



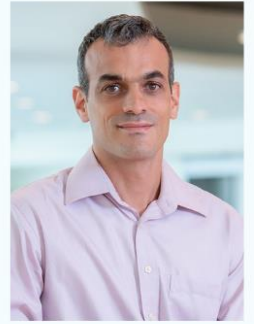
December 2022

IMPact@SUTD is a regular update featuring works by SUTD Faculty, Researchers, Students and Research Centres/Labs. We hope to create awareness of the Research by SUTD within the SUTD community and beyond. Share with us your SUTD works today so that we can include it in our next update.

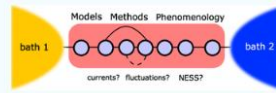
*Congratulations*

## DARIO POLETTI

Associate Professor, Programme Director For The SUTD Honours And Research Programme (SHARP), Associate Head Of Cluster For Graduate Programme And Research (Science, Mathematics And Technology)



For the publication of his paper, '**Nonequilibrium boundary-driven quantum systems: Models, methods, and properties**' in Review of Modern Physics (RMP)\*



\*RMP is the most prestigious journal in Physics, which has an impact factor of 50.5. Reviews of Modern Physics (RMP) is the world's premier physics review journal and the most highly cited Physical Review publication. Written by leading international researchers, RMP's in-depth essays provide outstanding coverage of a topic and give context and background for current research trends. Every year, the Nobel Prize winners in Physics will also publish papers after announcement of the winners in this journal.



**Single-Fluorophore-Based Organic Crystals with Distinct Conformers Enabling Wide-Range Excitation-Dependent Emissions**  
*Angewandte Chemie International Edition*

SUTD Author: Liu Xiaogang



**ScreenLife Capture: An open-source and user-friendly framework for collecting screenomes from Android smartphones**  
*Behaviour Research Methods*

SUTD Author: Yee Andrew Z. H., Yu Ryan, Lim Sun Sun, Lim Kwan Hui, Dinh Tien Tuan Anh, Loh Lionell, Hadianto Andre and Quizon Miguel



**Development of machine learning model for Laser Powder Bed Fusion Additive manufacturing process**  
*Journal of Intelligent Manufacturing*

SUTD Author: Umesh Kizhakkinan, Pham Luu Trung Duong, David W. Rosen and Nagarajan Raghavan

"In this work, we reported a universal molecular platform for inducing multicolor emissions in the crystalline phase. The emission maximum can be tuned over a wide range by varying excitation wavelengths. Furthermore, a high-capacity information storage device and a finite-state machine were established for showcasing multicolor displays and information storage."

--- [Liu Xiaogang](#)

"Our paper describes the development of a methodological tool to better understand digital device use, through the collection and analysis of 'screenomes' - which are high-frequency in-situ screenshots of people's smartphone use. Our pilot study found that device use is extremely heterogenous, and contributes to the idea that the concept of 'screen time' needs to be abandoned. We also extensively discuss the implications for future research on digital media effects, as well as the ethical considerations of using intrusive methods of collecting smartphone data."

--- [Andrew Yee](#)

"The team have developed a machine learning (ML) model using Tensor Train (TT) and Gaussian Process Regression (GPR) methods to predict the temperature field at the micro-scale of the laser powder bed fusion additive manufacturing process. The ML model could achieve a computational speed-up of 104 compared to the high-fidelity powder-scale computational model with a maximum L2 (%) error value of 1.23."

--- [Umesh Kizhakkinan](#)

**A systematic survey of attack detection and prevention in Connected and Autonomous Vehicles**  
*Vehicular Communications*

SUTD Author: Limbasiya Trupil; Teng Ko Zheng; Chattopadhyay Sudipta and Zhou Jianying

**Design of Mutual-Information-Maximizing Quantized Shuffled Min-Sum Decoder for Rate-Compatible Quasi-Cyclic LDPC Codes**  
*Electronics*

SUTD Author: Kang Peng and Cai Kui

**Designing high-efficiency metal and semimetal contacts to two-dimensional semiconductor gamma-GeSe**  
*Applied Physics Letters*

SUTD Author: Ang Yee Sin

**Electric-field induced magnetic-anisotropy transformation to achieve spontaneous valley polarization**  
*Journals of Materials Chemistry C*

SUTD Author: Ang Yee Sin

**Exploring the Potential Impact of Crowdshipping Using Public Transport in Singapore**  
*Transportation Research Record*

SUTD Author: Zhang Meijing and Cheah Lynette

**Intelligent MIMO Detection Using Meta Learning**  
*IEEE Wireless Communications Letters*

SUTD Author: Xu, Jindan

**Long-Short History of Gradients Is All You Need: Detecting Malicious and Unreliable Clients in Federated Learning**  
*Computer Security*

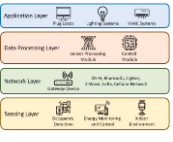
SUTD Author: Ngo Mao V.

**Low Energy Switching of Phase Change Materials Using a 2D Thermal Boundary Layer**  
*ACS Applied Materials & Interfaces*

SUTD Author: Ning Jing, Wang Yunzheng and Teo Ting Yu

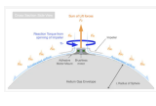
**Mobility-Aware Cluster Federated Learning in Hierarchical Wireless Networks**  
*IEEE Transactions on Wireless Communications*

SUTD Author: Quek Tony Q. S




**Plug-Mate: An IoT-based occupancy-driven plug load management system in smart buildings**  
*Building & Environment*

SUTD Author: Tekler Zeynep Duygu, Low Raymond, Yuen Chau and Blessing Lucienne



**Spherical Indoor Coanda Effect Drone (SpICED): A Spherical Blimp sUAS for Safe Indoor Use**  
*Drones*

SUTD Author: Ying Hong Peh, Win Shane Kyi Hla and Foong Shaohui



**Urban Heat Island Mitigation: GIS-Based Analysis for a Tropical City Singapore**  
*International Journal of Environmental Research and Public Health*

SUTD Author: Teo Ya Hui, Makani Mohamed Akbar Bin Humayun, Wang Weimeng, Yap Jun Hong and Cheong Kang Hao

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