

## Post-doctoral positions in Nanofoam

Post-doctoral positions are available in Prof. Barbaros Özyilmaz's group at the National University of Singapore (NUS) in the field of novel carbon nanofoam technology pioneered by our group.

Our group has invented a bottom-up approach to synthesise novel nano-structures (US Provisional Patent Application No. 62/851,793) that lead us to a unique, controlled spatial arrangement of nano-particles and provide us the key to achieving the highest volumetric surface area reported so far for carbon. Prior to this, a fully accessible pore structure with high surface area and material density has been the biggest obstacle in obtaining high volumetric surface area.

Our approach enabled us to create carbon foams to target very specific applications and tailor material properties accordingly. Apart from opening up vast application possibilities, our new carbon foam technology is solving some of the major technological bottlenecks that are of strong industry interests, especially in energy storage. For example, the carbon foams as ultra-thick electrodes for supercapacitor applications resulted in very high energy density and high power devices, thanks to the hierarchical structure of the pores made by nano-particles of specific aspect-ratios. Also, in the electrode developed for Si-based battery anodes, by introducing a novel elastic material, it allows us to obtain excellent structural stability under high lithiation rate. We have multiple industry collaborations in the energy storage area and one of them is the key industry player in supercapacitors, muRata Manufacturing Co. Ltd.

In this aspect, we want to further exploit the potential applications of applying this technique with 2D materials. 1) Synthesis and engineering of unique nano-porous materials for different energy storage applications, 2) Develop next-generation, power/energy-dense supercapacitors and battery storage devices

We invite suitable post-doctoral candidates who are passionate to develop this exciting research topic to apply.

### **ELIGIBILITY:**

Candidates should hold a PhD in Physics, Material Science, Nanoscience and Nanotechnology, Electronic or Chemical Engineering, or related disciplines.

The ideal candidate will possess the following:

1. Proven track record of excellence in experimental research with 2D materials, supercapacitor/battery storage devices
2. Strong command of English language.
3. Excellent communication and collaboration skills.
4. Demonstrate team leadership and project planning.