Kennedy Labs announces new porous silicon research and development project at the University of Ontario Institute of Technology (UOIT) in Oshawa, Ontario.

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Kennedy Labs, a Canadian nanofabrication company producing 2D materials and related sub-components for industrial devices and systems, announces a new porous silicon research and development project with Dr Amirkianoosh Kiani, at the University of Ontario Institute of Technology (UOIT) in Canada.

Funded in part by the National Science and Engineering Research Council of Canada (NSERC) and the Ontario Centre of Excellence (OCE), research and development work will be carried out at UOIT labs in Oshawa, Ontario. Dr. Amirkianoosh Kiani will lead a research team to create 3D porous structures on silicon. "Using a single step method, porous nanofibrous structures are grown on top of the silicon substrate after laser irradiation and under ambient conditions, and without chemical processes like acid etching" explained Dr. Kiani. These substrates can then be infused with metal and 2D materials like graphene using chemical and atomic vapour deposition processes to create sub-components for industrial applications.

"In 2013 Dr. John Vaughan and I started our first experiments infusing naturally porous materials with CVD graphene, using equipment and processes at the National Institute in Nanotechnology (NINT) in Edmonton, Alberta. When Dr Dolf Landheer joined us as Chief Scientist, he favoured work on porous silicon, and we shifted our focus to infusing porous silicon with graphene and other metals instead" explained Brian Kennedy, company President. "From there, we found Dr. Kiani, who has done significant work already using lasers to manufacture porous silicon. We look forward to collaborating with him at his new lab at UOIT and creating new sub-components for our industrial customers".

Graphene or metal enhanced porous silicon structures can be used as very high surface area scaffolds or sacrificial substrates for a myriad of commercial applications that need performance improvements or miniaturization. For example, in biotech, implant rejection rates can be decreased by increasing surface area on their exterior, where cells form. In sensing, increased surface area and conductivity increases sensitivity/performance. In energy storage, surface area can deliver higher power and faster charging and discharging times.

"Creating 3D structures in silicon, or building them up on top of silicon, can be a costly exercise. In some applications, porous silicon fabrication can economically deliver 3D structures and/or use existing silicon wafer substrate material that was adding little value to the old system" said Dr. Dolf Landheer, Kennedy Labs' Chief Scientist. "As consumer, medical, space and industrial applications continue to shrink but demand higher levels of performance and lower costs, porous silicon based devices can offer a solution. This can be done quickly without costly masks and using existing equipment technology, and scaled up into production".

Engineering samples of first generation porous silicon materials will be available in 2018 through Digi-Key (https://www.digikey.com/en/supplier-centers/k/kennedy-labs).