

# **Oxford Suzhou Centre for Advanced Research (OSCAR)**

---

NEWSLETTER 014

2018 September





## Headlines

Introduction to Principal Investigators and Their Research.....	2
Prof Ian Thompson and Prof Wei Huang (Department of Engineering Science) .....	2
Prof Jamie Warner (Department of Materials) .....	3
OSCAR Participates in Global Medical Week (GMW) 2018.....	4
OSCAR Visits to JITRI.....	5
Progress of OSCAR's Fit-out and Construction in September .....	7
News Links in September .....	8
SIP Enhances Efforts to Bolster Medical Device Innovation.....	8
National University of Singapore Artificial Intelligence Innovation and Commercialization Centre Inaugurated in SIP .....	9

## Introduction to Principal Investigators and Their Research

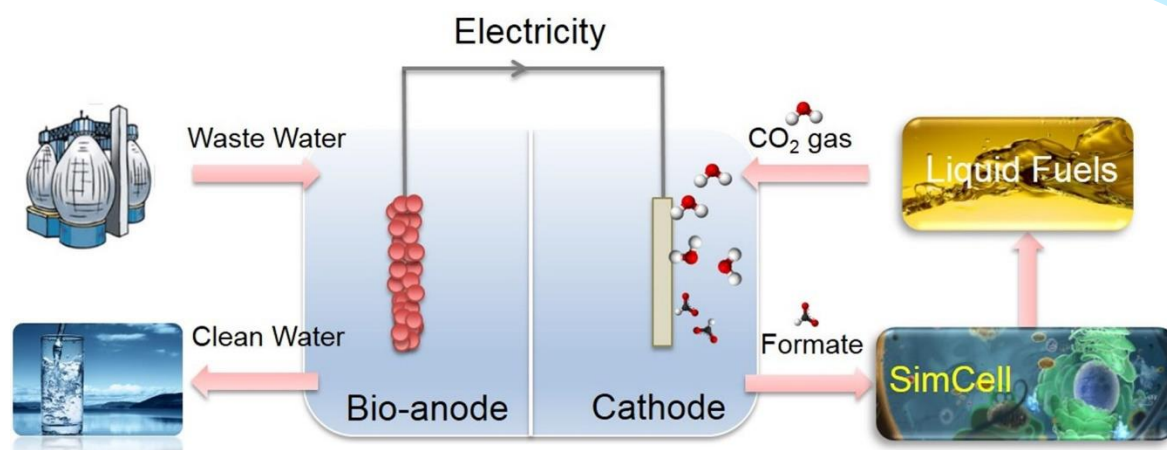
### Prof Ian Thompson and Prof Wei Huang (Department of Engineering Science)



Professors Thompson and Huang specialise in developing technologies for preventing pollution, stimulating microbial clean-up of waste waters, and their biotransformation to high value chemicals such as bioplastics. Their research focuses on exploitation of physical (ultrasound), chemical (nanomaterials) and biological (phytoremediation) approaches to enhance the transformation of wastes and industrial water clean-up, both in the environment and bioreactors, and the development of bacterial biosensors for detection of contaminants.

The focus of the OSCAR research programme will be on the environmental clean-up of soil and water, monitoring and pollution prevention with particular emphasis on industrial effluent and treating recalcitrant waste streams. Technologies will be developed to enable wastewater remediation on site, with recovery of polluting elements (such as high value metals). Synthetic biology approaches will be used to develop novel organisms that detect contaminants and improve their ability to biodegrade recalcitrant contaminants.

A particular area of unique expertise is the application Raman spectrometry for analysis of microbial communities. This enables microbial communities to be analysed down to the single cell level, which enables precise detection, isolation and exploitation of those individuals able to biodegrade environmental contaminants.



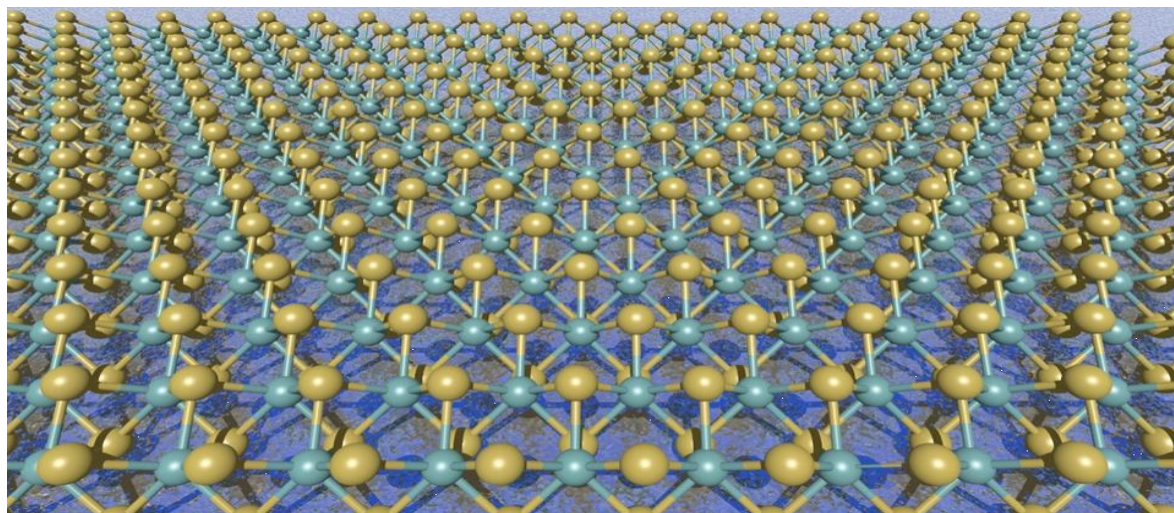
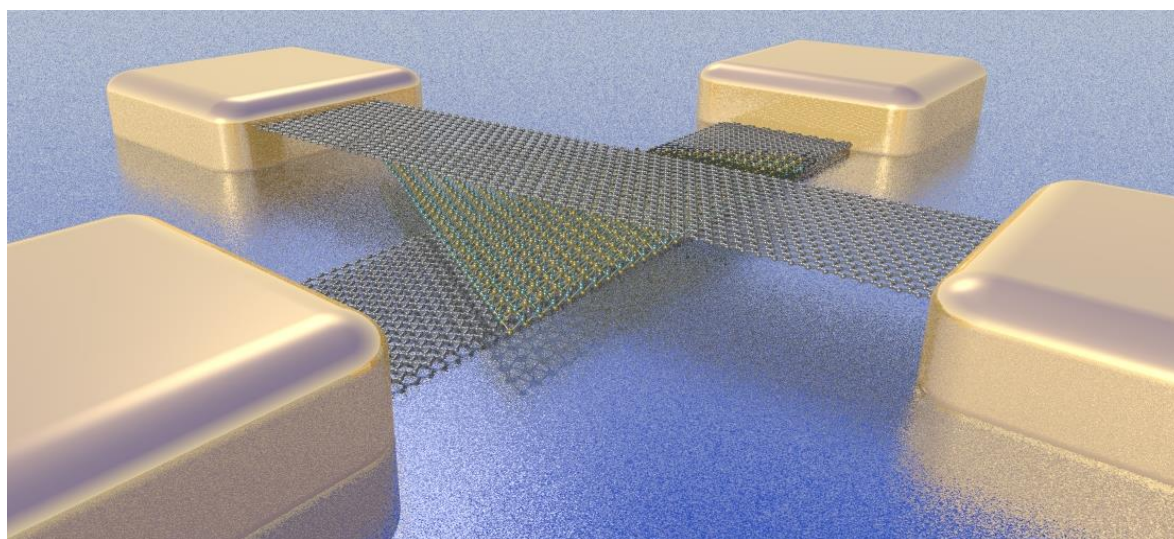


## Prof Jamie Warner (Department of Materials)

Professor Warner's research focuses on the unique properties that arise in materials when they are made very small, and the design, synthesis, characterization and understanding of novel nanostructured materials. His current focus is on 2-dimensional (2D) materials such as graphene, which is of great importance for many applications such as quantum computing, nanoelectronics and opto-electronics.



The overall aim of the OSCAR research programme is to develop scalable fabrication methods for manufacturing 2D semiconductor and insulator materials by chemical vapour deposition methods. The programme will focus on synthesis of graphene and related materials. The emphasis will be on developing these 2D materials for large scale opto-electronic applications. A major obstacle for realizing the potential of 2D materials is the efficient transfer onto clean substrates (base layers) for device fabrication. The aim is to develop step-by-step processing methods to enable large-scale transfer of materials without introducing defects or contamination. The OSCAR programme will also develop 2D sandwich thin film fabrication for electronic applications – the sequential stacking of 2D crystals to form vertical structures. Focus will be on obtaining atomic interfaces, without impurities between each layer, enabling high efficiency electronic device applications, such as transistors, opto-electronic switches, photodetectors, LEDs and solar cells.





## OSCAR Participates in Global Medical Week (GMW) 2018

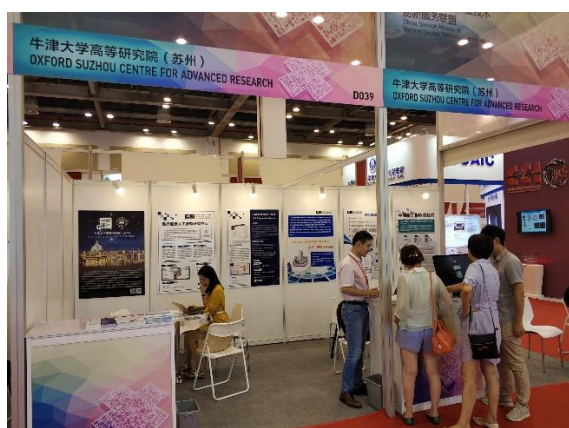


OSCAR participated in Global Medical Week (GMW) 2018, which opened in Suzhou on 6 September, to increase awareness of the Centre. Organized by the Ministry of Science and Technology of China, GMW 2018 was designed to promote innovation in medical devices, with its target audience being medical device R&D companies and distributors.

The events of GMW 2018 included the Medical Fair China 2018, the China Medical Devices Design & Startups Competition 2018 Final and three medical device forums with 15 panel sessions.

OSCAR had an 18m<sup>2</sup> stand at the Medical Fair, with posters from Prof Zhanfeng Cui, Prof Wei Huang, and Prof David Clifton. Dr. Weizhi Liu and Dr. Gao (representing Prof Wei Huang) gave talks at the In Vitro Diagnostic (IVD) Session on 7 September. Dr. Weizhi Liu introduced a faecal occult blood detection technology which can be used for the early detection of Colorectal Cancer and some other diseases of the digestive system. Dr. Yizhou Gao introduced Whole Cell Biosensor technology and its applications in environmental detection, food safety inspection and medical diagnoses.

GMW 2019 will be held in Suzhou in September 2019.



OSCAR stand, introducing OSCAR to interested visitors



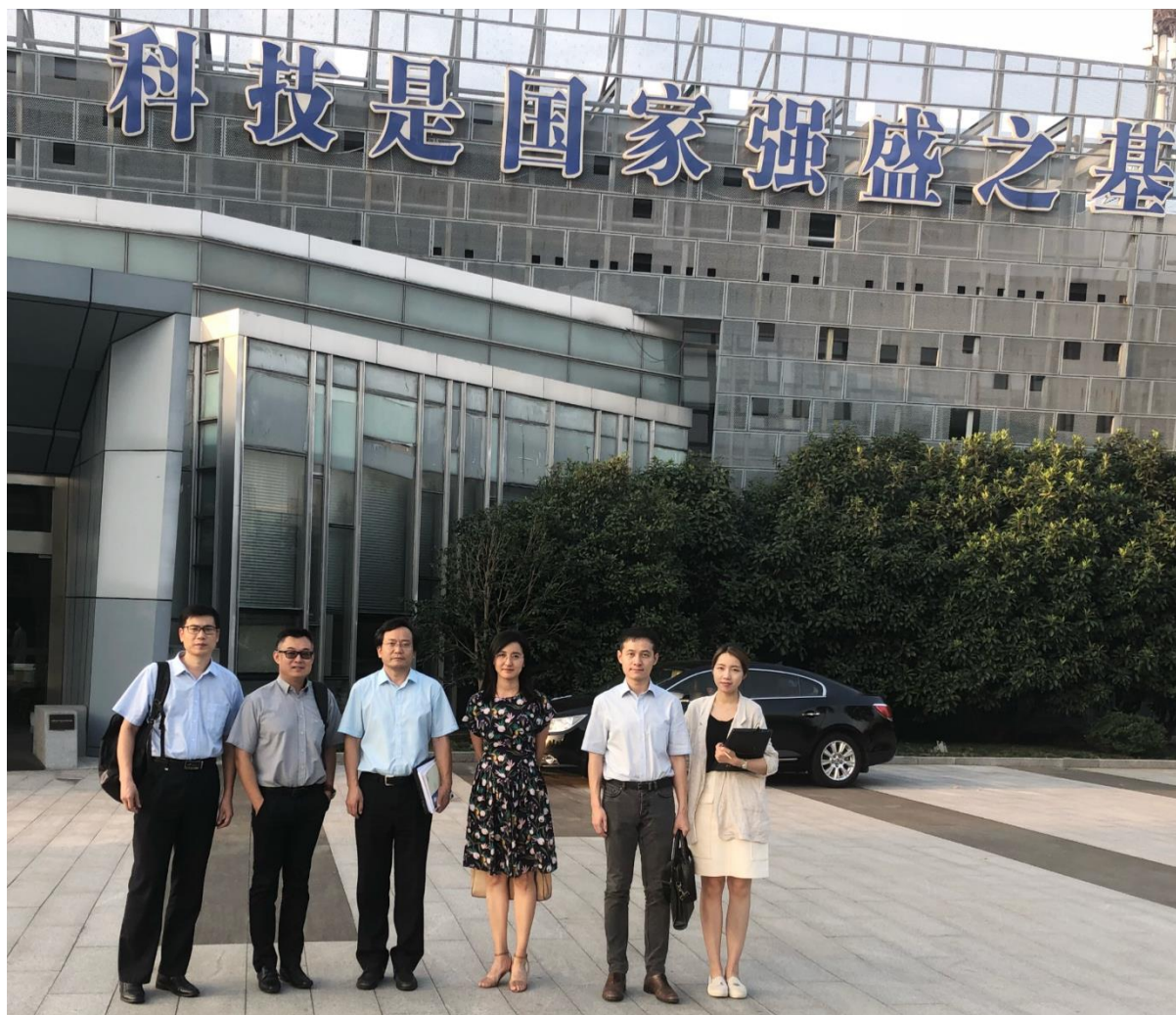
Dr Weizhi Liu, giving a presentation

## OSCAR Visits to JITRI

On 5 September, Dr. Jingsong Huang, Dr. Yang Yang, Dr. Weizhi Liu and Alex Yang visited Jiangsu Industrial Technology Research Institute (JITRI) to promote bilateral understanding and discuss future cooperation. The University of Oxford's Mathematical, Physical and Life Sciences Division (MPLS Division) and JITRI signed a cooperation agreement in September 2017, with OSCAR playing a key role in the collaboration.

Directors of the four major JITRI departments (Specialty Institutes Works, Resource Development, Industrial Development and Project Management) attended the meeting. Alex Yang provided a briefing on OSCAR, and Dr. Jingsong Huang, Dr. Yang Yang and Dr. Weizhi Liu introduced the research areas and ongoing projects of the OSCAR PIs.

Impressed by the high-quality research projects, JITRI also discussed future cooperation models and near-term plans with OSCAR. In addition to the two ongoing cooperation projects with Professor Donal Bradley and Professor Wei Huang, JITRI hopes to have another three cooperation projects with OSCAR/MPLS Division in place by the end of 2018: one early stage project, one medium stage project and one late stage project.



Group picture at JITRI



On 27 September, Dr. Jingsong Huang and Alex Yang visited one of JITRI's Specialty Institutes, the Institute of Organic Optoelectronics. The Institute was jointly set up in 2016 by JITRI, the group of Professor Shutang Li (Member of Chinese Academy of Sciences, Dean of FUNSOM, Soochow University) and Wujiang District Government. The total investment to-date is 360 million RMB with 2,000 m<sup>2</sup> of Optoelectronics Testing Centre and 20,000 m<sup>2</sup> of R&D space and Pilot Manufacturing Lines.

Dr. Huang visited the Optoelectronics Testing Centre and was impressed by the world class testing instruments including FIB+EDX, TEM, SEM, AFM, 400M NMR etc. from top instrument suppliers. During Dr. Huang's visit, he was particularly interested in their self-designed pilot line for Vacuum Deposition.

Dr. Huang held a meeting with Professor Jian Fan to understand the research interests of each group and explore future cooperation opportunities. Both sides decided to have another meeting in October 2018 to discuss possible cooperation projects to be supported by JITRI funding.



OSCAR visits the labs in JITRI



OSCAR visits the labs in JITRI



## Progress of OSCAR's Fit-out and Construction in September

Five companies with more than 100 workers were on-site carrying out the fit-out construction in September. The OSCAR team is working closely with the fit-out construction management company to ensure that progress moves forward with not only efficiency, but also safety and quality.



On-site Photo

Design Sketch

## News Links in September

### **SIP Enhances Efforts to Bolster Medical Device Innovation**

SIP has been endeavoring to bolster medical device innovation, encouraging local medical device developers and manufacturers to continuously improve their products and services for the benefit of their product users and their own development.

SIP is currently home to over 1,000 biomedicine enterprises, including over 700 proprietary brands. Of these, eight are covered by the national “Green Channel” program that is designed to facilitate registration and marketing of innovative medical devices.

Thanks to its consistent support, these enterprises have brought out a multitude of industry-best products, such as INNOMED’s super smooth guide wire for interventional treatments, and Jousing Medical Technology (Suzhou) Co Ltd.’s automated external defibrillator Jousing AED.

SIP hopes to create an ecosystem for all-around support to the enterprises. It encourages local enterprises to set up business and research alliances to seek mutual development by integrating resources. The local authority frequently organizes events like exhibitions and conferences for the enterprises to enhance their information and technology exchange with their peers. In a recent move, SIP Administrative Committee joined with China Strategic Medical Device Innovation Alliance and other two partners to host the Medical Device Innovation Week 2018 from Sept 8 to 9.

link: [http://www.sipac.gov.cn/english/news/201809/t20180929\\_819663.htm](http://www.sipac.gov.cn/english/news/201809/t20180929_819663.htm)





## National University of Singapore Artificial Intelligence Innovation and Commercialization Centre Inaugurated in SIP

NUS Artificial Intelligence Innovation and Commercialization Centre (NUSAIICC), a joint establishment by the National University of Singapore (NUS) and SIP Administrative Committee, was inaugurated in SIP on Sept 25. Its main mission is to promote scientific and technological innovation, application and the eventual commercialization of AI.

NUSAIICC consists of a number of experts and scholars from different NUS departments, with Professor Ooi Beng Chin, distinguished professor of computer science and director of Smart Systems Institute at NUS, serving as its director. It will actively identify and encourage budding start-ups to venture into the Chinese market through its one-stop services as well as promote application of NUS's AI technologies in different fields like medical treatment and financial services.


The 2018 China-Singapore AI Exchange Conference was held on the same day, gathering tens of domestic and overseas top AI experts and representatives of tech companies to discuss a series of hot topics concerning AI development.

link: [http://www.sipac.gov.cn/english/news/201809/t20180926\\_814147.htm](http://www.sipac.gov.cn/english/news/201809/t20180926_814147.htm)





 Building A, 388 Ruoshui Road, Suzhou Industrial Park, Jiangsu, P.R. China, 215123

 0086-512-62869088

 <https://oscar.web.ox.ac.uk/>