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Aerospace Engineering, IIT Kharagpur
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- Topic:** Atmospheric Pressure Plasma Jet for Microfluidic Applications
- Speaker:** Dr. Chia-Hung Tsai, Associate Professor, Mechanical Engineering, National Yang-Ming Chiao Tung University (NYCU), Taiwan
- Date and Time:** 12/05/2023, Friday, 12.00 PM to 1:00 PM (Indian Time),
2.30 PM to 3:30 PM (Taiwan Time)
- Webinar link:** meet.google.com/dkx-xbyk-wjy
- Hosts:** Prof. Sunil Manohar Dash, IIT Kharagpur, and Prof. Kim Boon Lua, NYCU Taiwan

Abstract

Atmospheric pressure plasma jet (APPJ) is a plasma device that can generate plasma without a low-pressure environment which provides great convenience and versatility in applications such as plasma medicine, agriculture, clean combustion and etc. This talk introduces new applications of APPJ on microfluidic systems and will be focused on two topics, including wall-less microchannel and APPJ-assisted droplet manipulation. The wall-less microchannel is achieved by the capability of surface modification using plasma. APPJ can turn a specified region from hydrophobic to hydrophilic on a surface and so that fluid can flow inside the region, known as a wall-less channel. In the second part, APPJ is employed to directly generate and manipulate droplets on an underived surface. By switching APPJ between plasma mode and jet mode, the droplets can be generated and moved from one reservoir to another. There are other applications of APPJ and will be presented during the talk.

About the Speaker



Dr. Chia-Hung Tsai (Dylan) is an Associate Professor in the Department of Mechanical Engineering at National Yang-Ming Chiao Tung University (NYCU) in Taiwan. He received his B.S. degree from National Taiwan University in Taiwan in 2002 and his Ph.D. degree from Stony Brook University in the USA in 2010. Before joining NYCU, he worked as a specially-appointed researcher and an Associate Professor at Osaka University in Japan during 2011-2016 and 2016-2017, respectively. He has been serving on the editorial board of leading journals and conferences. For example, he has served as an Editor for ROBOMECH Journal of Springer, an Associate Editor for IEEE Robotics and Automation Letters (RA-L), an Editor for IEEE/RSJ

International Conf. on Intelligent Robots and Systems (IROS) during 2017-2019 and Associate Editor for IEEE International Conf. on Robotics and Automation (ICRA) during 2020-2023. His research interest includes plasma technology, Lab-on-a-chip system, high-speed vision and viscoelastic interface.

Admission is free. All are welcome to attend.