

NanoWorld Conference Best Poster Award Winners

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The NanoWorld Conference taking place in March, 4-6 in Paris, France, was organized as previous editions in USA in order connecting multidisciplinary science and nanotechnologies for the solving of the main problems of humanity, among them cancer mortality. The poster NWCP5 by Dr. Charlette Tiloke, Durban University of Technology, South Africa (SA), entitled "**Niazimicin and its Phytonanoparticle Modulate Caspase-9 Splice Variants, IAP's and NFκB Signalling in Lung Cancer Cells**" was chosen for the NWC Poster Award for the importance of the topic – lung cancer, until now the most frequent death cause between cancer decease. Lung cancer is the most commonly occurring cancer in men and the third most commonly occurring cancer in women. There were 2 million new cases in 2018. Existing chemotherapy approach fails to fight lung cancer in the majority of cases. The novelty of this approach – combination of the traditional South African phytotherapy and gold nanoparticles as well as good presentation of the obtained encouraging results have induced the NWC Poster Award Committee to choose this work as one of the winners.

Nature is the store house of natural resources which have been used in many communities as dietary requirements or treatment of plethora of ailments. *Moringa oleifera* (MO) commonly known as Drumstick tree is found in SA and is used in traditional medicine to treat a variety of diseases [1-3]. Almost all parts of the tree are used in traditional treatments however the leaves have shown to have highest nutritional and medicinal properties. Cancer is one of the leading causes of death in SA and diagnosis is expected to increase over the next few years, which is alarming. Affordability and accessibility to treatment is also a major concern and often rural populations rely on traditional herbal medicines for treatment of various ailments. In addition, current therapies have several side-effects and are very expensive therefore alternate therapies are being actively being investigated. The antiproliferative effects of MO crude aqueous leaf extract in A549 lung, SNO esophageal and HepG₂ liver cancer cells was previously shown [4-6]. Gold nanoparticles (NP) are also showing potential in biomedical applications and could be used as an anticancer agent [7]. They can be synthesized chemically or via the use of plants/bioactive compounds which is cost-effective and environmentally friendly. Gold nanoparticles synthesized from MO crude aqueous leaf extract have apoptosis inducing effects in lung cancer cells [8]. The present poster assesses the antiproliferative effect of the bioactive compound found in MO and their synthesized gold nanoparticle in A549 lung cancer cells. The bioactive compound and gold nanoparticles induced apoptosis in the cancerous lung cells showing potential as a therapeutic agent and can possibly be used in treatment regimes.

Dr. Charlette Tiloke completed a BSc Biomedical Science, Bachelor of Medical Science (Honours) – Medical Biochemistry (Cum Laude) and her

MSc was upgraded to a PhD in Medical Biochemistry. Her curiosity and passion for research led her to pursue a PhD and Postdoctoral research fellowship at University of KwaZulu-Natal and Durban University of Technology, Durban, SA respectively under the supervision of Prof. Anil A. Chuturgoon, Prof. Alisa Phulukdaree, and Prof. Robert M. Gengan. She was awarded the prestigious National Research Foundation Postdoctoral research fellowship, SA and the L'Oréal-UNESCO for Women in Science Sub-Saharan Africa Regional Fellowship. She has published several research papers, book chapters and is part of various ethics and review committees. She is also a valued collaborator on several inter-departmental and international research studies. She has mentored, assisted and co-supervised honors, Masters and PhD students to successful completion of their research projects and publication of manuscripts. Dr. Tiloke enjoys researching, analyzing, interpreting, designing and developing new therapies and research studies. She is passionate about developing novel, cost-effective, complementary and alternate anticancer, nutraceutical and antimicrobial therapies. Her research focuses on South Africa's medicinal plants and their synthesized nanoparticles.



Dr. Charlette Tiloke.

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Another poster which equivalently deserved NWC Poster Award has been presented to Marine Dabert, Mariam Mezghan and coworkers (Mohamed Zaier, Samar Hajjar-Garreau, Loic Vidal and Lavinia Balan) from CNRS Mulhouse Materials Science Institute and University of Strasbourg, France, entitled "**Silver Nanostructures with Tuned Optical Properties by Photochemical Approach**". Photochemistry is a powerful tool for controlling size and shape of metal nanoparticles. The novelty of this research consists in fast and green photochemical approach capable of generating nano-layers of silver nanoparticles on glass substrates [1, 2]. The influence of chemical and photonic parameters on the morphology of silver nanostructures was studied with a view to adjusting their size and shape so as to tune their plasmonic characteristics and optical properties. Moreover, a particular process was developed to control the spatial organization of the nanoparticles in order to generate thin layers exhibiting both a high electric conductivity and a fair reflectivity. Promising prospective of application of such smart plasmonic surfaces should open up as biocide films, electronic components, surface enhanced Raman scattering (SERS), optical sensors or light filters. The possible applications make this development of high interest for modern nanotechnology. As a consequence, NWC Poster Award Committee choose this work as one of the winners and presented it to the Marian Mezghani who was particularly involved in the work presented in the poster.

Mariam Mezghani, 27 years old, is an Engineer in Material Science and works in the group of the CNRS Senior Researcher Dr. Lavinia Balan at the Institute of Materials Science of Mulhouse (IS2M CNRS UMR7361) – France, since September 2017. The research activity of this group is focused on the photochemistry applied to the synthesis of nanoparticles and nanomaterials.

Graduate of the National School of Engineering of Monastir - Tunisia as a textile engineer in 2016, she then joined the Ecole Nationale Supérieure d'Ingénieurs Sud Alsace (ENSISA) in Mulhouse - France where she obtained a Master degree in mechanics and fiber sciences.

As a materials engineer, she works on tuning the morphology of metal nanostructures in order to obtain functional surfaces with a variety of plasmonic and optical properties. In addition, she evaluates the antimicrobial activity of substrates thus functionalized for medical and general use applications.



Mariam Mezghani

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