

Functional Nanofiber-Reinforced Nanocomposites Foams for Wearable Electronics (*New - Winter 2019*)

Faculty advisor: Prof. Chul Park

Brief description of the project: Rapid developments of the nanotechnology, conventional material couldn't satisfy the human needs due to their limited material properties. By that reason, composites, which are composed of two or more materials, have been actively studied to overcome material's limit. There are many filler materials to enhance properties such as carbon blacks (zero-dimensional, 0-D), carbon nanotubes (one-dimensional, 1-D), and graphene (two-dimensional, 2-D). Among them, the 1-D nanomaterial is easy to make a percolation network that the fillers are fully connected in the matrix. In this project, we will demonstrate the system which can demonstrate the functional nanofiber (1-D), which have sub-micron diameter with a high-aspect ratio, networks. Also, we will demonstrate the functional nanofiber-reinforced nanocomposites and their foam structures using supercritical fluids. You will learn from design the fabrication system to the realization of functional composites and measurement of their properties.

Supervisor: Professor Chul Park

Contact: Dr. Byung Gwan Hyun bghyun@mie.utoronto.ca