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Controlling droplet-surface interactions: from ruptures of the intervening air layer to intermittent wetting on soft surfaces

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Venue: Faculty of Engineering Bldg. 2, Room 232

Abstract:
The interaction between a solid surface and an approaching droplet strongly depends on the intervening air film between them. Once the air film ruptures, the three-phase contact line established from liquid-solid contact becomes the dominant factor affecting the droplet's behavior. In this seminar, I will discuss the dynamics of air films and contact lines in several situations in which surfaces are incorporated with novel effects. These include those with deformable surfaces, heated surfaces, and electrical fields. In these situations, interesting phenomena can be observed, paving way for a greater understanding of wide variety of droplet-surface interactions and their applicability in practical applications.

Short bio: Tuan Tran is an Associate Professor of the School of Mechanical & Aerospace Engineering, Nanyang Technological University (NTU), Singapore. He received his BSc degree in Engineering Mechanics from the Hanoi University of Science, Vietnam in 2004. He then pursued his graduate study which focused on thin-film flows and turbulent frictional drag at the University of Illinois at Urbana-Champaign, USA. Upon completion of his PhD degree in 2010, he worked as a post-doctoral researcher at the Physics of Fluids Group, University of Twente, The Netherlands. He joined NTU in 2013 as a Nanyang Assistant Professor. Tran's research encompasses a wide range of topics, from complex multi-phase flows and soft matters to application-oriented topics such as thermal management using phase-change materials and development of droplet- and powder-based 3D printing technologies.

主催：
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