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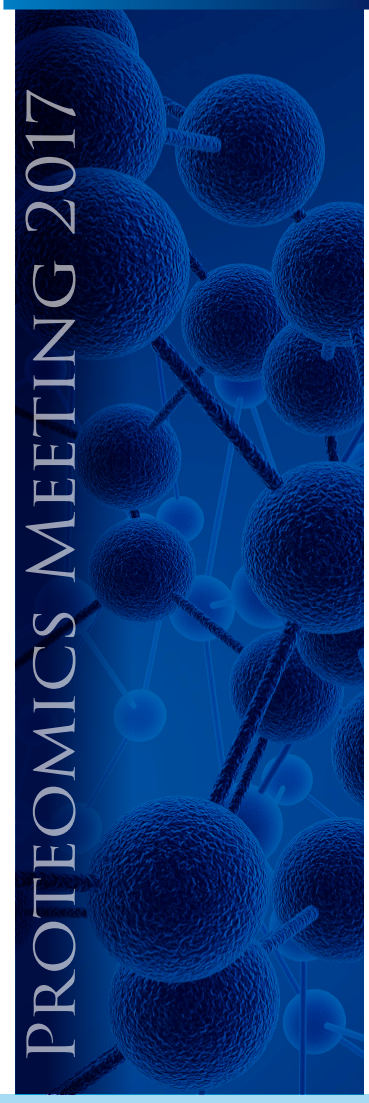

Convergence of biological and electronics materials for bioelectronic platforms

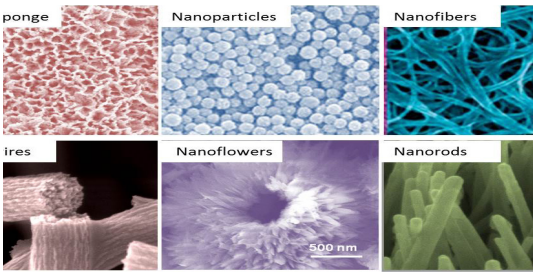

Figure-1: Shotgun proteomics data generation

Bringing together electronics and biology materials on a single platform can pave for highly sensitive and novel biomedical devices and clinical applications. Different morphologies, materials and composites are being combined to have added functionalities and customized interfaces for various bio-medical and bioengineering applications. The field of bioelectronics is further fueled by innovations in electronics, biotechnology and has received a strong boost with the advent of 3D bioprinting technology. 3D printing is driving the bio-medical industry with specifications such as user customization, cost-effectiveness and short response time. The talk will focus on novel bio- and electronic materials and processes to bring them together for added functionality and wider applications. The talk will bring to light formulation of the electronic nano- and biomaterials and how to synergistically incorporate them on a single platform to perform pre-defined tasks and provide information relevant to instrument novel biomedical devices. The talk will also discuss leveraging on 3D printing techniques for tissue engineering and biocompatible biomedical platforms. We report printing, optimization and characterization of electronic tracks on bio-scaffolds for making complete bio-medical devices to understand printing capability on such platforms. The platforms provide biocompatible, flexible and robust base for the electronic circuits to be laid down. The fabricated devices and platforms are compatible with cells and tissues are cheap, easy to fabricate and do not require any post-processing.

Recent Publications

1. Goh G D, Agarwala S, Goh G L, Dikshit V, Yeong W Y and Harper C (2017) Additive manufacturing in unmanned aerial vehicles (UAVs): challenges and potential. Aerospace Science and Technology; 63: 140-151.
2. Sing S L, Wang S, Agarwala S, Wiria F E, Ha T M H, Yeong W Y (2017) Fabrication of titanium based biphasic scaffold using selective laser melting and collagen immersion. International Journal of Bioprinting; 3: 1-7

Biography

Shweta Agarwala has obtained her PhD in Electronics Engineering in 2012 from National University of Singapore (NUS) on nanostructured materials for dye-sensitized solar cells. Currently, she is a Researcher at SC3DP, NTU. Her research is aimed at printed electronics, 3D printing, bioprinting and bioelectronics platforms for electronics, biomedical and aerospace applications.

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