Superlens Research at Bangor

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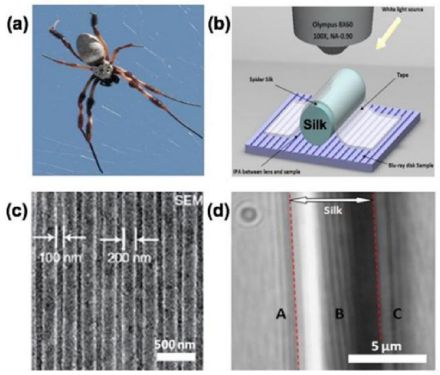
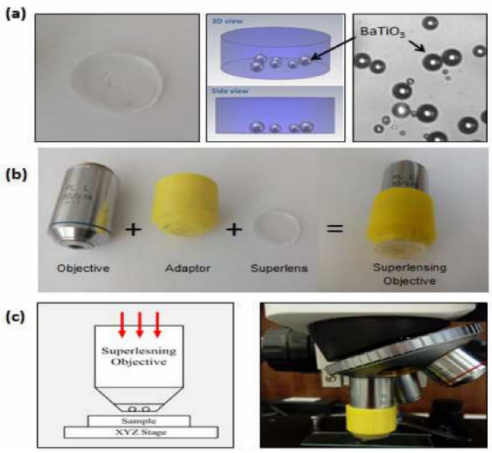
Conventional microscope is not powerful enough to see the nanoscale objects like viruses. But recent research undertaken in Bangor University School of Electronic Engineering reveals we could make the microscope much more powerful by shrinking the lens size down into microscale. This is underpinned by the new physics discovered behind small micro and nano-sized transparent particles when they interact with lights. At Bangor we are proud ourselves to be the leading pioneer of such type of superlenses including 'microsphere superlens (2011)', 'spider silk superlens (2016)' and 'nanoparticle-made metamaterial superlens (2016)', all were published in top journals (Nature Communication, Nano Letters, Science Advances) and widely publicised (BBC, New York Times etc). The recent design of 'Bangor superlens' was patented (PCT/GB2014/052578) and of great potential for commercial exploitation. Our vision is that someday every microscope user will have the 'Bangor superlens' product in their hand for daily use of microscopes. The superlens product can find applications in bio-imaging, nanofoucsing, nanolithography, nano-solar energy concentrator, nanochemistry, nanomedicine areas. Our researches are in collaboration with leading scientists from Oxford University, UCL, Swansea University and Cardiff University in the UK, Fudan University in China, and new collaborators from Frances, Italy and Germany, with Bangor leads the superlens developments.

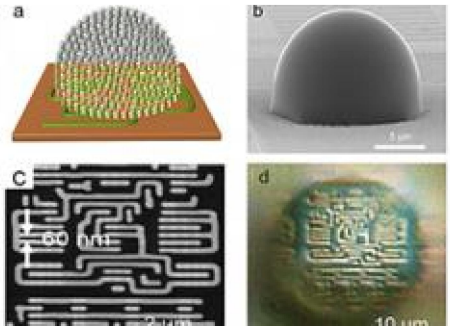


Spider Silk Superlens

Nano. Lett. 16, 5842 (2016)

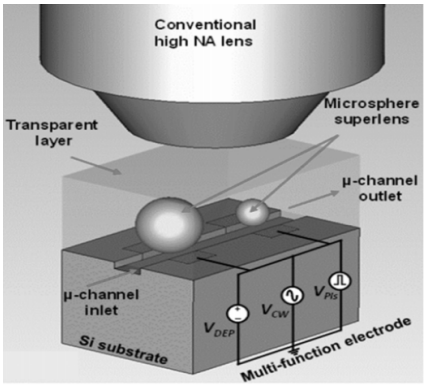


Latest version of Bangor Superlens



Nanoparticle-made superlens

Sci. Adv. 2, e1600901 (2016)



On-Chip microfluidic nanoscope

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