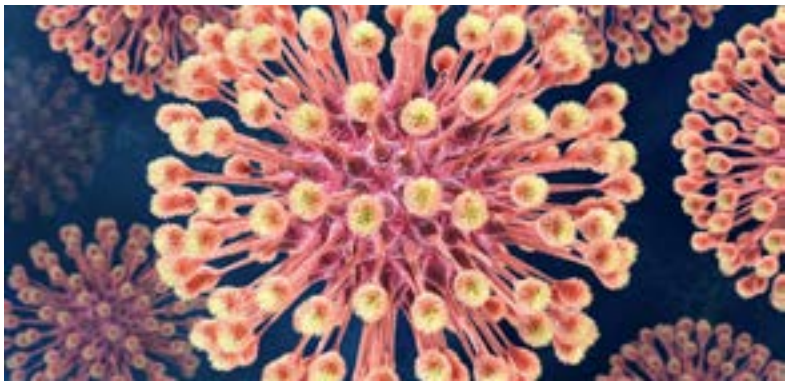
Microbial Ecology 2018



International Pre Conference Workshop on

Microbial Ecology & Eco Systems

June 28-29, 2018 | Alexandria, Egypt

SESSION-I

Keynote Forum

Day 1

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Suez Canal University, Egypt

Bioremediation of oil-contaminated brackish salty water and its safe use in the cultivation of woody trees and economic plants

Oil-mining companies have to subject waste water to expensive treatment before it can be discharged on land or at sea to comply with environment regulations. This study aims at developing an economically valid and applied comprehensive solution that takes advantage of oil-contaminated brackish salty water disposed by the General Petroleum Company in Egypt, maximizes its economic value and ensures its safe use in the environment. Three fields in RasSidr site of the company were inspected. Two main common plant species to RasSidr, *Tamarix niloteca* tree and *Phragmites australis* grass, that are tolerant to salinity along with *Pongamia pinnata* tree that is a leguminous and suitable for the RasSidr environment and grow close to saline-tiled beaches were used. These plants together with their associated bacteria of endophytes and rhizosphere that utilize crude oil as a carbon and energy source was considered a useful combination of bioremediation agents. Initially, soil characteristics were determined by analyzing soil samples taken at depths of 25 cm and 50 cm, and bacterial content of soil around the roots and within plant tissues was examined. Discharged water (@50 m3day-1) was used in irrigating plant fields in amounts sufficient to plant needs only. Growth parameters of plants were assessed four times in an interval of two months. Preliminary results indicated that growth rates in plant length, number of branches and stem girth, and chlorophyll content of oil-polluted water-irrigated plants of the two plant species were not significantly different ($p \leq 0.05$) from plants irrigated with fresh water. The number of bacteria in the soil increased significantly ($p \geq 0.05$) over time, and the color of residual oil in the soil was fading, indicating its decomposition. Soil under *Tamarix niloteca* contained similar quantities of microorganisms in both coastal saline-alkali soil and inland arid region indicating that colonization of the plant provided stable growth conditions for microorganisms. These plants and endophytes and rhizosphere combination played the main rule in the in-situ bioremediation process, and were efficient in removing around 70 % of the initial traces of crude oil within two months. They also provide safe environment and promote plant growth. They were able to decompose hydrocarbons and residues of crude oil as they possess special physiological mechanisms (PGPR) turns polluted water to safe water for human and environmental, and meanwhile achieving the objectives of this work. These results indicated that *Tamarix niloteca* and *Phragmites australis* are promising agents for treating oil-polluted salty wastewater in other fields of crude oil mining.

Keywords: Bioremediation, endophytes, oil contamination, *Phragmits australis*, *Pongamia pinnata, rhizosphere, Tamarix niloteca.*

Biography

Elsayed El-Meleigy is Professor Emeritus, Faculty of Science, Suez Canal University and president of General Syndicate of Scientific Professionals in Egypt. He obtained his PhD in 1989, Ain Shams University, and spent postdoctoral sabbaticals in Purdue University, USA (2000). He has a Bachelor in Shariaa Law, Al-Azhar University (2004). He is a member of the Supreme Council of Universities and Faculty of Science, Suez Canal University. He authored numerous cultural and scientific books in plant physiology. Prof. El-Meleigy supervised many PhD and MSc Thesis, and examined many others. He is a member of many scientific organizations and participated in numerous conferences and scientific events at national, regional and international levels. He offered hundreds of public lectures, carried out many projects and activities for the community. He attended specialized courses in Egypt, America and Germany, and took consultancies in the fields of plastics, paints, inks, adhesives, dry-ink pens and detergents.

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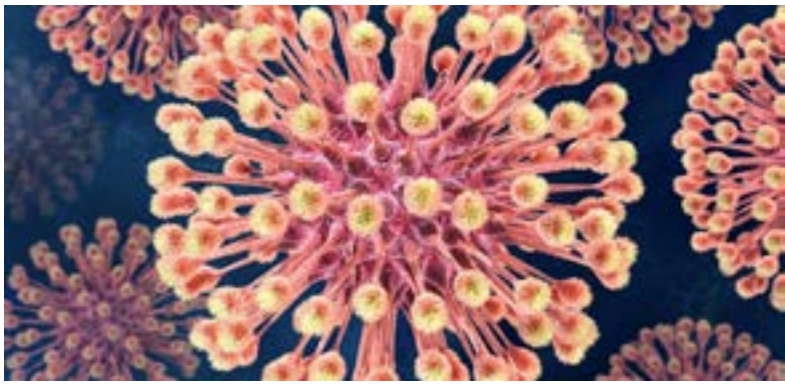

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Morsy Abu-Youssef
Alexandria University, Egypt

Science and Modern life

Chemistry as one of the main basic life sciences was found to play a great role in our modern life. Employing metals or metal ions in a coordination field with simple organic ligands and bridging units shows ancient and modern sophisticated applications. Plants life dynamo, "Chlorophyll" and animal life Oxygen transporter, "Hemoglobin" also some vitamins such as Vitamin B12 are representative models for the metal coordination chemistry role in plants and human life through an oxidation/reduction or bond formation/breaking process. Such natural facts encourage scientists to more and more trials to introduce metals into medical applications. Information storage materials is depending on certain magnetization property which takes place when some magnetic elements form coordinate Bonds in a certain way giving what is called Single Molecule Magnets (SMM). Each SMM can act as one bite on a computer hard disk. Producing Non-Linear Optics depending on Chiral centers of non-magnetic elements that helps producing new laser beam that didn't exist before[3,5]. On similar ways of employing coordination chemistry rules, we can produce metal complexes acting as Antibiotics like simple silver nicotinate and/or picolinate polymeric complexes. Using what is called Molecular Engineering to produce multifunctional materials is nowadays a main goal for most of scientists. Producing or selecting new building blocks of diatomic or polyatomic molecules or ions that give an arrangement or certain high order of Transition Metal elements is opening many new windows to new applications. Information storage (Single Molecule Magnets), New Laser Beam Lines (Non-Linear Optics), Antimicrobial Agent for (Antibiotic Resistant, Diabetic foot Ulcer Bacteria).

Biography

Morsy A M Abu-Youssef is a Professor of Inorganic Chemistry. Chem. Department, Faculty of Science, Alexandria University. He is a Head of the Syndicate of Scientific Professions in Alexandria (2016 – till now) and a Member of the Supreme Committee for Scientific Research at Alexandria, Univ., Egypt. (2014- till now), Participated in "The Scientific Research Development Plan" for Alex. Univ. Member of the Supreme Committee for International Relations at Alexandria, Univ., Egypt. He was The Egyptian Cultural Counselor to Austria, Hungary, Slovakia, Slovenia and Czech Republic; the Egyptian Embassy in Vienna. (2010 – 2013). He is Head of the Inorg. Chem. Sector, Faculty of Science, Alex. University, Egypt. He is Expertise Trainer at the "FLDC" Faculty and Leadership Development Center, Alexandria University. He supervised many Ph.D. and M.Sc. Thesis, and examined many others. He has List of Publications contain 90 publications in International pre-reviewed Journals and about 60 International Conference Meetings around the world and one Patent research. He is a member of many scientific organizations and Professional Institutions. He awarded The Flame of Peace Award 2013 "Habsburg Flame of Peace Organization in Austria", FOI Grant (2001) "Swedish Defense Research Agency", Alexandria University Award for Science "In Chemistry" (2000) and also he awarded Lisa-Meitner Stependium 1994 "Austrian Scientific Foundation" (FWF).

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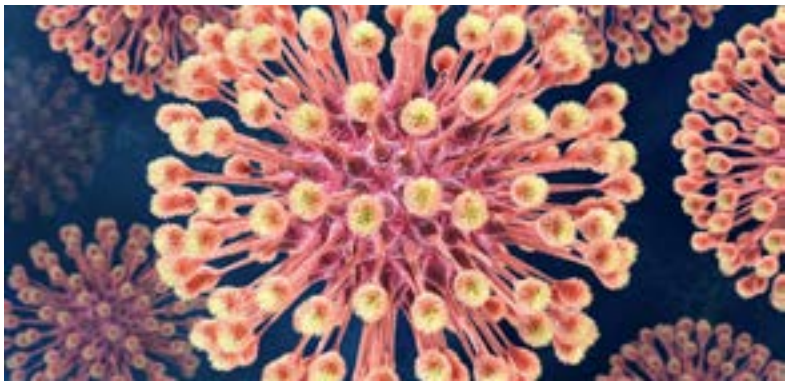

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SESSION-III

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Mohamed Bassam Aboul-Nasr

University of Sohag, Egypt

Mycogenesis of silver nanoparticles using nonpathogenic, opportunistic and pathogenic fungi

Nanobiotechnology is an important field of modern research dealing with design, synthesis, and manipulation of particle structures ranging from approximately 1-100 nm. It serves as an imperative technique in the development of clean, nontoxic, and eco-friendly procedures for the synthesis of metal NPs having the intrinsic ability to reduce metals by specific metabolic pathways. Biosynthesis of such nanoparticles is replacing chemical and physical methods of synthesis. It can be performed by fungi, bacteria, yeast or plant extracts. The size, shape and morphology of Ag NPs depend on the tendency of reduction by the organic reducing agent. The precise mechanism for the synthesis of nanoparticles employing biological agents have not been conceived as yet. This is because different biological agents react differently with metal ions leading to the formation of nanoparticles. Many microorganisms produce inorganic materials either intra or extra-cellular. But the mechanism for intra and extracellular synthesis of nanoparticles is different with different biological agents. The cell wall of the microorganisms plays an important role in the intracellular genesis. The mechanism involves electrostatic interaction of the positive charge of the metal ions with negative charge of the cell wall. The enzymes which are present within the cell wall reduce the ions to nanoparticles and these nanoparticles get diffused off through the Cell wall. The extracellular synthesis of silver nanoparticles using microbes is basically found to be nitrate reductase-mediated synthesis. Production of silver nanoparticles through fungi has several advantages over the other microorganisms. They include tolerance towards high metal nanoparticle concentration in the medium, easy management in large-scale production of nanoparticles, good dispersion of nanoparticle and much higher amounts of protein expressions. Our project is dealing with potential silver nanoparticle inducing fungi either non-pathogenic, opportunistic and pathogenic selected fungal strains.

Biography

M Bassam Aboul-Nasr is an emeritus Professor in the Department of Botany and Microbiology since 2015. His B.Sc. and M.Sc. were obtained in botany and mycology from the Faculty of Science, Assiut, Egypt, and his Ph.D. was awarded to him by the University of Maryland, USA. He was employed by FDA,USA (1983-1985), appointed as TA and lecturer in UMDCP,USA(1985-1989). He did postdoctoral work at the University of Maryland, USA in 1989. He worked in University of Sohag as a senior demonstrator in 1976, a lecturer in 990. He worked in KSA universities from 1993-2005. He supervised numerous Master and Ph.D thesis, editor of one book and main author of a lot of internationally published articles. His main research interest is fungi, mycotoxins, aspergillosis causing fungi and bionanoparticles. His hobbies are reading, listening to soft music, and camping.

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