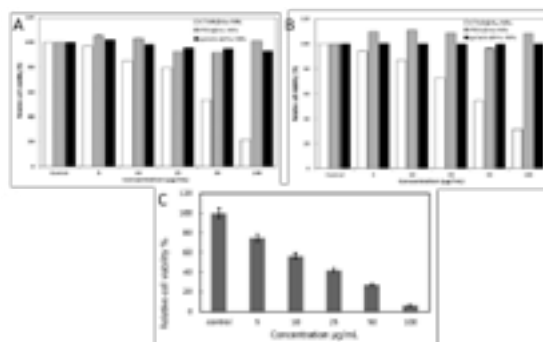
4th International Conference on**Past and Present Research Systems of Green Chemistry**

October 16-18, 2017 Atlanta, USA

Synthesis of gelatin stabilized high aspect ratio gold nanorods with enhanced biological stability as effective photothermal agent for cancer therapy**Oluwatobi S Oluwafemi**

University of Johannesburg, South Africa

A major challenge in efficient biological application of near infrared gold nanorods is the surfactant bilayer-induced cytotoxicity. Hence, there is need for the synthesis of biocompatible, non-toxic and stable functionalized gold nanorods. Though the use of gelatin as a passivating agent is a promising material for multifunctional coating, the inherent cytotoxicity, biological stability as well as the photothermal application performance of gelatin coated gold nanorods still need to be investigated before *in vivo* therapeutic application. In this study, synthesis of gelatin conjugated high aspect ratio gold nanorods (Au-NRs) with enhanced stability in biological system and its application in photothermal tumor ablation is herein reported for the first time. The gelatin shell required for the appropriate coating was optimized and investigated for their stability in culture media and relative cytotoxicity towards KM-Luc/GFP (mouse fibroblast histiocytoma cell line) and FM3A-Luc (breast carcinoma cell line) cancer cell lines. The optimized ratio of the gelatin-coated Au-NRs (0.5:1) exhibited enhanced biological media stability, improved temperature elevation and excellent photostability compared to CTAB and PEG capped gold nanorods. The cellular cytotoxicity and *in vitro* laser cytotoxicity experiments further demonstrate the effectiveness of the gelatin-coated nanorods in efficiently inhibiting deep-embedded tumor cells proliferation

**Biography**

Oluwatobi S Oluwafemi is a Researcher of National Research Foundation (NRF), South Africa at the Department of Applied Chemistry, University of Johannesburg. His research is in the broad area of nanotechnology and includes green synthesis of semiconductor and metal nanomaterials for different applications which include but not limited to biological (Imaging, labeling, therapeutic-PDT and PTT), optical, environmental and water treatment. He has authored and co-authored many journal publications, book chapters and books. He is a reviewer for many international journals in the field of Nanotechnology and has won many accolades both at local as well as at international level, focusing on different ways

Oluwafemi.oluwatobi@gmail.com

Notes: