



March 2023

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.

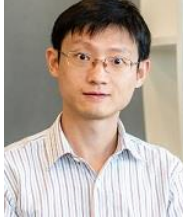


**Reversible electrical switching of nanostructural color pixels**  
Nanophotonics

SUTD Author: Yang, Joel K. W, Zhang, Shutao

"In this work, we design and fabricate an electrical switching display element based on silicon nanodisks with Mie resonances, which are integrated into an electrochemical system. The device can be utilized to achieve electrically switching reflective display devices, such as color electronic papers, photonic devices, holography, etc."

--- [Zhang Shutao](#)



**Classification of time-reversal-invariant crystals with gauge structures**  
Nature Communications

SUTD Author: Shengyuan A. Yang

"Classical symmetries are projectively represented in quantum world, a point of fundamental importance but not fully appreciated in condensed matters. Here, we develop for the first time a framework for classifying all projective algebra of space groups, which opens the door to a totally new field with fascinating physical consequences. "

--- [Yang Shengyuan](#)

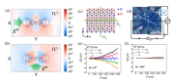


**Towards Backdoor Attacks and Defense in Robust Machine Learning Models**  
Computers and Security

SUTD Author: Udeshi, Sakshi; Chattopadhyay, Sudipta

"Robust optimization is a popular method to produce robust machine learning systems and thwart adversarial attacks. We show these systems are, however, susceptible to backdoor attacks. We design AEGIS to accurately detect a wide variety of backdoors where existing defense for backdoor fails due to the nature of robust optimization."

--- [Sudipta Chattopadhyay](#)



**Control over Berry Curvature Dipole with Electric Field in WTe<sub>2</sub>**  
Physical Review Letters

SUTD Author: Liu, Huiying; Yang, Shengyuan A.



**CoRE: Constrained Robustness Evaluation of Machine Learning-Based Stability Assessment for Power Systems**  
IEEE-CAA Journal of Automatica Sinica

SUTD Author: Yau, David K. Y.



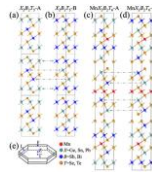
**Dialogue Relation Extraction with Document-Level Heterogeneous Graph Attention Networks**  
Cognitive Computation

SUTD Author: Chen, Hui; Hong, Pengfei; Han, Wei; Majumder, Navonil; Poria, Soujanya



**Embedding knowledge graph of patent metadata to measure knowledge proximity**  
Journal of the Association for Information Science and Technology

SUTD Author: Li, Guangtong; Siddharth, L.; Luo, Jianxi



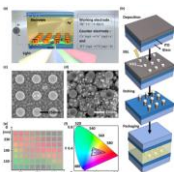
**Intrinsic ferromagnetic axion states and single pair of Weyl fermions in the stable-state MnX<sub>2</sub>B<sub>2</sub>T<sub>6</sub> family of materials**  
Physical Review B

SUTD Author: Wu, Weikang; Yang, Shengyuan A



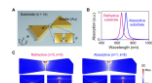
**Optical diffraction tomography and image reconstruction to measure host cell alterations caused by divergent Plasmodium species**  
Spectrochimica Acta Part A-Molecular and Biomolecular Spectroscopy

SUTD Author: Naidu, Renugah; Chu, Trang T. T.; Chandramohanadas, Rajesh



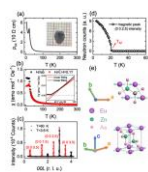
**Reversible electrical switching of nanostructural color pixels**  
Nanophotonics

SUTD Author: Yang, Joel K. W.



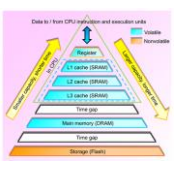
**Substrate engineering of plasmonic nanocavity antenna modes**  
Optics Express

SUTD Author: Wu, Lin



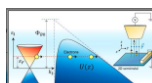
**Topological Hall effect driven by short-range magnetic order in EuZn<sub>2</sub>As<sub>2</sub>**  
Physical Review B

SUTD Author: Yang, Shengyuan A.



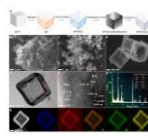
**Toward Single-Cell Multiple-Strategy Processing Shift Register Powered by Phase-Change Memory Materials**  
Advanced Intelligent Systems

SUTD Author: Go, Shao-Xiang; Wang, Qiang; Bajalovic, Natasa; Loke, Desmond K.



**Universal model for electron thermal-field emission from two-dimensional semimetals**  
Physics of Plasmas

SUTD Author: Ang, L. K.; Ang, Yee Sin



**Understanding the Highly Reversible Potassium Storage of Hollow Ternary (Bi-Sb)<sub>2</sub>S<sub>3</sub>@N-C Nanocube**  
ACS Nano

SUTD Author: Yang, Liping; Shen, Ting; Pam, Mei Er; Yang, Hui Ying

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