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.

**Boron Vacancies Causing Breakdown in 2D Layered Hexagonal Boron Nitride Dielectrics**

IEEE Electron Device Letters

SUTD Author: Alkil Ranjan, Nagarajan Raghavan, Sen Mei, K. Shubhakar, and Kin Leong Pey

"Hexagonal boron nitride (h-BN) is a promising 2D layered insulator which can seamlessly integrate with graphene and other 2D materials. In this study, we investigate stochastic nature of breakdown in h-BN. We present evidence that points to a non-Weibull distribution for h-BN breakdown and show that boron vacancy defects are the precursors to breakdown!".

--- Alkil Ranjan

**Detachable Acoustophoretic System for Fluorescence-Activated Sorting at the Single-Droplet Level**

Analytical Chemistry

SUTD Author: Peixian Li, Zhichao Ma, Yinning Zhou and Ye Ai

"We have developed an acoustic fluorescence activated droplet sorting (FADS) system that can achieve accurate isolation of single cell droplets for high-yield single cell sequencing. This acoustic FADS also enables effective sorting of small particles down to submicron size, which is challenging for existing cell sorting technologies."

--- Ye Ai

**Gestures and speech elicitation for 3D CAD modeling in conceptual design**

Automation in Construction

SUTD Author: Sumbul Khan and Bige Tuncer

"Multimodal interaction techniques offer designers a natural way to create CAD models for conceptual design. We present a compilation of expert-evaluated gestures evaluated suitable for the articulation of CAD modeling referents. We provide recommendations for the design of a gesture and speech based CAD modeling system for conceptual design."

--- Sumbul Khan

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Measuring imperfections of water quality sensors in water distribution networks

Optical nonlinearities in ultra-silicon-rich nitride characterized using z-scan measurements

Polypyrrole coated niobium disulfide nanowires as high performance electrocatalysts for hydrogen evolution reaction

Revealing the switching mechanisms of an off-on-off fluorescent logic gate system

Solution of the Crow-Kimura model with a periodically changing (two-season) fitness function

The interplay between drift and electrical measurement in conduction atomic force microscopy

Tunable, Cost-Effective, and Scalable Structural Colors for Sensing and Consumer Products

Two-dimensional nodal-loop half-metal in monolayer MnN

Water-Tunable Highly Sub-Wavelength Spiral Resonator for Magnetic Field Enhancement of MRI Coils at 1.5T

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