

Materials Day Schedule

Friday, October 18, 2024

Location: FedEx Institute of Technology Lobby, Methodist Presentation Theater

- **Registration and Check-in:** 8:00 AM – 8:30 AM
- **Breakfast:** 8:00 AM – 8:45 AM
- **Opening Remarks:** 8:30–8:45 AM
- **Morning Session: Oral Presentations (Physics and Chemistry of Nanomaterials):** 8:45 – 12:00 noon
- **Lunch at Methodist Lobby FIT:** 12:00 noon-1:10 PM
- **Afternoon Session: Oral Presentations (Biomaterials and Bioengineering):** 1:15 PM – 4:00 PM
- **Poster Presentation and Refreshment:** 3:30 -5:00 PM

Morning Session: Physics and Chemistry of Materials (8:30 am- noon)

8:30am-8:45am: Cody Behles, DLS, Executiver Director, UofM Research and Innovation Development

8:45 am-9:15 am: (**Keynote Speaker, [Dr. Shawn Pollard](#), Department of Physics and Materials Science, UofM**

"Thin film engineering for the design and manipulation of magnetic solitons"

9:15 am-9:30 am: (**[Mitchell Lee Taylor](#), Chemistry, UofM**)

"Single Vesicle Surface Protein Profiling and Machine Learning-Based Dual Image Analysis for Breast Cancer Detection"

9:30 am-9:45 am: (**[Ravi Kumar](#), Mechanical Engineering, UofM**)

Configurational entropy and metastable states of finite clusters in 2D dusty plasma

9:45 am-10:00 am: (**[Justin Butger](#), Department of Physics and Materials Science, UofM**)

"Entropy production during Filament formation in ECM Memristors"

10:00 am-10:15 am: (**[Alisha Dhakal](#), Department of Physics and Materials Science, UofM.**)

"Enhanced Electrochemical Performance of $\text{LaMnO}_3\text{-Co}_3\text{O}_4$ nanocomposite for Energy Storage"

10:15 am-10:30 am: (**[Jolaikha Sultana](#), Department of Physics and Materials Science, UofM.**)

"Structural, Magnetic, and Magnetocaloric effects in Al doped HoCrO_3 orthochromite compounds"

10:30 am-10:45 am: (**[Zhuanee Khan](#), Mechanical Engineering, UofM**)

"Exploring heat treatment as an alternative to hot isostatic pressing in Laser powder bed fused Ti-6Al-4V"

10:45 am:-11:00 am: (**[Himal Pokhrel](#), Department of Physics and Materials Science, UofM.**)

"Plasma-enhanced chemical vapor deposition: An introduction"

11:00 am-11:15 am: (Liyan Jacob, Department of Physics and Materials Science, UofM.)
"Effects of Temperature Cycling on Py/Gd Ferrimagnetic Multilayers".

11:15 am-11:30 am: (Dr. Harish Chandra Kaushik, Mechanical Engineering, UofM.):
"Laser-powder bed fusion of Ti-6Al-2Sn-4Zr-2Mo-0.08Si (Ti-6242) alloy: process-microstructure-properties relationship"

11:30am-11:45am : (Mrittika Roy, Mechanical Engineering, UofM.):
"Mutual neutralization in mono-atomic ion pairs in finite gas pressure using Landau-Zener theory trajectory simulation"

11:45am-12:00 noon: (Yagna Bhadur, Department of Physics and Materials Science, UofM.):
"Plasmon-assisted Random lasing of Perovskite Materials"

Lunch Break: 12:00noon-1:10 pm- FIT Methodist Lobby

Afternoon Session: Biomaterials and Bioengineering, 1:15pm-4:00pm

1:15 pm-1:45 pm: (Invited Industry Talk, Mark Morrison, Sr. Director, Smith and Nephew Inc.):

"The Use of Additive Manufacturing in the Medical-Device Industry"

1:45 pm-2:15 pm: (**Keynote Speaker, [Dr. Yuan Gao, Mechanical Engineering](#)**):

"Acoustic Bubbles in Microfluidic Systems: A Versatile Tool for Biomedical Applications"

2:15 pm-2:30 pm: ([Alexandra Snyder, Biomedical Engineering, UofM.](#)):

Modulating mechanical Properties and immune response in Near-field electrosun Bioresorbable vascular grafts

2:30 pm-2:45 pm: ([Professor Car Herickhoff, Biomedical Engineering, UofM](#)):

"Ultrasound imaging Enabled by piezoelectric materials"

2:45 pm-3:00 pm: ([Evan Main, Biomedical Engineering, UofM.](#))

"Examining primary driving factors in manuka honeys ability to downregulate neutrophil inflammatory response to biomaterials"

3:00 pm-3:15 pm: ([Haosheng Wen, Graduate Research fellow, U of Chicago](#)):

"Rationally engineered PCDH15 proteins restore hearing in USH1F mouse models"

3:15 pm-3:30 pm:([Josh Bush, Graduate Student, Biomedical Engineering, UofM.](#))::

"Natural Polymer Biomaterials Solving Real World Problems."

3:30 pm-3:45 pm: ([Azim Farhan, Department of Physics and Materials Science](#)):

"Analysis of free radical concentration in Gamm-irradiated vitamin E mixed UHMPWE at room temperature"

3:45 pm-4:00pm: ([Hossain Shadman, Department of Chemistry](#))

"Characterizing conformational ensembles of human intrinsically disordered proteome"

4:00 pm-4:15 pm: Concluding Remark

9:00 am-5:00 pm- Poster Session (FIT Methodist Lobby).

5:00 pm: Event Ends.

Poster Presentation

Methodist Lobby, 4:00pm-5:00pm

Martina Rodrigues: (Department of Physics and Materials Science, UofM)

Optimal Structural and Physical Properties of Aerogels for Promoting Robust Neurite Extension in vitro

Tamanna Ferdous (Department of Chemistry, UofM)

Structural analysis of Zn-curcumin complex for its localized release via bioprintable hydrogels

Adeline Nordmore: (Biomedical Engineering, UofM)

Mechanical Characterization of Touch Spun Manuka Honey Infused Small-Diameter Vascular Grafts

Rabeta Yeasmin: (Biomedical Engineering, UofM)

Decanoyl-modified electrospun chitosan membranes loaded with 2-decenoic acid analogs inhibit S. aureus

Jordan Darling: (Department of Physics and Materials Science, UofM)

Lipid Membrane Interactions with Polymer-Grafted Nanoparticles

Brittney Preyer: (Biology, LeMoyen Owen College, Memphis)

Synthesis and Characterization of TiO₂ Thin Films via Sol-Gel Spin Coating Technique

Haosheng Wen: (Graduate Research Fellow, Biochemistry and Molecular Biophysics, U Chicago)

Novel Multi-Phase Transitions in a System of Soft Vesicle Enclosing Environment-Sensitive Self-Propelled particles

Yu Zhu: (Department of Medicinal Chemistry and Molecular Pharmacology, Purdue University)

Liposomes-Induced Nanostar Self-Assemblies of Spherical Nanoparticles

Debendra Timsina (Graduate Student, Department of Physics and Materials Science, UofM)

'Effect of Argon Plasma- Induced Buckling on Coercivity of Permalloy Thin Films on PDMS'

Afsana Sharmin (Graduate Student, Department of Physics and Materials Science, UofM)

Radiation-Induced Free Radicals in UHMWPE: A Comprehensive Study for a Period of 25 Years".

Andi Tubbs: (Graduate Student, Biomedical Engineering):

Electrospun Acylated Chitosan Templates Loaded with Berberine HCl Provide Controlled Release for Anti-inflammatory Therapeutics".

Elizabeth A Matlock Buchanan (Undergraduate, Biomedical Engineering, UofM)

Polyethylene (PE) Immersion in Royal Jelly's 10-Hydroxy-2-decenoic-acid (10-H₂DA) Imparts Potential Antimicrobial Properties

Michelle Maggie Lee (Undergraduate, Biomedical Engineering, UofM)

Electrospun Chitosan Membranes Loaded with Bupivacaine and Cis-2-Decenoic Acid Reduce Bacterial Load in Contaminated Burn Wounds

Tolulope Ayodeji Aye (Undergraduate, Chemistry, UofM)

The role of material surface in heavy metal accumulation

Alex Bryan (Graduate Student, Biomedical Engineering, UofM)

The role of material surface in heavy metal accumulation

Blake Robinson (Biomedical Engineering, UofM)

In vitro characterization of cross linked electrospun chitosan-copolymer membranes for skin wound healing

Simon Prazak (Graduate Student, Biomedical Engineering, UofM)

Reinforced composite collagen hydrogel as a model for the purposes of vascular tissue reconstruction

Alberto Rodriguez-Nieves (Graduate Student, Chemistry, UofM)

Multiplexed Surface Protein Detection and Cancer Classification Using Gap-Enhanced Magneticâˆ™Plasmonic Coreâˆ™Shell Raman Nanotags and Machine Learning Algorithm

Brinton Eldrige (Chemistry, UofM)

PlasMol: A Robust Software Interfacing Classical Electrodynamics Simulations with Quantum Mechanical Calculations

Ezzuddin Abuhussein (Biomedical Engineering, UofM)

A Novel Method for the Acylation of Electrospun Chitosan Nanofibers Using an Antimicrobial Fatty Acid

Kazi Islam (Graduate Student, Department of Physics and Materials Science, UofM)

Effects of composition gradients on temperature dependent magnetization and coercivity in CoGd alloys.

Suprava Shah (Chemistry, UofM)

Multiplexed Circulating Tumor Cell Detection and Classification Using Gap-Enhanced Gold Nanorods and Machine Learning Algorithm

Pavel Qualadize (Biomedical Engineering, UofM)

A Bioactive Chitosan-Xylan Composite Loaded With and Delivering Naturally Occurring Fatty Acids to Control Infection

Mitchell Taylor (Biomedical Engineering, UofM)

Single Vesicle Surface Protein Profiling and Machine Learning-Based Dual Image Analysis for Breast Cancer Detection.

Mitchell Lutey (Research Assistance, Biomedical Engineering, UofM)

Dual Imaging Single Vesicle Surface Protein Profiling and Early Cancer Detection

Martina Dubakova (Laboratory of Biomaterials and Tissue Engineering, Institute of Physiology, Czech Academy of Sciences)

Nanocrystalline diamond-coated Ti6Al4V implants functionalized with BMP-7 promote extracellular matrix mineralization and faster osseointegration