

38th SOUTHERN BIOMEDICAL ENGINEERING CONFERENCE

Concurrent Sessions 2A and 2B

10:30 am- 12:00 pm

Session 2A MicroFluidics

Conference Room 1

10:30-10:50

Session Keynote



VASCULARIZED CORTICAL ORGANOID MICROPHYSIOLOGICAL SYSTEM TO MODEL ALZHEIMER'S DISEASE

Dr. Yeoheung Yun

North Carolina A&T State University

Dr. Yeoheung Yun received both BS Degree and MS Degree from the Department of Mechanical Engineering at Chonbuk National University at South Korea. He then worked on Machatronics Research Center at Chonbuk National University and Artificial Sight Development Research Lab of Ophthalmology Department at Wonkwang Medical College, South Korea. He acquired PhD from University of Cincinnati, Ohio and further developed a career as a Post-doc and Research Assistant Professor at the same place. He led to develop nanomedicine technology such as carbon material synthesis, electroanalytical biosensor, T cell immunology and cancer biology. In particular, Dr. Yun is pioneered on Carbon Nanotube (CNT) synthesis and its use for biomedical application. He grew the longest Carbon Nanotube Array using CVD (Chemical vapor deposition) method at Cincinnati, elucidating new mechanism of carbon nanotube growth. He relocated to North Carolina A&T State University (NC A&T) to establish new Bioengineering Program and also worked as a thrust leader for Engineering Research Center for Revolutionized Metallic Biomaterials (ERC-RMB) to establish 1) new knowledge of degradation mechanism in biodegradable metals, 2) new testing standard development with ASME/ISO and FDA, 3) new knowledge about biocompatibility and toxicity, and 4) bioengineering research capacity at NC A&T. Dr. Yun also pioneered mini-brain technology in terms of stem cell differentiation, organoid, vascularization, high throughput screening, brain disease modeling, extracellular matrix, mechanobiology, hydrogel biomaterials, and computational modeling. Dr. Yun made a significant contribution to develop brain chip platform to screen nerve agents, organophosphates such as sarin as a terrorist attack. Dr. Yun engineered T cell immunology research areas including ion channels, immunological synapse formation, immunosuppressive particles, T cell activation, artificial antigen presenting cell (APC) surface, point-of- care device, lipid vesicles, and CAR T cell therapy. Yun has published over 100 papers in archival journals, 5 patents, one book and five book chapters in areas of including 1) Bioengineering, 2) biomaterials, 3) electrochemistry/corrosion, 4) biosensors/actuators, 5) biomechanics/mechanobiology, 6) immunology, and 7) cancer biology. He gave TedTalk, Spectrum News, Oliver Max Gardner Award, invited talks, and keynote speaker.

Friday	Presentation #	Conference Room: 1
Time		Session 2A: Microfluidics Session Chair: Kunal Mitra, Ph.D., Florida Institute of Technology, Co-Chair: Kenneth Butler, Ph.D., University of Mississippi Medical Center
10:30	Keynote	VASCULARIZED CORTICAL ORGANOID MICROPHYSIOLOGICAL SYSTEM TO MODEL ALZHEIMER'S DISEASE <i>Yeoheung Yun, Balqees Khader, Teal Russell, Qassim Dirir, Yan Li, Chiwan Chiang, and Daniel T. Laskowitz.</i> <i>North Carolina A&T State University, Greensboro, NC, USA</i>
11:00	2-1A	THERMAL MICRO-FINS INFLUENCE ON FLOW STRUCTURES FOR INDUCING LOCAL SHEAR STRESSES ON ADHERED CELLS ¹ Arupjyoti Kakati, ² Kunal Mitra, ¹ Saurabh Gupta, ¹ Arindam Bit ¹ Biomedical Department, National Institute of Technology Raipur, India ² Biomedical Engineering, Florida Tech, FL, USA
11:10	2-2A	EFFECTS OF MECHANICAL FORCES IN THE DEVELOPMENT OF BIOPRINTED BLOOD VESSELS <i>Khemraj Deshmukh^a, Saurabh Gupta^a, Arindam Bit^a, Kunal Mitra^{b*}</i> ^a Biomedical Department, National Institute of Technology, Raipur, India ^b Biomedical Engineering, Florida Tech, Melbourne, Florida, USA
11:20	2-3A	CELL CO-CULTURE MICROFLUIDICS PLATFORM WITH AN INTEGRATED HYDRAULIC VALVE FOR CONTROLLED INTERACTION OF BRAIN ENDOTHELIAL CELLS AND ASTROCYTES <i>Faria Binte Hossain¹, Saif Mohammad Ishraq Bari², Gergana Nestorova³ *</i>