

Program

***Nanotechnology Convergence for
Sustainable Energy, Environment,
Climate Change and Health:
A US-Africa Conference***

July 14-18, 2024

Casablanca, Morocco

Conference Chairs:

Isabel Escobar, University of Kentucky
Ahmed El-Gendy, University of Texas-El Paso



Engineering
Conferences
International

Engineering Conferences International

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The conference organizers gratefully acknowledge support from the U.S. National Science Foundation.



Sunday, July 14, 2024

- 17:00 – 18:00 Conference check-in (Câpre Room)
- 18:00 – 19:15 Opening and Welcome
Isabel Escobar and Ahmed El-Gendy, Conference co-chairs

Plenary #1

Overview of the NSF ENG/CBET Division: Core programs and convergence research opportunities

Nora Savage, National Science Foundation, USA

- 19:15 – 21:15 Reception and Dinner

NOTES

- *Technical and Poster Sessions will be in the Anis & Basilic rooms on the ground floor of the hotel.*
- *The ECI Office is across from the meeting room in Origan & Capre.*
- *Breakfasts and lunches will be in the Bab Restaurant.*
- *Audiotaping, videotaping and photography of presentations are prohibited.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *Speakers – Please leave at least 3 minutes for questions*
- *Please do not smoke at any conference functions.*
- *Turn your cellular telephones to vibrate or off during technical sessions.*

Monday, July 15, 2024

07:00 – 09:00 Breakfast Buffet

09:00 – 10:00 **Plenary #2**
Selective membranes for ion recovery and fractionation of pharmaceutical components
Suzana Nunes, KAUST, Saudi Arabia

10:00 – 10:30 Coffee Break

10:30 – 12:00 **Session 1: Nano-Environment – Coatings and Manufacturing**
Session Chair: Maria Coleman, University of Toledo, USA

Oral107s1 - Fabrication of polymeric membranes with silver nanoparticles and eco-friendly solvents for biofouling reduction in water filtration
David Lu, University of Kentucky, USA

Oral121s1 - Antimicrobial potential of nanocrystalline cellulose quaternary ammonium coatings
Christa Hestekin, University of Arkansas, USA

Oral112s - Manufacturing of loose-nanofiltration polymeric membranes with eco-friendly solvents for water purification on an R2R system
Kwangjun Jung, Georgia Institute of Technology, USA

Oral132s1 - Opportunities and challenges in complex particles
Martin Thuo, North Carolina State University, USA

12:00 – 13:30 Lunch

13:30 – 14:30 **Session 2: Nano-Energy**
Session Chair: Kaitlyn Crawford, University of Central Florida, USA

Oral102s1 - Nanoscale topological structure a non-equilibrium dynamics in functional materials
Edwin Fohntung, Rensselaer Polytechnic Institute, USA

Oral108s1 - Thin film nanophotonics for clean energy applications
Mohamed El Kabbash, University of Arizona, USA

Oral127s1 - A sustainable approach in energy application using clay-based membranes
Mohamad Roxy Islam, University of Central Florida, USA

14:30 – 15:00 Coffee Break

15:00 – 16:00 **Plenary #3**
The U.S. 21st Century Nanotechnology Research and Development Act at 21
Branden Brough, Director, NNCO, USA

16:45 – 19:00 Poster Session / Social Hour

Dinner on your own

Tuesday, July 16, 2024

07:00 – 08:45 Breakfast Buffet

09:00 – 10:00

Plenary #4

Oral109s1 - Nanoparticles and multifunctional membranes for environmental remediation

Dibakar Bhattacharyya, University of Kentucky, USA

10:00 – 10:30

Coffee Break

10:30 – 12:00

Session 3: Nano-Environmental Applications

Session Chair: Christa Hestekin, University of Arkansas, USA

Oral137s1 - Sulfated nanocellulose coatings for enhanced agronomic benefits and environmental sustainability in wheat and quinoa cultivation

Mohamed Jaouahar, Mohammed VI Polytechnic University, Morocco

Oral125s1 - Delamination mitigation of modified bilayer membranes using a single slot die roll-to-roll manufacturing process

Minwoo Jung, Georgia Institute of Technology, USA

Oral134s1 - Sustainable additive manufacturing of polysulfone membranes for liquid separations

Brian Leonard, West Virginia University, USA

Oral114s1 - Effects of wet exfoliation strategies on the yield and colloidal behavior of 2D hexagonal boron nitride nanosheets

Anika Azme, University of Nebraska – Lincoln, USA

12:00 – 13:30

Lunch

13:30 – 15:00

Session 4: Nano-Medicine

Session Chair: Peter Vikesland, Virginia Technical University, USA

Oral106s1 - Smart nanomagnets for hyperthermia cancer therapy: in vitro and in vivo studies for breast, prostate tumor models

Mariam Elabbasi, University of Texas at El Paso, USA

Oral110s1 - Magnetically responsive biocompatible micromotors activated by light for targeted cell therapy

Taiwo Sogbesan, FAMU-FSU College of Engineering, USA

Oral122s1 - Nano(particles) to Treat Big (fat)

MD Nurunnabi, University of Texas at El Paso, USA

Oral130s1 - Nanoplastics: Emerging health effects and addressing knowledge gaps in their formation and remediation

Kaitlyn Crawford, University of Central Florida, USA

15:30 - 16:00

Coffee Break

Tuesday, July 16, 2024 (continued)

16:00 – 17:00

Session 5: Agriculture and Health

Session Chair: Mohamed Jaouahar, Mohammed VI Polytechnic University, Morocco

Oral124s1 - Addressing sustainability goals using nanobiotechnology enabled sensing

Peter Vikesland, Virginia Technical University, USA

Oral138s1 - Inactivation of Aerosolized Microbes using Chemically Immobilized Silver Nanoparticles on Air Filtration Membranes

Isabel C. Escobar, University of Kentucky, USA

Oral136s1 - Multifunctional phosphate-based bioplastics for sustainable environment, agriculture and energy

Houssine Sehaqui, Mohammed VI Polytechnic University, Morocco.

Virtual - Oral128s1 - Adaxial and abaxial leaf surfaces afford different nanocarrier foliar uptake pathways and nanofertilizer efficiency

Gregory Lowry, Carnegie Mellon University, USA

17:00 – 17:15

Stretch Break

17:15 – 18:15

Plenary #5

Leveraging nanotechnology applications to address climate change

Jacob Jones, North Carolina State University and Director, Science and Technologies for Phosphorus Sustainability (STEPS) Center, USA

18:15 – 20:00

Poster Session / Social Hour

Dinner on your own

Wednesday, July 17, 2024

- 07:00 – 08:45 Breakfast Buffet
- 09:00 – 10:00 **Session 6: Sustainable Nanotechnology**
Session Chair: Abdoulaye Ndao, University of California San Diego, USA
- Oral118s1 - Sustainable bimetallic nanocatalysts for electrochemical detection and degradation of 1, 4-dioxane in water and wastewater**
Omowunmi Sadik, New Jersey Institute of Technology, USA
- Oral120s1 - Nanocellulose membranes for sustainable engineering**
Jamie Hestekin, University of Arkansas, USA
- Virtual - Nanosciences & Nanotechnologies towards SDGs & Science with social impact**
Malik Maaza, University of South Africa, South Africa
- 10:00 – 10:30 Coffee Break
- 10:30 – 11:30 **Session 7: Nano-Metrology**
Session Chair: Jamie Hestekin, University of Arkansas, USA
- Oral101s1 - Symmetry and topology in photonics nanostructures**
Abdoulaye Ndao, University of California San Diego, USA
- Oral111s1 - Leveraging nanoparticles for modeling viral vector recovery by membranes**
Mara Leach, University of Kentucky, USA
- Oral139s1 - The Hidden Power of Nanomagnets in Industry and Medicine**
Ahmed El-Gendy, University of Texas at El Paso, USA
- 11:30 – 12:00 Stretch Break
- 12:00 – 13:00 **Panel**
Bridging Divides: Connecting Nanotechnology Environmental, Health and Safety (EHS) Communities of Research (CORs) Across Regions
Moderator: Quinn Spadola (Deputy Director, NNCO)
Panelists: Christof Asbach (Department Head (IUTA), Exposure COR Co-chair)
Olga Tsyusko-Unrine (University of Kentucky, Ecotoxicity COR Co-chair)
Mark Wiesner (Duke University, Risk Assessment COR Co-chair)
- 13:30 – 14:30 Lunch
- 14:30 Depart for Excursion (**Meet in hotel lobby no later than 14:25**)
Guided tour of Casablanca will include visit to Hassan II Mosque.
- 19:30 Conference Dinner

Thursday, July 18, 2024

07:00 – 08:45 Breakfast Buffet

09:00 – 10:00

Session 8: Nano-catalysis and Contaminant Barriers

Session Chair: Dibakar Bhattacharyya, University of Kentucky, USA

Oral123s1 - Efficacy of zero-valent iron (f0) particles and photocatalytic nanoparticles in removal of complex polar contaminants from water systems

Hamidreza Sharifan, University of Texas at El Paso, USA

Oral129s1 - Functional polymers composites for gas separations membrane and barrier applications

Maria Coleman, University of Toledo, USA

Oral135s1 - Assessing stability and toxicity of the polymeric membranes with phosphorene and their potential for removal of per-and polyfluoroalkyl substances

Olga Tsyusko, University of Kentucky, USA

Nanotechnology Convergence for Sustainable Energy, Environment, Climate Change and Health: a US-Africa Conference

POSTER PRESENTATIONS

As of 11 July 2024

<u>POSTER</u>	<u>TITLE</u>
1	Leveraging nanoparticles for modeling viral vector recovery by membranes Mara Leach, University of Kentucky, United States of America
2	Harnessing Cellulose Nanofibers for Sustainable Water Filtration and Soil Remediation: A Nanotechnology Approach Ke'Shan Lighty, North Carolina A&T State University, United States of America
3	Chemical & Physical characterization of Plastic Breakdown: accelerated oxidation of formulated polyethylene plastic Aicha EL kharraf, University of Rennes, Duke university, France
4	Exploring new and existing materials for development of phosphorus sensors. Quintino Medi, Clemson University, STEPS, United States of America
5	Characterization of polystyrene response in <i>Saccharomyces Cerevisiae</i> Kwaniyah Tuffour, UNCG & NCAT - Joint School of Nanoscience and Nanoengineering, United States of America
6	Transcriptional Response of <i>Candida albicans</i> to Silica Nanoparticles Zelena Johnson, University of North Carolina at Greensboro, United States of America
7	Enhancing Phosphorus Degradation Efficiency with Nano-Enhanced Electrospun Fibers and Metallic Coatings Sharika Cochran, NCAT - JSNN, United States of America
8	Innovative Technologies for food, energy, and water nexus sustainability Shawn Adams, UNC-Greensboro, United States of America
9	Smart Nanomagnets for Hyperthermia Cancer Therapy: In vitro and In vivo Studies for Breast, Prostate Tumor Models. Mariam Elabbasi, University of Texas at El Paso, United States of America
10	Fabrication of polymeric membranes with silver nanoparticles and eco-friendly solvents for biofouling reduction in water filtration David Lu, University of Kentucky, United States of America
11	Magnetically Responsive Biocompatible Micromotors Activated by Light for Targeted Cell Therapy Taiwo Sogbesan, FAMU-FSU College of Engineering, n/a, United States of America

**Nanotechnology Convergence for Sustainable Energy,
Environment, Climate Change and Health**
POSTER PRESENTATIONS

<u>POSTER</u>	<u>TITLE</u>
12	Leveraging nanoparticles for modeling viral vector recovery by membranes Mara Leach, University of Kentucky, United States of America
13	Manufacturing of Loose-Nanofiltration Polymeric Membranes with Eco-friendly Solvents for Water Purification on an R2R system Kwangjun Jung, Georgia Institute of Technology, United States of America
14	Effects of wet exfoliation strategies on the yield and colloidal behavior of 2D hexagonal Boron Nitride nanosheets Anika Azme, University of Nebraska - Lincoln, United States of America
15	Delamination mitigation of modified bilayer membranes using a single slot die roll-to-roll manufacturing process Minwoo Jung, Georgia Institute of Technology, United States of America
16	A sustainable approach in energy application using clay-based membranes Md. Roxy Islam, University of Central Florida, United States of America
17	Sulfated nanocellulose coatings for enhanced agronomic benefits and environmental sustainability in wheat and quinoa cultivation Mohamed Jaouahar, Materials Science, Energy, and Nanoengineering (MSN) Department; Mohammed VI Polytechnic University, Morocco