

December 2017

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!

Assistant Professor Dawn Tan has been awarded the *L'Oréal Singapore for Women in Science National Fellowships 2017 - Physical Science*

This programme introduced in 2009, aims to recognise and award talented women in the field of science.



4D rods: 3D structures via programmable 1D composite rods
Materials & Design

SUTD Authors: Zhen Ding, Oliver Weeger, and Martin L. Dunn

"We describe a new technology that integrates 3D printing, smart materials, and computational design algorithms to print a component and then with a single heating process, transform it into a completely different 3D shape; the latter can be achieved faster and cheaper than by directly 3D printing it."

--- Martin L. Dunn



From Cells to Laminate: Probing and Modeling Residual Stress Evolution in Thin Silicon Photovoltaic Modules using Synchrotron X-ray Micro-Diffraction Experiments and Finite Element Simulations
Progress in Photovoltaics

SUTD Authors: Sasi Kumar Tippabhotla, Ihor Radchenko, W.J.R. Song, Vincent Handara, Andrew A.O. Tay, and Arief S. Budiman

"Solar module integration process causes residual thermal stresses, leading to subsequent cell fractures, a major challenge for the PV industry. We demonstrated a quantitative evaluation of cell residual stress for the first time through unique synchrotron micro-XRD experiments and FEM simulations, enabling the design of highly reliable c-Si solar modules."

--- Sasi Kumar Tippabhotla



Surveillance nanotechnology for multi-organ cancer metastases
Nature Biomedical Engineering

SUTD Authors: Xinyu Zhao, Yang Sheng, and Tan Mei Chee

"Optical imaging of metastasis in vivo has been limited by the absence of suitable probes that overcome tissue-related signal attenuation. Here, we demonstrate the functional design of brightly-emitting nanoprobe to enable longitudinal tracking of metastasis using an infrared imaging system. Real-time lesion tracking would facilitate therapy monitoring in preclinical settings."

--- Tan Mei Chee

Computing on quantum shared secrets
Physical Review A

SUTD Authors: Yingkai Ouyang, Si-Hui Tan, Liming Zhao, and Joseph F. Fitzsimons

Electrical Homogeneity of Large-Area Chemical Vapor Deposited Multilayer Hexagonal Boron Nitride Sheets
Acs Applied Materials & Interfaces

SUTD Authors: Wei Sun Leong and Hui Ying Yang

Fully Exploiting Cloud Computing to Achieve a Green and Flexible C-RAN
IEEE Communications Magazine

SUTD Author: Tony Q. S. Quek

Half-Sandwich Ruthenium Phenolate-Oxazoline Complexes: Experimental and Theoretical Studies in Catalytic Transfer Hydrogenation of Nitroarene
Organometallics

SUTD Author: Richmond Lee

Hourglass Dirac chain metal in rhenium dioxide
Nature Communications

SUTD Authors: Shan-Shan Wang, Ying Liu, Zhi-Ming Yu, Xian-Lei Sheng, and Shengyuan A. Yang

Interactions between molecules and perovskites in halide perovskite solar cells
Materials and Solar Cells

SUTD Author: Xiaogang Liu

Pressure-Stabilized Semiconducting Electrides in Alkaline-Earth Metal Subnitrides
J. Am. Chem. Soc

SUTD Authors: Yunwei Zhang, Weikang Wu, and Shengyuan A. Yang

Two-dimensional spin-orbit Dirac point in monolayer HfGeTe
Phys. Rev. Materials 1

SUTD Authors: Shan Guan, Ying Liu, Zhi-Ming Yu, Shan-Shan Wang, and Shengyuan A. Yang

"Logic will get you from A to B. Imagination will take you everywhere."

---Albert Einstein