

## April 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.



High-fidelity imaging of amyloid-beta deposits with an ultrasensitive fluorescent probe facilitates the early diagnosis and treatment of Alzheimer's Disease Theranostics

SUTD Author: Tianruo Shen, Davin Tan and Xiaogang Liu

"Aided via computational modeling, we developed an ultrasensitive probe to detect  $A\beta$  deposition in live animals. This probe could facilitate the study of the  $A\beta$ -related pathology of Alzheimer's Disease."



Multi-stage anisotropic etching of two-dimensional heterostructures Nano Research

SUTD Author: Dechao Geng and Hui Ying Yang

"In this work, interface-driven anisotropic etching mode is demonstrated for the first time to be generally applied to 2D heterostructures. It is shown that the typical in-plane graphene and hexagonal boron nitride (h-BN) heterostructures follow a multi-stage etching behavior initiated first along the interfacial region between the two materials and then along edges of neighboring h-BN flakes and finally along central edges of h-BN."

--- Hui Ying Yang



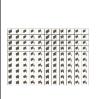
Superior Volumetric Capability Dual-Ion Batteries Enabled by A Microsize Niobium Tungsten Oxide Anode Advanced Functional

Advanced Functional Materials

SUTD Author: Jiaojiao Zhu

"We propose a novel strategy to use Wadsley-Roth phase niobium tungsten oxide to achieve dual-ion batteries (DIBs) with superior volumetric performance. The excellent practicality of this DIB is demonstrated by assembling a flexible pouch battery. Meanwhile, the energy storage mechanism of the full battery was investigated by operando XRD characterization and operando Raman spectroscopy."

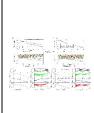
--- Jiaojiao Zhu



A part-scale, feature-based surrogate model for residual stresses in the laser powder bed fusion process Journal of Materials Processing Technology

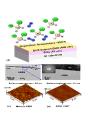
--- Tianruo Shen

SUTD Author: Guoying Dong, Umesh Kizhakkinan and David William Rosen



Alternating lysis and lysogeny is a winning strategy in bacteriophages due to Parrondo's paradox Proceedings of the National Academy of Sciences of the United States of America

SUTD Author: Kang Hao Cheong, Tao Wen, and Jin Ming Koh



Enhanced photonics devices based on low temperature plasma-deposited dichlorosilanebased ultra-siliconrich nitride (Si8N) Scientific Reports

SUTD Author: Hongwei Gao, Hongwei Gao, Peng Xing, George F. R. Chen, Xavier X. Chia, Yanmei Cao, Kenny Y. K. Ong and Dawn T. H. Tan



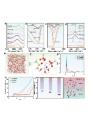
Evaluation of Fiber-Reinforced Modular Soft Actuators for Individualized Soft Rehabilitation Gloves Actuators

SUTD Author: Shaoying Huang



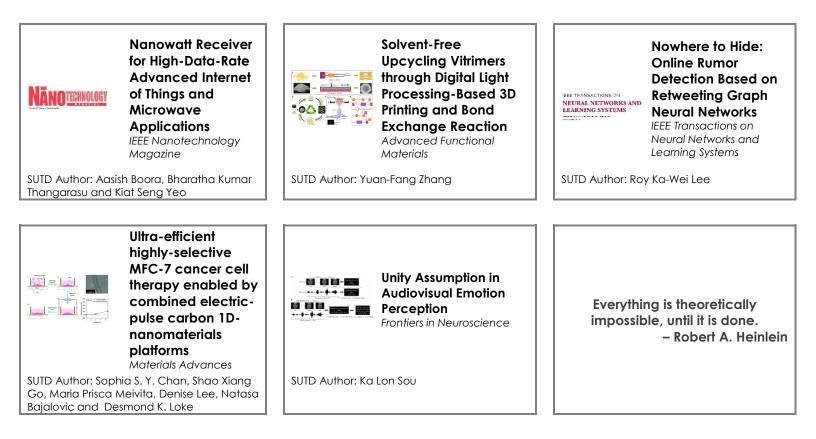
Flexible Fiber Inductive Coils for Soft Robots and Wearable Devices IEEE Robotics and Automation Letters

SUTD Author: Aby Raj P. M., Thileepan Stalin, and Pablo Valdivia y Alvarado



Hydrated Eutectic Electrolyte with Ligand-Oriented Solvation Shell to Boost the Stability of Zinc Battery Advanced Functional Materials

SUTD Author: Tian Chen Li



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