NanoFlorida 2020

Hosted Virtually by the Dr. John T. Macdonald Biomedical Nanotechnology Institute of the University of Miami (BioNIUM)

September 25th, 2020
12:00 – 5:00 PM EDT

Conference Program

UNIVERSITY OF MIAMI

Conference Access

All Times are in Eastern Daylight Time (Miami)

Webinar access link. Please use this link to access most of the webinar, including the keynote and plenary talks, shark tank competition, and award ceremony.

Poster Q&A Session Access:

During our poster session from 2:45 PM – 3:45 PM, we will have two question and answer sessions with the poster presenters. **Please see page 9 for more details.**

Please use this access link to attend the **Materials, Devices, and Enabling Technologies Q&A** from 2:45 – 3:15 PM.

Please use this access link to attend the **Biomedical and Biotechnology Q&A** from 2:45 – 3:15 PM.

Please use this access link to attend the **Environmental, Agricultural, and Energy Q&A** from 3:15 – 3:45 PM.

Please use this access link to attend the **Pharmaceutical Q&A** from 3:15 – 3:45 PM.

Welcome to NanoFlorida 2020!

The NanoFlorida 2020 Organizers and Organizing Committee would like to welcome you to this year's conference. NanoFlorida was established in 2007 as an annual get together of scientists, students, and faculty from a consortium of universities and colleges around the State of Florida with the goal of enhancing the stature of nanoscience and nanotechnology in the Sunshine State. This is a student organized and run conference, whose location rotates amongst the consortium member institutions. The University of Miami's Dr. JT Macdonald Foundation Biomedical Nanotechnology Institute, BioNIUM, serves as the host in 2020, and Umer Bakali, Jessi Hersh, and Michael Moraskie, three dedicated PhD students, are the organizers.

NanoFlorida has emerged as an effective vehicle to showcase the latest discoveries, promote exchange of ideas, discuss scholarly educational programs, foster collaborations, partnerships, and interactions amongst academic, industrial, and governmental scientists. The success of NanoFlorida and the strong partnership forged by the member institutions led in 2019 to the incorporation of the consortium as a non-profit organization, the Florida Nanotechnology Association or FAN, which serves as the professional society for our State's nanotechnology community. While FAN has a seminar series and programs to enhance interactions among its members, the most important event that FAN sponsors is NanoFlorida.

The COVID-19 global pandemic brought unprecedented challenges that were not imaginable, deeply impacting our Florida community. The nanotechnology community has played a major role in helping combat the pandemic by elucidating the mechanism of viral transmission, developing new nanotech-inspired diagnostic tests, drugs, and vaccines, and engineering masks and personal protection equipment. Celebrating nanoscience and nanotechnology made sense more than ever!

Jessi, Michael, and Umer, organizers of NanoFlorida, with advice from the organization committee composed of the leadership of BioNIUM and the FAN Executive Committee, rose to the challenge to organize a virtual conference. We are happy to report that we have a record number of participants (>450). Moreover, we have implemented exciting research and Shark Tank competitions in the program to promote innovation and entrepreneurship amongst the next generation of scientists and engineers. The program also features two lectures by international leaders in nanotechnology, namely Dr. Paul Weiss, UC Presidential Chair at UCLA, and Dr. Thomas Webster, the Art Zafiropoulo Chair at Northeastern University.

The BioNIUM leadership would like to thank Michael, Umer and Jessi for all the enthusiasm and hard work that they invested in making NanoFlorida 2020 a reality. Credit also goes to Dr. Shyam Mohapatra, the FAN Executive Committee, faculty and staff from all participating institutions who have supported and guided student participants. We also want to thank the University of Miami's Miller School of Medicine Department of Biochemistry and Molecular Biology, and BioNIUM's staff for helping in organizing the conference. Special thanks to our sponsors as well.

Please, join us in celebrating nanoscience and nanotechnology at a time when our diverse community of scientist and engineers have demonstrated their commitment to help others with their creativity, relentless work, and humanity. It is only when we are united, working in teams focused on a common goal that we can win the battle against the SARS-CoV-2 virus!

Thank you for attending and we hope that you enjoy NanoFlorida 2020!

Sincerely,

Sylvia Daunert

Sylvia Daunert, PharmD, MS, PhD
Professor and Lucille P. Markey Chair
Director, Dr. JT Macdonald Foundation Biomedical Nanotechnology Institute
Department of Biochemistry and Molecular Biology
Miller School of Medicine
University of Miami

Letter from Florida Association for Nanotechnology

Welcome to the NanoFlorida 2020 International Conference!

Welcome to the NanoFlorida 2020 International Conference! On behalf of the Florida Association for Nanotechnology (FAN), we welcome you to this year's conference. Each year, universities and colleges around the state of Florida rotate their efforts in hosting the annual NanoFlorida Conference. For the past twelve years, a consortium of Florida universities organized the annual conference that addressed critical needs of research students and faculty within the state of Florida. Most importantly, NanoFlorida conferences provide a forum for academic and industrial researchers to share their recent discoveries, exchange new ideas, and develop professional relationships that strengthen the state's nanotechnology research community.

The Steering Committee decided to officially incorporate as a non-profit, the Florida Association for Nanotechnology, to expand the education and training of the next generation in nanotechnology. It also established an International Academy of Nanotechnology and decided to hold the 13th annual meeting as the NanoFlorida International Conference (NIC) virtually hosted by the University of Miami, in Miami, Florida, on September 25th, 2020 from 12:00 – 5:00 pm.

In addition to research presentations, the conference will provide new opportunities for students to network with researchers from Florida's leading academic institutions and the broader nanobiotechnology industry.

On behalf of the Florida Association of Nanotechnology, I would like to thank the Steering Committee, Local Support Committee and numerous faculty and staff members from all participating institutions who have worked tremendously hard to make this conference a reality. We also want to thank the University of Miami and their staff for serving as the host of this year's event.

Please take this opportunity to network and collaborate with other researchers in the field, which will ultimately aid in the development of a new generation of nanoscientists. Be sure to share the #NanoFlorida2020 experience on our social media!

Thank you for attending and we hope you enjoy NanoFlorida 2020!

Sincerely,
Shyam S. Mohapatra, PhD
President, FAN

Conference Organizers

Michael P. Moraskie Alvarez-Tabío, is a Ph.D. student in the Biochemistry and Molecular Biology department at the University of Miami. He earned a B.S. in Biology with a minor in English Literature from Haverford College in 2016. His research interests focus on the microbiome, specifically on developing biosensors for the study of quorum sensing molecules as biomarkers of disease.

Umer Bakali is a Ph.D. student in the Department of Biochemistry and Molecular Biology at the University of Miami. He earned his B.S. in Biochemistry and Molecular Biology from the University of Miami in 2018, with a minor in Philosophy. His research interests are centered on chromatographic and spectrometric analyses of physiologically relevant compounds, including carcinogens and biomarkers of infection. He assists in evaluating hazardous occupational and environmental exposures sustained by firefighters.

Jessica Hersh is a Ph.D. student in the Department of Biochemistry and Molecular Biology at the University of Miami. She earned her B.S. in Materials Science and Engineering with a minor in Biomedical Engineering from Cornell University in 2019. Her research interests are centered on nanomedicine and targeted delivery of therapeutic cargo. Her current research involves developing cationic polymers for gene delivery applications.

Conference Organizers

Sylvia Daunert, PharmD, MS, PhD, Excma. Dra. is the Lucille P. Markey Chair of Biochemistry and Molecular Biology at the University of Miami Miller School of Medicine. She is the Director of the JT Macdonald Foundation Biomedical Nanotechnology Institute of the University of Miami (BioNIUM)

Sapna Deo, PhD, is a Professor and the Graduate Program Director of the Department of Biochemistry and Molecular Biology at the University of Miami Miller School of Medicine. She also serves as the Educational Initiatives Director of BioNIUM.

Marc R. Knecht, PhD, is a Professor of Chemistry at the University of Miami and Associate Director of BioNIUM.

Sung Jin Kim, PhD, is an Associate Professor of Electrical and Computer Engineering with a joint appointment in the Department of Biochemistry and Molecular Biology. He is also the Director of BioNIUM NanoFabrication Facility.

Ashutosh Agarwal, PhD, is an Associate Professor of Biomedical Engineering at the University of Miami. He is also an Associate Director of BioNIUM.

Courtney Dumont, PhD, is an Assistant Professor of Biomedical Engineering and holds a secondary appointment in the Department of Biochemistry and Molecular Biology at the University of Miami.

NanoFlorida 2020 Sponsors

UNIVERSITY OF MIAMI
CLINICAL & TRANSLATIONAL SCIENCE INSTITUTE

Miami CTSI Resources provided under NIH CTSA Grant # UL1TR000460

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UNIVERSITY OF MIAMI
THE DR. JOHN T. MACDONALD FOUNDATION BIOMEDICAL NANOTECHNOLOGY INSTITUTE
BioNIUM

Conference Schedule

12:00 – 12:15 PM

Opening Remarks

Sylvia Daunert, PharmD, MS, PhD
Director, Dr. JT Macdonald Foundation Biomedical Nanotechnology Institute (BioNIUM)
Lucille P. Markey Chair, Biochemistry and Molecular Biology
University of Miami

Shyam Mohapatra, PhD, MBA
Founding President, Florida Association of Nanotechnology (FAN)
Distinguished Health Professor, University of South Florida

Sylvia Daunert, PharmD, MS, PhD

Jeffrey L. Duerk, PhD
Provost and Executive Vice President for Academic Affairs,
University of Miami

12:15 – 1:15 PM

Keynote Lecture

Introduction by Shanta Dhar, PhD

Paul S. Weiss, PhD
UC Presidential Chair, University of California, Los Angeles
Founding Editor and Editor-in-Chief, ACS Nano

1:15 – 2:45 PM

Shark Tank Competition

2:45 – 3:45 PM

Poster Session

3:45 – 4:30 PM

Plenary Lecture

Introduction by Courtney Dumont, PhD

Thomas J. Webster, PhD
Art Zafiropoulo Chair in Engineering
Professor of Chemical Engineering, Northeastern University
Editor-in-Chief, International Journal of Nanomedicine

4:30 – 5:00 PM

Awards and Closing Remarks

Marc R. Knecht, PhD
Professor of Chemistry, University of Miami
Associate Director, BioNIUM

Ashutosh Agarwal, PhD
Associate Professor of Biomedical Engineering, University of Miami
Associate Director, BioNIUM

Announcing NanoFlorida 2021

Jack Judy, PhD
Director, Nanoscience Institute for Medical and Engineering Technology (NIMET)
University of Florida

Table of Contents

Keynote Address – Dr. Paul S. Weiss

Nanotechnology Approaches to Biology and Medicine

By controlling the exposed chemical functionality of materials from the submolecular through the centimeter scale, we have enabled new capabilities in biology, medicine, and other areas. I will discuss current and upcoming advances and will pose the challenges that lie ahead in creating, developing, and applying new tools using this capability. These advances include using biomolecular recognition in sensor arrays to probe dynamic chemistry in the brain and microbiome systems. In other areas, we introduce biomolecular payloads into cells for gene editing at high throughput for off-the-shelf solutions targeting hemoglobinopathies, immune diseases, and cancers. We circumvent the need for viral transfection and electroporation, both of which have significant disadvantages in safety, throughput, cell viability, and cost. Mechanical deformation can make cell membranes transiently porous and enable gene-editing payloads to enter cells. These methods use specific chemical functionalization and control of surface contact and adhesion in microfluidic channels.

Paul S. Weiss graduated from MIT with S.B. and S.M. degrees in chemistry in 1980 and from the University of California at Berkeley with a Ph.D. in chemistry in 1986. He is a nanoscientist and holds a UC Presidential Chair and a distinguished professor of chemistry & biochemistry, bioengineering, and materials science & engineering at UCLA, where he was previously director of the California NanoSystems Institute. He also currently holds visiting appointments at Harvard's Wyss Institute and several universities in Australia, China, and South Korea. He studies the ultimate limits of miniaturization, developing and applying new tools and methods for atomic-resolution and spectroscopic imaging and patterning of chemical functionality. He and his group apply these advances in other areas including neuroscience, microbiome studies, and high-throughput gene editing. He led, coauthored, and published the technology roadmaps for the BRAIN Initiative and the U.S. Microbiome Initiative. He has won a number of awards in science, engineering, teaching, publishing, and communications. He is a fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Science, the American Chemical Society, the American Institute for Medical and Biological Engineering, the American Physical Society, the American Vacuum Society, the Canadian Academy of Engineering, the Materials Research Society, and an honorary fellow of the Chinese Chemical Society and Chemical Research Society of India. He is the founding and current editor-in-chief of *ACS Nano*.

Plenary Address
Dr. Thomas J. Webster

Green Nanomedicine, Implantable Sensors, and Oh Yes, Don't Forget, Nanotechnology for COVID-19

COVID-19 has highlighted numerous failures in our global healthcare system, from a system focussed on centralized hospitals to a lack of platform technologies to treat viral outbreaks. This presentation will highlight new materials being developed to aid in COVID-19 prevention, detection, and therapy. Rather than waiting for a year or longer for vaccine development, this presentation will highlight how nanomaterials can be a platform technology modified to treat every new virus that comes along. It will also highlight the use of at home sensors and diagnostic kits that make it easy for patients to determine if they have been exposed to viruses rather than going to a facility (i.e., hospital) in which their infection could spread. Further, it will introduce green nanomedicine, or environmentally friendly ways that nanomaterials can be made which outperform conventional chemical synthesis. Overall, this presentation will demonstrate how new materials will better prepare us for the next viral outbreak and begin to heal our current global healthcare system which has demonstrated significant failures during the COVID-19 pandemic.

Thomas J. Webster's (H index: 95) degrees are in chemical engineering from the University of Pittsburgh (B.S., 1995) and in biomedical engineering from Rensselaer Polytechnic Institute (M.S., 1997; Ph.D., 2000). He currently serves as the Art Zafiropoulo Endowed Chair and Professor of Chemical Engineering at Northeastern University. Prof. Webster has graduated/supervised over 189 graduate students generating over 700 peer reviewed articles in his 20 year career. He has formed 12 companies who collectively have over 21 FDA approved medical products. Prof. Webster is a fellow of over 8 societies and was the past-president of the U.S. Society for Biomaterials.

Shark Tank Competition

For the NanoFlorida 2020 Conference, we are proud to introduce a new and exciting event: The Shark Tank Competition. Local and international students submitted abstracts for a potential nanoscience invention, describing how it would work and why they believe it can become a profitable venture. From this original pool of applicants, five finalists have been selected to pitch their nanoscience invention to a panel of experts in commercialization. Our panel of expert Shark Tank Judges will have the opportunity to engage with our finalists and ask them for more information about their product.

Who will convince the judges to invest in their product and win the Shark Tank Competition? Join us from 1:15 PM - 2:45 PM to find out!

Expected Start Time	Presenter	Presentation Title
1:25 PM	Claudia Alarcón López	NanoAd Antibacterial Composite
1:40 PM	Brandon Applewhite	BioBandages Angiogenesis
1:55 PM	Tracey Bell	Lipid Droplet Microarray Technology (LiMiT)
2:10 PM	Emmanuel Okogbue	Mechanically Flexible Electro-thermal Smart Windows
2:25 PM	Sabrina Petrucci	An RNA-based Lateral Flow Assay for the Detection of Pathogenic Bacteria

Shark Tank – Judges

Ruan Cox, PhD, is an Industry Alliances Development Manager at the Office of Innovation and Industry Alliances ("Innovation Office") at the University of South Florida. He is responsible for assisting in the conceptualization, development and negotiation of collaborations with industry partners interested in sponsoring research at Moffitt Cancer Center. Ruan earned a BS from the University of Florida and Ph.D. in Molecular Medicine from the University of South Florida's Morsani College of Medicine with a focus in Immunology. While earning his Ph.D. Ruan received prestigious fellowships from the American Heart Association, Florida Education Fund and Alfred P. Sloan Foundation. He has also received numerous awards for his presentations at the American Thoracic Society; World Allergy Congress; Federation of American Societies for Experimental Biology and American Academy for Allery Asthma and Immunology. Ruan currently serves on boards for the Tampa Bay Economic Development Commission, American Thoracic Society and the University of Florida Alumni Association.

Jeff Hersh, PhD, MD, is the Chief Medical Officer of GE HealthCare. He is an Advisory Board Member and Program Mentor for the Entrepreneurship for Biomedicine Program at the University of Washington St. Louis. This program is a free, online, NIH-funded training program for biomedical researchers to help develop entrepreneurial thinking. Jeff has consulted for many startups and venture capitalists. Jeff has extensive clinical trial experience, including being the PI of dozens of studies, has been awarded an NIH grant, and has published well over 100 articles, written several book chapters and delivered hundreds of invited lectures. Jeff holds a medical degree from the University of Miami Leonard M. Miller School of Medicine and has numerous other degrees including a PhD in Theoretical Physics from Yale University and a MS in Electrical Engineering from George Washington University. Jeff has extensive academic credentials having held faculty positions at Yale, Dartmouth, Cornell, Tufts, the University of Massachusetts, and Harvard, amongst others.

Shark Tank – Judges, continued

Jennifer McKinley, MS is a part of the team at the University of Central Florida's Office of Technology Transfer. Prior to joining UCF, Jennifer worked at Lucent Technologies in the analytical and diagnostic labs, supporting the semiconductor manufacturing line and Bell Labs researchers. She then went on to co-found NanoSpective, a company focused on nanoscale materials characterization primarily to provide scientific evidence for intellectual property assertion. Following that, Jennifer co-founded another company, IRradiance Glass, a research and product development company for infrared optical materials. Jennifer has degrees in Chemistry and Materials Science & Engineering from UCF and carried out her graduate research within UCF's College of Optics and Photonics.

Suhrud Rajguru, Ph.D., is an Associate Professor of Biomedical Engineering and Otolaryngology at the University of Miami and a co-founder and Chief Scientific Officer of Restor-Ear Devices, LLC. He completed his undergraduate studies in Mumbai, India prior to pursuing doctoral studies at the University of Utah. Dr. Rajguru's research foci are on the investigations of pathophysiology, the diagnosis and treatment of various hearing and balance disorders. An educator, scientist and entrepreneur, he is an author of numerous peer-reviewed publications and is a named inventor on several issued and pending patent applications. His research is supported by the National Institutes of Health and industry partners and he is actively involved in the education and mentoring of undergraduate and graduate students.

Shark Tank - Finalists

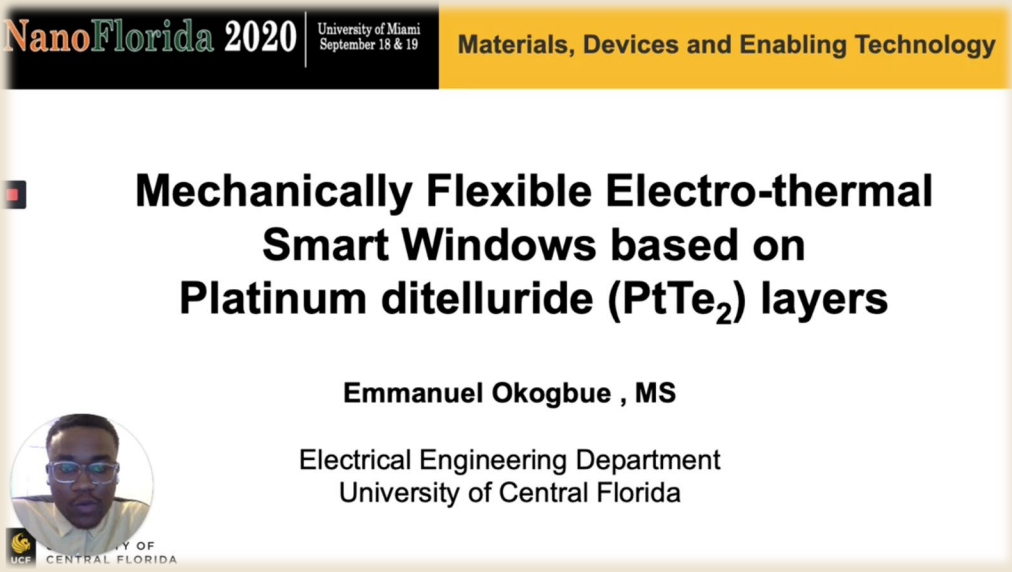
NanoAd Antibacterial Composite
Claudia Alarcón López, Tecnológico de Monterrey

BioBandages Angiogenesis
Brandon Applewhite, University of Miami

Shark Tank – Finalists, continued

Lipid Droplet Microarray Technology (LiMiT)
Tracey Bell, Florida State University

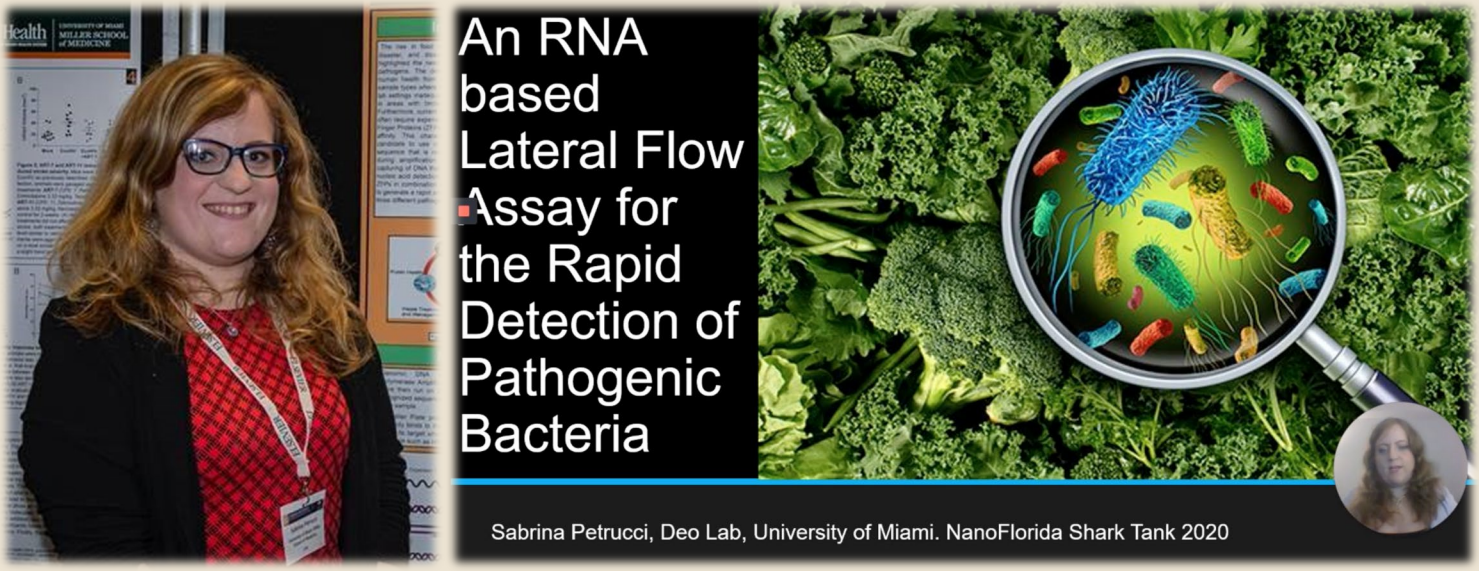
Mechanically Flexible Electro-thermal Smart Windows
Emmanuel Okogbue, University of Central Florida



Shark Tank – Finalists, continued

An RNA-based Lateral Flow Assay for the Detection of Pathogenic Bacteria

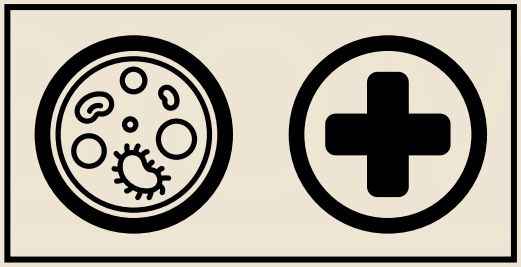
Sabrina Petrucci, University of Miami



Student Poster Presentations

This year, students from across the state of Florida and beyond have recorded their poster presentations for your viewing pleasure. We have compiled these videos into convenient playlists, which you can access by clicking on the category buttons below. If you'd like to search for a specific presentation, please refer to the tables in the following pages.

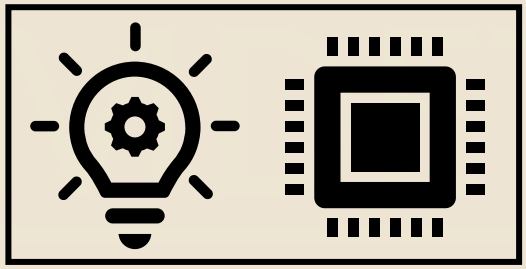
Biomedical & Biotechnology



Energy, Agricultural & Environmental

Pharmaceutical

Materials, Devices, Enabling Technologies



If you have any questions for our student presenters, they will be available in dedicated Q&A meetings during the poster session break. Please refer to the table below for the times and links to these meetings. You can also leave them a question in the comments section of their video.

Time	Meeting A	Meeting B
Session 1 2:45 PM - 3:15 PM	Materials, Devices, Enabling Technologies	Biomedical and Biotechnology
Session 2 3:15 PM - 3:45 PM	Energy, Agriculture, & Environmental	Pharmaceutical

Poster Presentations:
Biomedical & Biotechnology

Presenter Name	Presentation Title (Videos Hyperlinked, to View Click Title)
Balaashwin Babu	Hollow ceria nanoparticle synthesis and biomedical applications
Agnes Badu-Mensah	Investigation of Neuromuscular Pathology in ALS by Developing Patient iPSC-derived Phenotypic Model
Andrew Ciciriello	Synthetic Ligand-Receptor Binding for Targeted Delivery to the Spinal Cord
Chaker Fares	Demonstration of a SiC Protective Coating for Titanium Implants
Subham Guin	Metabolic Modulation of the Tumor Microenvironment Leads to Multiple Checkpoint Inhibition and Immune Cell Infiltration
Jeny Jose	Cissus quadrangulis doped Hydroxyapatite for Osteopathy
Akil Kalathil	Therapeutic nanoparticles for treatment of atherosclerosis
Chitvan Killawala	Development of a Portable Solid-State Sensor System for Real-time Monitoring of Firefighter Exposure to Polyaromatic Hydrocarbons
Elayaraja Kolanthai	Self-luminescent reduced graphene oxide/strontium-incorporated hydroxyapatite for bio-imaging application
Stephen Michel	Co-Surfactant Mediated Functionalization of Single Walled Carbon Nanotubes for Biomedical Applications
Juanpablo Olguin	Polymer hydrogels with tunable carbohydrate content to probe extracellular matrix-lectin interactions
Popular Pandey	Dynamic Surface Charge Discrimination of Single Protein Molecules in Solution by Potentiometric Nanoimpact Method
Devon Pawley	In Vivo Assessment of Dexamethasone (DXM) Infused and Coated Poly(lactic-co-glycolic acid) (PLGA) Microneedles as an Improved Drug Delivery System for Intracochlear Biodegradable Devices
Sherwin Reyes	An Intact Cell Bioluminescence-Based Assay for the Simple and Rapid Diagnosis of Urinary Tract Infection
Shrita Sarkar	Patient Derived Glioma Stem Cell Modulation for Improved Therapeutic Outcome
Anuj Shah	Phospholipid-enhancing Targeted Nanoparticle for Mitochondrial Membrane Integrity for the Treatment of Barth Syndrome
Bapurao Surnar	Dual-Targeted Synthetic Nanoparticles for Cardiovascular Diseases
Jonathan Tabares	Multifunctional SICM of iPSC derived Cardiomyocytes
Ruwen Tan	Engineering Nanostructure on Polymer Thin Film Surfaces for Bactericidal and Antireflective Properties
Minghan Xian	Modular Biological Sensor System for Rapid Detection of SARS-CoV-2 virus and Cardiac Troponin I
Elnaz Zeynaloo	Nanocarriers functionalized with LFA-1 I-domain for the targeted delivery of Mesenchymal Stem Cells to inflamed tissues
Yiqun Zhou	Carbon Dots: From Lab Synthesis to Unique Applications

Poster Presentations: Materials, Devices, & Enabling Technologies

Presenter Name	Presentation Title (Videos Hyperlinked, to View Click Title)
Alexandria Brady-Miné	Incorporation of Lysine into PNIPAAm to Enhance Protein Adsorption
Nermina Brljak	Effect of Peptide Sequence to Affinity for h-Boron Nitride
Mark Ciappesoni	Multiplexed biomarker detection using plasmon field effect transistor
Mark Ciappesoni	Robust biosensing platform using a plasmon field effect transistor with a Si-based active channel
Chiara Deriu	Optimization of the surface environment of SERS-active colloidal nanomaterials
Chaker Fares	Temperature-Dependent Electrical Characteristics of β-Ga2O3 Diodes with W Schottky Contacts Up to 500°C
Zhenyu Fu	Microstructure and chemical states of fission products in irradiated UCO fuel kernels
Yifei Fu	Study of MicroRNA(miRNA) Loading on Antioxidant Cerium Oxide Nanoparticles for Clinical Application
Mounisha Ganesan	"Development of high performance Carbon Nanotube based transparent heaters for deicing applications"
Andrew Garcia	Monte Carlo Simulations of Metal-Organic Frameworks (MOFs) Crystal Growth
Daiki Hara	In-Vivo Quantification of PSMA-Targeted Gold Nanoparticles through X-ray Fluorescence Computed Tomography
Michael Hnatiuk	Enhancing Nano Research Through Arduino Controlled Devices
Hana Hrim	Nano-optical imaging of graphene oxide in a picocavity
Meysoun Jabrane	Adsorption of Iron-Phthalocyanine (FePc) on transition metal surfaces: a DFT+vdWs study
Peng Jiang	Pushing the boundaries for electron microprobe: sub-micron scale high-precision and high-accuracy minor and trace element analyses
Ladan Jiracek	Assessing the Electrical Isolation Performance of Microgaskets for Miniature High-Channel-Density Neural-Implant Connectors
Udit Kumar	Viral inactivation using localized UV emission and application in self-cleaning PPE
Calen Leverant	Patterning Shape Memory Polymer Nanostructures by Crosslinking Dangling Chain Ends
Julian Long	Sub-Nanometer Scale Surface Finishing of Fused Silica Laser Optics
Keenan Mintz	A deep investigation into the structure of carbon dots
Mirra Mogensen	Photophysical characteristics of polymer encapsulated nanocrystalline lead halide perovskite films
Craig Neal	Nanoengineering Methods for low Solid Solubility Compositions: optimized Silver modified Nanoceria for Biomedical Applications
Mary Olagunju	Remotely Responsive Nanoparticle Catalysts
Atul Parab	Peptides-Induced Generation of Two-Dimensional Nanomaterials In Aqueous Media.
Mackenson Polche	SIZE ANALYSIS OF BIMETALLIC THERMOELECTRIC NANOANTENNAS BY THE SEEBECK EFFECT FOR SOLAR ENERGY APPLICATIONS.
Gabrielle Roberts	Study of Small Bimetallic Clusters Agn-1M (M = Au, Co, Cu, Mn, Ni, Pd, Pt, Ru; n = 3, 9, 15) using Density Functional Theory
Muhammad Sajid	ADSORPTION CHARACTERISTICS OF SMALL MOLECULES ON SILICA/Ru(0001)
Muhammad Waqas Shabbir	Plasmonically enhanced mid-IR light source based on tunable spectrally and directionally selective thermal emission from nanopatterned graphene
Nick Vandervoort	Strength of Amorphous and Nano Crystalline Fine Diameter Fibers
Chun-Hung Wang	Accurate prediction of terahertz spectra of molecular crystals of fentanyl and its analogs
Xinyi Xia	Thiol-gold Binding Study for the Biofunctionalization Process for Electronic Biosensing
Minghan Xian	Thermal Simulation and Forward Bias Degradation Mechanism for β-Ga2O3 Schottky Rectifiers
Nusaiba Zaman	The Dissociative adsorption of O2 on the bimetallic Pd3M2 clusters (M=Ag, Au, Co, Cu, Mn, Ni, Pt and Ru) by Density Functional Theory

Poster Presentations:
Energy, Environmental, & Agricultural

Presenter Name	Presentation Title (Videos Hyperlinked, to View Click Title)
Maria Campos	Nano-zinc coated urea: an innovative approach to systemic delivery of Zn-micronutrient
Derek Chamberlin	Nano CT reveals and Bomb 14C validates Otolith-based Age Estimation in Gray Triggerfish, (Balistes capriscus)
Ryan Heetai	Formulated antimicrobial ZnO: Mode of Action Study Against Pathogenic Plant Bacteria
Aadithya Jeyaranjan	Ceria/ carbon composite aerogels – A promising electrode material for high-performance supercapacitors
Nedgine Joseph	Destabilizing Nanosized Biochar
Ahmed Moawad	ACOF-1@BiOBr core–shell spheres as an efficient photocatalyst for dyes degradation
Harun Roshid	Smart Long-Lived Spore-Based Biosensors for Monitoring the Chemical Characteristics and Establishing the Microbial Fingerprints of Soil
Laboni Santra	A Flexible DLP 3D-printed Coated Microneedle Patch for the Delivery of New Therapeutics to Citrus Stem Tissue
Gibson Scisco	Resistivity of Mesopore Confined Ionic Liquid Determined by Electrochemical Impedance Spectroscopy
Zachary VanOrman	Green-to-Blue Triplet Fusion Upconversion Sensitized by Anisotropic CdSe Nanoplatelets
Johnathan von der Heyde	Breadth & Depth: Genetic Algorithms alongside Density Functional Theory for Nanocluster Optimization and Categorization

Poster Presentations:
Pharmaceutical

Presenter Name	Presentation Title (Videos Hyperlinked, to View Click Title)
Brandon Applewhite	Periadventitial Controlled Release of Beta-Aminoproprionitrile using Electrospun Nanofibers to Improve Arteriovenous Fistula Outcomes
Kaveena Autar	The Application of hiPSC-Cortical Neurons to Drug Evaluation in a Body-on-a-Chip System
Priyal Bagwe	Microneedle Delivery of Microencapsulated Gonorrhoea Vaccine Induced Strong Immunity
Keegan Braz Gomes	Flu Fighters: A transdermal subunit vaccine to protect against the influenza virus
Emily Eachus	Peptide-functionalized dendrimers for delivery of microdystrophin to skeletal muscle cells
Hamidreza Farzaneh	Development of PEGylated magnetoelectric nanoparticle for Alzheimer's disease
Devyani Joshi	Measles Vaccination via 3D printed Oral Dissolving Films (ODFs)
Devyani Joshi	Regenerative Medicine based Cell-therapy for Treatment of Parkinson's Disease
Alexia Lydia Kafkoutsou	Nano-Vanilloid Formulations for the Induction of Targeted Therapeutic Hypothermia
Akanksha Kale	Surface Functionalized Nanoparticles of Oxytocin to cross the Blood-Brain Barrier
Dawin Khiev	Niosomes as an essential nanocarrier for ophthalmic delivery system
Ipshita Menon	Quick Dissolving Microneedle based Nanoparticulate vaccine for Respiratory Syncytial Virus: Formulation and Optimization
Ipshita Menon	Needle-Free Transdermal delivery of a Microparticulate VLP Vaccine Induces (Th)1 Polarized Immune response against Respiratory Syncytial Virus
Mohammad Mofidfar	Pharmaceutical Jewelry: Earring Patch for Transdermal Delivery of Contraceptive Hormone
Tohfa Nasibova	Peganum harmala in nanotechnology
Smital Rajan Patil	Addressing the SARS pandemic: A novel microparticulate microneedle vaccine for COVID-19 using the SARS Spike S-1 protein antigen
Nadia Peyravian	Opioid antagonist nanodrugs as therapeutic agents for ischemic stroke
Jarriaun Streets	Sunitinib-Loaded MPEG-PCL Micelles for the Treatment of Age-Related Macular Degeneration
RIDDHI VICHARE	Biodegradable Nanomedicine for effective Antioxidant Gene delivery to the eye
Sharon Vijayanand	Combating Coronavirus – Development of needle free transdermal microparticulate vaccine.

Publication Opportunity

Message from the Guest Editors

This Special Issue of *Applied Sciences* will be devoted to bringing together the latest advances in various fields of applied nanoscience and nanotechnology in one compendium. The articles submitted in response to this Special Issue may comprise reviews of advances in a field, research articles and 1-2 page research reports.

A Special Issue coincides with the 2020 NanoFlorida International Conference, to be held September 25, 2020, which provides leading scientists with a venue to present the latest research in the field and discuss new directions and collaborations. Topics for NanoFlorida symposia evolve with developments in the fields of nanoscience and engineering, and parallel symposia will be organized to address scientific advances in nanobiotechnology, biosensing, microfluidics, nanodiagnostics, gene and cell technology, nanoscale drug delivery, organ-on-a-chip, nanomaterials, and other cutting-edge areas of research, which can be part of this Special Issue.

Looking forward to your contributions,

Prof. Shyam (Sam) S. Mohapatra
President, FAN
Guest Editor
Center for Research and Education in NanoBioengineering
Department of Internal Medicine
Morsani College of Medicine
Taneja College of Pharmacy Graduate Programs
College of Pharmacy: University of South Florida

Sylvia Daunert, PharmD, MS, PhD
NanoFlorida 2020, Organizing Committee
Co-Guest Editor
Professor and Lucille P. Markey Chair
Dept. of Biochemistry and Molecular Biology
Miller School of Medicine
Director, BioNIUM
University of Miami

Ashutosh Agarwal, PhD
NanoFlorida 2020, Organizing Committee
Co-Guest Editor
Associate Professor
Department of Biomedical Engineering
Associate Director, BioNIUM
University of Miami

Marc Knecht, PhD
NanoFlorida 2020, Organizing Committee
Co-Guest Editor
Professor
Department of Chemistry
Associate Director, BioNIUM
University of Miami

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- Luisa Betancourt, MD, MS - Senior Clinical Research Coordinator

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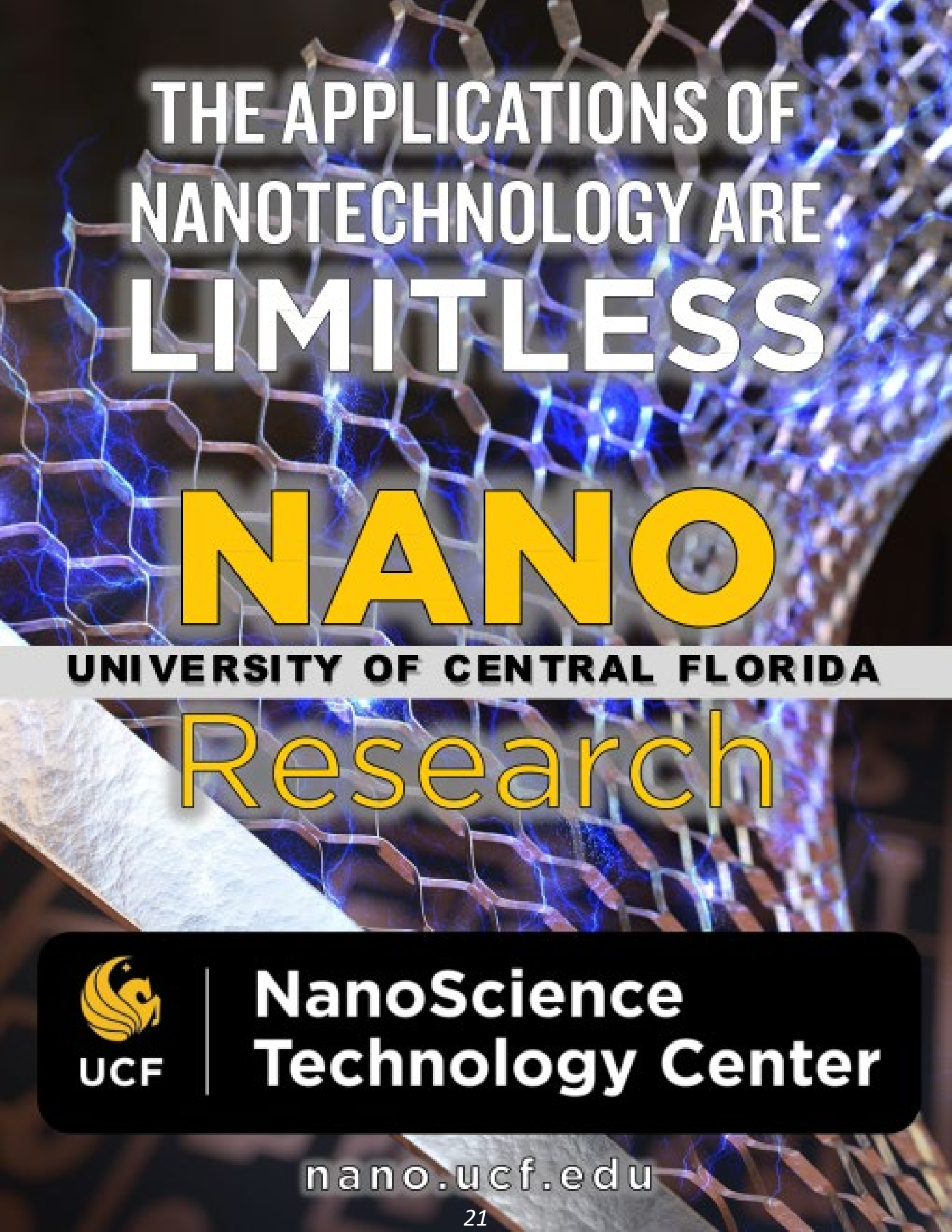
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