



INTERNATIONAL NANOTECHNOLOGY WORKSHOP (ONLINE) NW-4, 2020

28

DECEMBER

2020

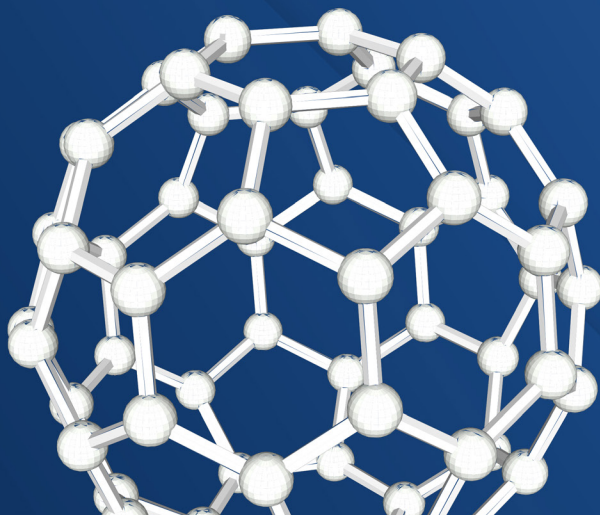
Monday at 10.00 AM

THIS WORKSHOP IS ORGANIZED BY:
PHYSICS EDUCATION DEPARTMENT,
FACULTY OF EDUCATION,
TISHK INTERNATIONAL UNIVERSITY



Tishk

International University



THE AMERICAN UNIVERSITY OF IRAQ
SULAIMANI



4TH INTERNATIONAL NANOTECHNOLOGY WORKSHOP (ONLINE)

4th International Nanotechnology Workshop Program NW-4 - ONLINE

December 28th, Monday, 2020

Please note: This program will be performed online, therefore depending on technical issues this schedule can be changed.

10:00-10:20 AM	Opening Ceremony and Welcoming Speeches - Promotional Videos of TIU - Welcome Speech: Dr. Idris Hadi, Head of Board of Trustees, Tishk International University - How the Nanotechnology Workshop started?
1 st session	
Session chair:	Dr. Amir Abdulrahman Ahmed
10:20- 11:00 AM	1 st Keynote speech : Asst. Prof. Dr. Azeez A. Barzinjy , <i>Salahaddin University and Tishk International University, Erbil, Iraq</i> Green Synthesis and Characterization of Nanoparticles and Their Potential Applications
11:00- 11:30 AM	2 nd Keynote speech : Dr. Muhammad Hisham , <i>Tishk International University, Erbil, Iraq</i> Nanomaterials and Their Applications in Green Technology
11.30 – 12.10	3 rd Keynote speech : Prof. Dr. Mohammad Mansoob Khan , <i>Chemical Sciences, Faculty of Science, Universiti Brunei Darussalam</i> New Trends in Nanosciences: Green Chemistry and Nanobiotechnology
12.10-12.25	Online Certificate submission
12.25-14.00 Break Time	
2 nd session	
Session chair:	Dr. Wala Gazey Dizayee
14:00- 14:40 PM	4 th Keynote speech : Asst. Prof. Dr. Samir Mustafa Hamad , <i>Soran Research center, Soran University, Erbil-Iraq</i> From Chemical Method to Biological Method For ZnO Nanorods Synthesis
14:40- 15:20 PM	5 th Keynote speech : Asst. Prof. Dr. Ahmed Salih , <i>University of Sulaimani, College of Engineering and American University of Iraq, Sulaimani, Iraq</i> Some Engineering Applications of Nanotechnology In Enhancing the Smartness of the Materials, Drilling Fluid In Oil and Gas Operations, Hydraulic Fracturing, and Construction Fields
15.20 – 16.00 PM	6 th Keynote speech : Prof. Dr. Mogalahalli Venkatesh Reddy , <i>Institute of Research Hydro-Québec, Centre of Excellence in Transportation Electrification and Energy Storage (CETEES), Hydro-Québec, Canada</i> Functional Nanomaterials and Its Application for Energy Storage & Conversion
16.00 -16.05 PM	Closing ceremony
16.05-16.20 PM	Online Certificate submission

Mogalahalli Venkatesh Reddy



University

Institute of Research Hydro-Québec, Centre of Excellence in Transportation Electrification and Energy Storage (CETEES), Hydro-Québec, Canada

ABSTRACT

This talk will discuss various nanomaterials synthesis, physical characterization techniques, fundamentals and applications specifically in area of Metal ion batteries (Li, Na), supercapacitors, solar cells, Sensors, catalysis and solid electrolyte materials. Various synthesis methods like chemical and physical for nano and submicron materials and its characterization techniques like Rietveld refinement, X-ray diffraction, Neutron diffraction, X-ray absorption spectroscopy (XAS), X-ray photoelectron spectroscopy (XPS), Rutherford Backscattering spectrometry (RBS), Scanning and Transmission electron microscopy (SEM/TEM), Raman/IR density and BET surface area methods will be discussed. Use of electroanalytical studies like cyclic voltammetry, galvanostatic cycling and impedance spectroscopy techniques for testing and analysis and in situ and ex situ studies reaction mechanisms and voltage hysteresis and ion conduction mechanisms.

Mohammad Mansoob Khan



University	Chemical Sciences, Faculty of Science, Universiti Brunei Darussalam, Jalan Tungku Link, Gadong, BE 1410, Brunei Darussalam.
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ABSTRACT

In this international workshop I would like to introduce myself, my current university, Universiti Brunei Darussalam and my past, present and future research work and achievements. I have been working on green and biogenic synthesis of metal nanoparticles (mainly Au and Ag NPs), metal oxides (TiO₂, ZnO, SnO₂, CeO₂, MnO₂ etc), Chalcogenides (CdS, ZnS etc) graphene and graphitic carbon nitride based nanocomposites and nanohybrids which can be used as photocatalysts. Mostly, these nanomaterials were/are synthesized using green and biogenic synthesis methods using biofilms, microbial fuel cells and aqueous plant extracts. The synthesized nanomaterials such as narrow band gap metal oxides (such as TiO₂, ZnO, SnO₂, CeO₂), nanocomposites (such as Au@TiO₂, Ag@TiO₂, Pt@TiO₂, Ag@ZnO, Au@SnO₂, Ag@SnO₂, Au@CeO₂, Ag@CeO₂, CNT/MnO₂, CdS-graphene, Au-Graphene, Ag-Graphene, CeO₂-Graphene, ZnO/CeO₂, PANI@TiO₂, Chitosan-SnO₂, Cobalt-doped Ceria/reduced graphene oxide nanocomposite, Ag/CeO₂/ZnO nanostructure, Au decorated-graphitic g-C₃N₄ nanostructures, Ag@g-C₃N₄ nanostructures and doped as well as dual doped metal oxides (such as Mg-doped ZnO, Cu-doped ZnO, Co-doped ZnO, Mn-doped ZnO, Ni-doped SnO₂, Co-doped SnO₂, Zr-doped CeO₂, Sn-doped CeO₂, Mg/Cu-dual doped ZnO, Ni/Co-dual doped SnO₂, Zr/Sn-dual doped CeO₂). These synthesized nanomaterials were mainly used for photocatalysis related applications such as waste water treatment, artificial waste water treatment, dye degradation, chemicals synthesis, electrode materials, photoanodes, optoelectronic devices, photoantioxidant studies etc. Currently, I am focusing on the green synthesis of nanomaterials using aqueous plant extract for visible light induced photocatalytic related applications such as photocatalytic tiles, photocatalytic paints, photocatalytic deodorizing and air cleaner, photocatalytic water purification, self-cleaning, self-sterilizing, anti-fogging surfaces, organic synthesis and conversion etc.

Dr. Ahmed Salih



University

Assistant Professor, University of Sulaimani, College of Engineering and American University of Iraq, Sulaimani

ABSTRACT

The presentation of the impact of nanomaterials on improving the physical and mechanical properties of the materials will be explained and supported with the publications in high reputation journals. Also, the influence of the nano materials on the piezo-electrical resistivity in the oil well and construction engineering applications will be presented.

The major effects of nanomaterials in the hydraulic fracturing fluids and to reduce the fluid loss in the drilling muds will be explained and interesting results in the recent publication will be shown.

Azeez Abdullah Barzinjy



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ABSTRACT

In continuation of our recent works [1-9] regarding green synthesis nanomaterials, here in this talk an active and easy process of one-pot green synthesis of a number of nanoparticles is proposed. In our investigations, a variety of plant extracts, as efficient chelation and capping agents together with different salts, were utilized as salt ions sources. The plant extracts, were analyzed using both UV-Vis, quantitative, and FT-IR, qualitative methods in order to identify the essential phytochemicals which are necessary for reducing, capping and stabilizing of nanoparticles. Our studies showed that the salts with unlike counter-ions cause (dissimilar nucleation and growth kinetics). The structure, size, morphology, thermal behavior, surface area, surface charge, chemical composition and optical properties of the nanoparticles were investigated using several characterization techniques, namely UV-Vis, FT-IR, XRD, FE-SEM, EDX, DSC, DLS, Zeta potential and BET analysis.

The DSC analysis utilized to analysis the endothermic and exothermic peaks and water absorption by the synthesized NPs. It can also ascribe the loss of unstable wetting agent molecules adsorbed on the surface of the NPs throughout the synthesizing process. The XRD analysis showed that the change in plant extracts resulted in a range in crystallite size, while, the DLS analysis showed that the particles size alters with changing the plant extract and corresponding salts. The utilized method can produce nanoparticles with different shapes, highest crystallinity ranging between 96.96% to 100.0%, relatively high stability and good specific surface area.

After synthesizing and characterization process, the green synthesized NPs were employed for removing organic pollutants, explicitly methyl orange (MO) from water using UV-Vis spectroscopy. Nearly an entire degradation of MO was achieved within a very short time and the degradation process was reproducible for several runs. On the other hand, the synthesized NPs can be, also, utilized as a thin film layer on the top of the p-type or n-type Si wafer. Then the synthesized NPs thin film can be utilized for many applications such as gas-sensing, UV emission LED apparatus, solar panel and many other applications.

Asst. Prof. Dr. Samir Mustafa Hamad



University

Soran Research center, Soran University, Erbil-Iraq

ABSTRACT

Zinc oxide nanorods (ZnO NRs) have been studied with different growth temperature by using modified chemical bath deposition (M-CBD) method. The synthesized ZnO nanorods was carried out with two steps, the first step is deposition of the ZnO seed layer on the glass substrate and the second one is growing the ZnO nanorods on the seeded substrate. The influence of the growth temperature on the morphology and crystal structure of the ZnO samples was investigated by field emission scanning electron microscopy (FE-SEM) and X-ray diffraction (XRD). The UV-Vis spectroscopy was also utilized to characterize the optical properties of ZnO nanostructure. Additionally, ZnO nanorods were found to be well oriented along (002) planes with different growth temperature. However, the ZnO NRs have been grown by biology method at optimized growth condition; also the morphology of the samples was characterized using FE-SEM.



University

Department of Physics Education, Faculty of Education, Tishk International University, Erbil, Iraq

ABSTRACT

The present research aims to synthesis nano-based semiconductors using a facile and cost-effective approach. The synthesized materials are characterized to investigate their structural and morphological properties. Nano-based semiconductors are then will be applied or recommended for applications such as self-powered devices. Devices that can operate without applying external power, i.e. operated with zero applied voltage. The project aims to fabricate highly sensitive nano-based devices such photosensors, gas sensors and nanogenerators that could be remarkable candidates to be applied in green technology.

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