Applied Optics group
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The University of Nottingham

Microsphere Superlens and applications in high-resolution imaging and beyond

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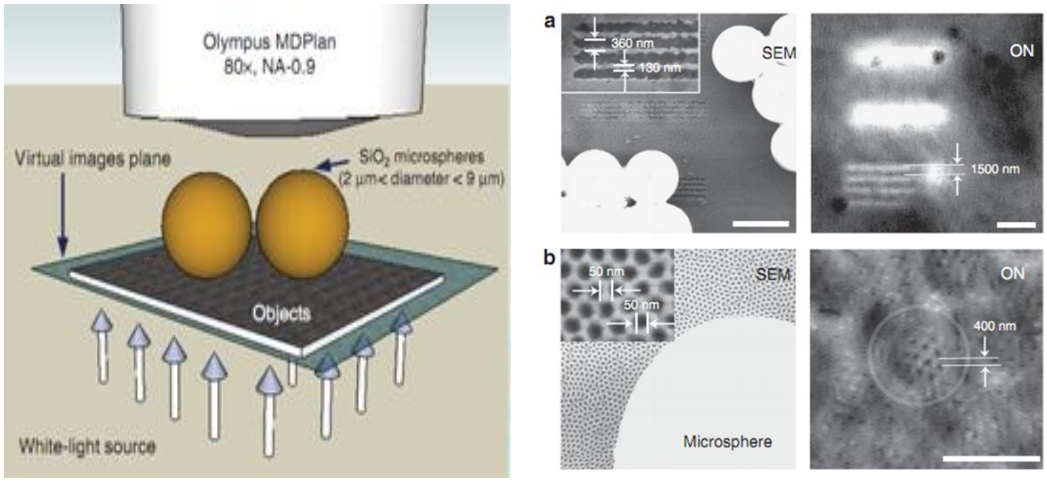
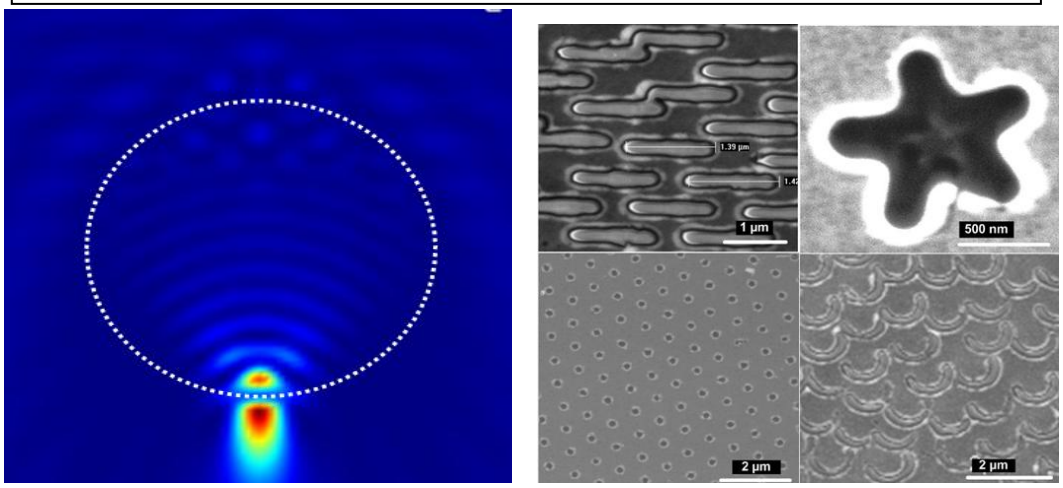


Nano Imaging at 50-nm resolution. (***Nature Communications*** *2, Art. 218, (2011),*



Nanofabrication at 80-nm resolution. ***(Appl. Phys. Lett.,*** 2007. **90,**: p. 243101)

1.00pm Tuesday 11th March 2014
2nd Floor Lecture Theatre
Tower Building. All welcome

Applied Optics Group Lunchtime Seminar:

Microsphere Superlens and applications in high-resolution imaging and beyond

Conventional lenses are diffraction-limited. Their resolution is limited at about half the illuminating wavelength. Techniques to overcoming the diffraction limit are under constantly development and highly sought by the optics community. In this seminar, I will talk about a relatively new technique which is based on the use of tiny microspheres that process super-resolution focusing capability. Fundamentals and applications of microsphere superlenses in nanoscale high resolution imaging (50-nm resolution), large-area nanofabrication (80 nm resolution) and other fields (nano-chemistry, nano-spectroscopy etc) will be presented and discussed. Theoretically, the technique permits to reach 20 nm resolutions with visible lights and lasers.

Dr. James (Zengbo) Wang is currently a senior lecturer in imaging at Bangor University, North Wales; He was previously a lecturer in laser micro/nano-engineering at University of Manchester (2009-2012), and a research fellow in University of Southampton and Data Storage Institute Singapore.

His expertise lies in the fields of optical nanoscopy and imaging, nano-fabrication, nano-plasmonics/electronics, laser micro nano processing, laser cleaning and the applications. He has author/co-authored more than 100 publications, and delivered a series of invited talks in major international conferences, UK/overseas institutions and companies.

He is the main inventor of the world's first 50-nm resolution white-light nanoscope that could be potentially used for live virus imaging in real time. The work, since its publication in Nature Communications, has attracted huge public interests and media coverage including the BBC and New York Times. The work was awarded a first prize in a Royal Academy of Engineering (RAEng) poster competition event in nano-engineering. It was invited as a feature article in Laser Focus World and coined by the RCUK as one of '50 big ideas for the future' in year 2011. At present, he is working on the improvements of the design and implementation of the nanoscope with ultimate goal to commercialize the microsphere nanoscope system.

His personal website is at: http://www.zengbowang.com