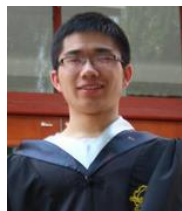




May 2023

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.



**A panoramic review on two-photon polymerization lithography for optics and photonics**  
*Nanofabrication and nano-photonics*

SUTD Author: Hao Wang, Wang Zhang, Hongtao Wang, Cheng-Feng Pan, Parvathi. N. S. Nair, Yujie Ke, Tomo. Mori, John. Y. E. Chan, Joel. K. W. Yang

"Two-photon polymerization lithography is the most promising nanoscale 3D printing technology in the world. We systematically reviewed its fundamental mechanisms, categories of materials, fabrication technologies, and various optical applications, also provided an insightful perspective to help tackle with the current challenges and facilitate the future investigations."

--- [Hao Wang](#)



**Slow-Light-Based Dispersion Compensation of High-Speed Data on a Silicon Nitride Chip**  
*Advanced Photonics Research*

SUTD Author: Ong, Kenny Yong Keng; Chen, George Feng Rong; Choi, Juwon; Tan, Dawn T. H

"Dispersion impairments in data center fiber links limit transmission at higher data rates and reach. In our work, we present a superimposed grating structure utilizing the slow-light effect to compensate for dispersion. This low loss on-chip device reduces bit-error rates by nine orders of magnitude at data rates of 28 Gbps"

--- [Kenny Ong](#)



**A Federated Learning-based Industrial Health Prognostics for Heterogeneous Edge Devices Using Matched Feature Extraction**  
*IEEE Transactions on Automation Science and Engineering*

SUTD Author: Anushiya Arunan, Qin Yan, and Prof Yuen Chau

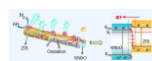
"Achieving accurate industrial health prognostics is challenging under data privacy restrictions and edge data heterogeneity. Thus, to discriminatively learn from heterogeneous degradation data, we propose a pioneering federated learning-based model with a feature similarity-matched parameter aggregation algorithm. This approach enables effective learning by preserving distinct feature extractors of edge models."

--- [Anushiya Arunan](#)



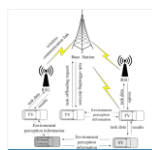
**A novel assessment approach based on group evidential reasoning and risk attitude**  
*Group Decision and Negotiation*

SUTD Author: Zheng, Chaoyu; Yue, Mu



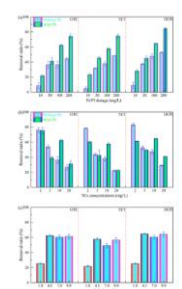
**Construction of 1D/2D core-shell structured K<sub>6</sub>Nb<sub>10.8</sub>O<sub>30</sub>@Zn<sub>2</sub>In<sub>2</sub>S<sub>5</sub> as S-scheme photocatalysts for cocatalyst-free hydrogen production**  
*Chemical Engineering Journal*

SUTD Author: Yang, Hui Ying



**Edge Computing Task Offloading for Environmental Perception of Autonomous Vehicles in 6G Networks**  
*IEEE Transactions on Network Science and Engineering*

SUTD Author: Yuan, Yanli



**Effects of Polystyrene Microplastics on Multiple Tetracycline Removals by Ferrate**  
*Industrial & Engineering Chemistry Research*

SUTD Author: Yao, Jingjing; Yang, Hui Ying]



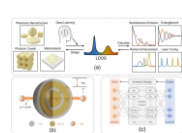
**Energetic and configurational mechanisms to facilitate mica nanosheets synthesis by organo-ammonium cation intercalation**  
*Computational Materials Science*

SUTD Author: Wu, Shunnian; Wu, Ping



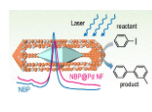
**From Eye to Brain: A Proactive and Distributed Crowdsensing Framework for Federated Learning**  
*IEEE Internet of Things Journal*

SUTD Author: Xiong, Zehui



**Inverse design in quantum nanophotonics: combining local-density-of-states and deep learning**  
*Nanophotonics*

SUTD Author: Zhou, Wen-Jie; Wu, Lin



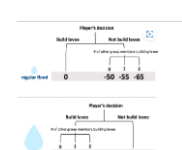
**Plasmonic and catalytic Au NBP@AgPd nanoframes for highly efficient photocatalytic reactions**  
*Physical Chemistry Chemical Physics*

SUTD Author: Sun, Ruan, Qifeng



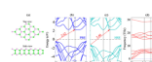
**The Effect of Potential Analogies and Negative Issues on Creative Designs**  
*Journal of Mechanical Design*

SUTD Author: Silva, Arlindo



**The levee dilemma game: A game experiment on flood management decision-making**  
*International Journal of Disaster Risk Reduction*

SUTD Author: Chan, Jeffrey Kok Hui



**Understanding Electronic Properties and Tunable Schottky Barriers in a Graphene/Boron Selenide van der Waals Heterostructure**  
*Langmuir*

SUTD Author: Ang, Yee Sin



**Visualizing Drug Release from a Stimuli-Responsive Soft Material Based on Amine-Thiol Displacement**  
*ACS Applied materials & Interfaces*

SUTD Author: Huang, Shiqing; Liu, Xiaogang

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