

### NANOMATERIALS FOR ENERGY and WATER Management NTU – HUJ CREATE Phase II



The Hebrew  
University of  
Jerusalem



NANYANG  
TECHNOLOGICAL  
UNIVERSITY



#### Programme Leaders



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The joint research programme between Hebrew University of Jerusalem (HUJ) and Nanyang Technological University (NTU) on “Nanomaterials for Energy and Water Management” commenced on October 2016.

The research programme is funded by Singapore-HUJ Alliance for Research and Enterprise (SHARE), under the Campus for Research Excellence and Technological Enterprise (CREATE).

#### Research

NEW is a joint research programme between HUJ and NTU, to develop novel materials and devices for three themes: printable energy materials and devices, energy modulation and storage systems for buildings, and materials and processes for energy-water nexus. This project aims to innovate advanced materials in pushing the scientific frontiers in energy harvesting, conservation and storage to meet the energy-water nexus needs through innovative manufacturing processes.

This collaborative research effort between NTU and HUJ in “Nanomaterials for Energy and Water Management” aims to bring scientific excellence and innovation, leading to technology transfer, licensing and entrepreneurship. The program comprises three themes:

#### Theme 1: Printable energy materials, processes and devices

Provide platform technologies for fabrication of energy related devices, based on past achievements in 2D printing, and bringing new technology such as 3D printing. 3D printing is achieved by using an additive process

#### Theme 2 : Energy modulation and storage systems for buildings

Aim at developing adaptive energy systems and materials that can be integrated into buildings, and enable energy storage with the focus on addressing the global challenge of excessive energy consumption for thermal management.

### Theme 3: Advanced materials and processes for energy-water nexus

Focus on integrating some of the findings in the Energy and Water thrusts of Phase 1 of the program, and to bring new ideas that will enable technologies that support water-efficient energy systems or energy-efficient water system.

## Researchers

A total of 47 researchers are working in this programme. They consist of post-doctoral fellows, research associates, project officers and PhD students. In the research teams, there are a total of 16 Principal Investigators (PIs), 11 from Nanyang Technological University and 5 from the Hebrew University of Jerusalem. All HUJ PIs hold a joint appointment with NTU and a joint PhD program is in place.

## Highlights

NEW CREATE programme is originally started with NTU-HUJ-BGU program as phase I in 2011 and was renewed to Phase II (NTU-HUJ programme) in October 2016.

### Strategic collaborations with other printing centers in Singapore and Israel



NEW CREATE Phase II kick off meeting on 11 August 2016

The field of additive manufacturing is considered as the fourth industrial revolution. Singapore has been also focusing on boosting the skills in advanced manufacturing including the 3D printing industry. This programme aims to be a leader in materials science and development for additive manufacturing, while focusing on using these technologies for energy and energy-water nexus sectors, in creating value-add skills and propagating the technology capability. The programme proposes to work on new and emerging materials tailored for AM such as carbon fibers, graphene, silicone hybrids and the impact of multi-material capabilities.

Proposed work of this programme aligns with Singapore's plan on Future of Manufacturing to develop new and disruptive technologies such as 3D printing or functional coatings with our expertise in developing new materials. This will also serve as a collaboration platform with the Singapore Center for 3D printing in NTU, the 3D printing center at HUJI, SIMTECH's roll-to-roll printing capabilities and various industries, with the end goal for energy and energy-water nexus devices and systems.

For more information, please contact: [NTU-HUJ@ntu.edu.sg](mailto:NTU-HUJ@ntu.edu.sg) Website: <http://www3.ntu.edu.sg/new-create/index.html>

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