



UNIVERSITY OF
OSCAR OXFORD

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“Prof. Moloney Awarded New Workstation Grant



In June, OSCAR's Surface Materials Chemistry Lab led by the Deputy Director Prof. Mark Moloney was awarded a prestigious "Foreign Expert Workshop" award by Suzhou Municipal Science and Technology Department. The Workshops are intended to attract eminent academics to undertake research in Suzhou. The award is a boost to Prof. Moloney's team and OSCAR as a whole.

Funding for established workstations is contingent upon research progress made during the first year. The most viable workshop will receive financial subsidies capped at 300,000 RMB per year, each workshop could apply for

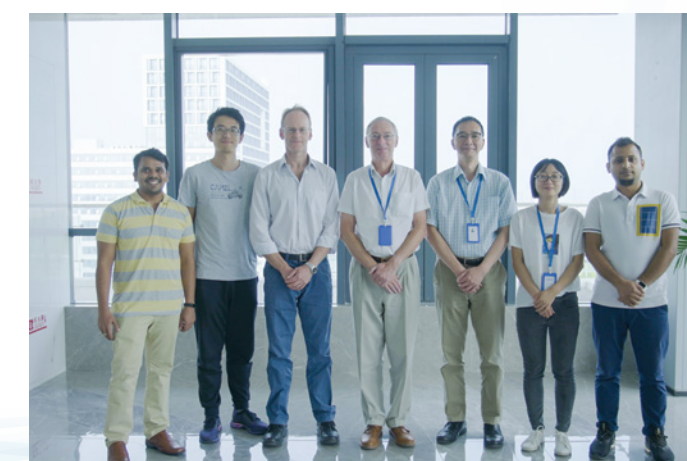
three times in total based on their research performance.

The Suzhou Municipal Science and Technology Department will review progress of all awardees and recommend the best to apply for the Jiangsu Provincial Foreign Expert Workshop award.



Prof. Mark Moloney

Deputy Director of OSCAR
Professor of Chemistry, University of Oxford
Fellow of Royal Society of Chemistry



Members of OSCAR's chemistry team (picture taken in 2019). Dr. Ziyue Xiong joined the team in 2020

OSCAR Materials Surface Chemistry Lab Intro

Professor Moloney has been active in the field of material surface functionalization research for over ten years. Novel research from his team led to the establishment of a spinout company, where Prof. Moloney served as the scientific consultant. The company, Oxford Advanced was launched in collaboration with his partners in 2006. The Oxford research team has developed technology to chemically modify material surfaces under mild conditions. These preserve bulk material properties while introducing new surface materials, such as colour, fluorescence, hydrophilicity and hydrophobicity, antimicrobial activity, and adhesiveness.

The surface science research team directed by Professor Moloney is committed to the development of surface modification technologies for polymer materials and biomedical materials. The team's work is expected to generate a technology platform for the preparation of various functional materials, and it is possible to establish an incubation company for commercial development. Research objectives include:

1. To research and develop antibacterial polypropylene and nylon, which is used to produce antibacterial masks, bandages, gloves and other protective medical products.
2. To develop electrochemical response materials for biological virus detection.
3. To develop antibacterial membranes.



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The First Spinout from OSCAR to Launch Rapid Covid-19 Virus Test Worldwide

Scientists from the University of Oxford's Department of Engineering Science and Oxford Suzhou Centre for Advanced Research (OSCAR) have developed a rapid test which detects the presence of virus - i.e. confirms if a person is currently infected and likely to be infectious - which could be adapted for use in settings ranging from community care, schools, airports or home self-testing.

Oxford University Innovation (OUI), the research commercialisation company of the University, has supported the formation of a lean spin-out company named Oxsed Limited, a social venture to commercialise and distribute technology jointly developed at Oxford University and OSCAR for detection of Covid-19.

The test will soon be certified with CE-mark and be shortly available in quantity with the commercial product name Oxsed RiViD Direct. The test will cost no more than £20 per test, which is considerably cheaper than most of the products currently on market.

The Oxford-OSCAR team has designed primers with high specificity to confirm presence of the virus in infected people, adapted from an established technology known as RT-LAMP (reverse transcription-loop mediated isothermal amplification). It is a simplified one-step version of a viral RNA test and can be used in the field without specialist equipment or training. The simple colorimetric result is read by eye or fluorescent display, meaning there is no need for additional tools to analyse results. A blue tooth linked fluorescent detection instrument can link the test result into a laboratory information system, so that test results can be tracked.

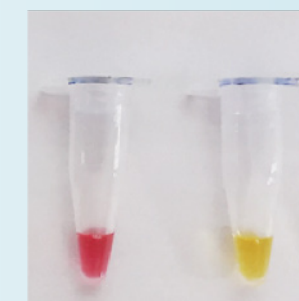
This test produces results within 30-45 min. It detects SARS-CoV-19 with great sensitivity and specificity using throat/nasal swabs directly to identify individuals carrying the virus. Clinical trials gave comparable results with laboratory tests, demonstrating reliability. And the results will be published shortly.

Prof Zhanfeng Cui, the Director of OSCAR, said: 'Our test is ideal for use in community or field settings by lay persons and allows immediate decisions to be made. Immediate applications are: returning to work/education (i.e. schools, universities, companies) and making quarantine decision (e.g. care homes, hospitals, temporary migrants, tourists). Use of such a test could be crucial to economic recovery globally.'

Prof Wei Huang, who designed the primers to target the viral RNA explained the advantage of the Oxford test: 'By designing the specific primers and controlling the biochemical reaction, we are able to eliminate the non-specific reactions that cause false positives and make our RT-LAMP test robust. And the Oxford test can be transported and stored at ambient temperature without need for cold chain, which makes shipping and distribution much easier.'

The project was initiated by OSCAR. The experiments to develop the technology were performed in the Department of Engineering Science at the University of Oxford. Clinical validation on direct use of swab solution was performed in Oxford University Hospitals NHS Foundation Trust, Peter Medawar Institute of Virology, Sir William Dunn School of Pathology, University of Oxford.

<https://www.research.ox.ac.uk/Article/2020-07-08-oxford-scientists-form-spinout-to-launch-rapid-covid-19-virus-test>



Negative Positive

“ OSCAR’s Academic Seminar Series

The ongoing COVID-19 pandemic has seen extensive lockdown policies enacted across the world. This prevented all but essential travel and meant Oxford-based Principal Investigators are unable to travel to OSCAR until further notice.

Each group has adapted well to the ‘new normal’ working conditions, with teleconferencing supervisory meetings arranged to guide and support research work which has already resumed in Suzhou.

An internal seminar series was proposed to boost collaboration and cohesiveness in these socially distanced times. After much discussion and preparations, OSCAR decided to hold monthly OSCAR Academic Seminar via video conference. At each seminar, two PIs will present a short talk around the research area. The discussions are open to all PIs and research staff.



The first OSCAR Academic Seminar, held on 19th June, was themed around COVID-19 and the efforts of research groups at OSCAR and Oxford to target the pandemic. Prof. Wei Huang and Prof. David Clifton kindly presented the inaugural talks at this highly topical seminar.

Prof. Wei Huang introduced the COVID-19 rapid test kit which has been jointly developed with OSCAR Director Prof. Zhanfeng Cui’s group. His talk included the design concepts, critical problems solved during development, and current achievements. This new test kit uses RT-LAMP and can specifically recognise SARS-CoV-2 (COVID-19) RNA and RNA fragments. Importantly, it does not require a laboratory environment or expensive test equipment so it can be performed in the field, for example, in community healthcare centres or transport hubs. Following clinical trials in China and the UK, the test kit has applied for CE mark accreditation and will soon be ready for commercial launch in China.

Prof. David Clifton, lead of the AI for Healthcare group, spoke about his group’s work in response to the COVID-19 pandemic by utilisation of AI technology. The group worked to assist with the screening of high-risk targets, using large amounts of health data to examine trends. Prof. Clifton also introduced work regarding intelligent preventive resource allocation which will provide support for clinical decision making, especially in the distribution of limited medical resources in critical environments. The wealth of data available from the COVID-19 pandemic has been made possible by the removal of barriers to publication alongside the availability of databases to research teams worldwide. Such volume, extent and immediacy of data is unprecedented. It highlights the role artificial intelligence can play during and in the immediate aftermath of the pandemic, as well as for potential future public health crises.

“ Third Meeting of the Oxford-SIP Cooperation and Development Board



On 29th June 2020, the third Oxford-SIP Cooperation and Development Board Meeting was held to review OSCAR’s work and to discuss the initial thoughts on OSCAR’s new Strategic Plan (2021-2025).

Co-chaired by Prof. Zhanfeng Cui and Mr. Xiaoming Lin, the Board was established in 2018 and meets every year to review OSCAR’s progress, and steer strategic development.

At this meeting, OSCAR presented a report covering research and establishment work, “Lab & Team Establishment, Research

Progress, Technology Transfer and OSCAR Technology Accelerator, Collaboration and Outreach, and Operations”. The emphasis was on OSCAR’s research team expansion and research progress. Prof. Cui highlighted OSCAR’s achievements to date:

- 16 Oxford University Principal Investigators
- 3 world-renowned academicians as OSCAR Visiting Academicians
- 28 full-time researchers recruited globally, among which 17 graduated from overseas universities
- 22 papers have been published
- 2 patent application applied
 - 1 further patent currently in filing
- 22 internal research projects in progress
- 3 projects successfully awarded research grant
- 32 projects ongoing (4 agreements signed; 15 projects started)

Initial thoughts on OSCAR’s Strategic Plan (2021-2025) were fully discussed at the meeting to set OSCAR’s mission, vision, objectives, and actions. The two parties reached a consensus to develop OSCAR’s research excellence, technology acceleration, outreach and collaboration by tapping resources from both ends.

SIP fully recognizes every progress made since OSCAR’s launch, and is confident and hopeful about OSCAR’s future growth. Meanwhile, SIP expressed intention to enhance support to OSCAR in all aspects, including finance, human resources, network, etc.

Based on article 1.1.3 of the Oxford SIP Collaboration Agreement signed in December 2016, the two parties will sign a supplemental agreement on how SIP will fund ongoing and future scientific research activities of OSCAR. SIP will initiate follow-up negotiations with Oxford University on continued cooperation, and formulate detailed action and financial plans on which both parties can agree.

In a separate section, OSCAR presented its response to the COVID-19 challenge. OSCAR initiated research in January 2020. Researchers in the UK and OSCAR collaborated closely, effectively demonstrating the innovative, international, responsive, and marketable research that underpins OSCAR's mission. Key achievements of the project included the invention of a rapid test kit, the publication of 2 papers and submission of 1 patent. The product, Oxsed RaViD Direct, also directly led to the launch of OSCAR's first spinout company, Oxsed, in June 2020.

The meeting also approved to add 2 Board members from the side of SIP, Wenqing Xu, Secretary of CPC Working Committee of Suzhou Dushu Lake Science & Education Innovation District (SEID), and Yu PAN, Director of the Administrative Committee of SEID; and 1 Board member from the side of Oxford University, Dr. Richard Liwicki, legal representative of OUSST.

Attendees (OSCAR)

- Dr. Matthew Perkins (CEO of OUI, OUSST board director, and board member of Oxford-SIP Cooperation and Development Board)
- Dr. Richard Liwicki (New Board Member, Legal Representative of OUSST, Former Acting Director, Research Services, University of Oxford)
- Leah He (OSCAR General Manager, Oxford-SIP Cooperation and Development Board secretariat)
- Apologies: Alison Noble (OUSST board director, and board member of Oxford-SIP Cooperation and Development Board)



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Meet OSCAR's Researchers

Interview with Mengmeng Ji



Mengmeng Ji

Research Technician in Prof. Ian Thompson and Prof. Wei Huang's group

Ji Mengmeng earned her Bachelor's degree in biological sciences from Ocean University of China in 2015. She continued her study for a Master's degree at the State Key Laboratory of Microbial Metabolism of Shanghai Jiaotong University from 2015 to 2018. During that period, her major research work was on environmental microbes. After graduating she joined in the School of Environmental Science and Engineering of Shandong University as a research assistant. She currently works as a laboratory research technician at OSCAR.

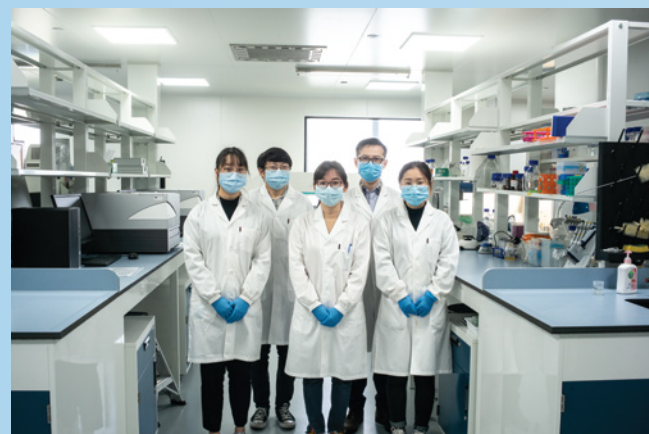
Q: It has been a year since you officially joined OSCAR. Could you talk about the gains and experiences you got from the one-year working experience?

I have gained a lot from the one-year working experience in OSCAR as I just entered the workforce. Firstly, my knowledge and experience in scientific research have been improved. OSCAR, the first overseas scientific research centre of the University of Oxford, has pooled many excellent scientific research teams led by top scientists in different fields. Therefore, I have access to globally advanced science and technology. Here, I have an insight into biosensors and the technology of Single-cell Raman Sorting which are completely new for me. However, under the careful guidance of Professor Huang Wei and Dr. Wang Yun, I am capable of independently completing biosensors detection. I believe I will gain more improvements in future work and have the ability to independently complete more experiments and to improve my theoretical knowledge.

Secondly, my communication skill has largely been promoted. I have learned to communicate effectively with others, to understand others and put myself in their shoes. Thus, many unnecessary accidents and misunderstandings are reduced.

Q: As a member of the research team of nucleic acid rapid testing technology in OSCAR, could you introduce to us the difficulties and challenges encountered by your team in the research process as well as the research results currently achieved?

The coronavirus nucleic acid testing project is a tough task with a tight schedule. It requires us to



OSCAR researchers involved in COVID-19 research
--Mengmeng Ji (R1)

communicate with senior scientists in Britain in time and cooperate with domestic hospitals and companies to provide testing reagents. In order to enable the earliest application of the nucleic acid rapid testing technology developed by the research team, each member of the research team has been working overtime to complete the testing experiment. As we uphold rigorous scientific attitude, we won't allow the existence of any slight error despite the tight timetable.

At present, OSCAR has realized a small batch production of nucleic acid rapid testing kits and their quality control. The research team is conducting R&D to increase production, reduce costs, and explore better methods for storing test kits.

Q: What are your short-term and long-term research objectives at OSCAR?

My current main jobs in OSCAR include completing the development and research work of test kits with my colleagues in the research team of the nucleic acid rapid testing technology. Furthermore, our team has also been engaging in the study on the application of magnetic nanoparticles-modified

biosensors in testing actual samples with the aim of extending the application of biosensors in food testing markets by modifying biosensors. In the long run, I hope to further learn the technology of Single-cell Raman Sorting and work on the relationship between human gut microbiota and human health by integrating with the technology.

Q: Could you talk about your life in OSCAR and Suzhou?

I have harmonious relationships with my colleagues in OSCAR as most of us live in the apartment built for scientists. We are both colleagues and friends as we work and live together. We care about and encourage each other. The operation team of the company also care about us and help us to solve the difficulties in life and work. I am happy to work in OSCAR. By the way, Suzhou is a beautiful city. Particularly, the environment of Suzhou Industrial Park where we live and work is clean, comfortable, and not too noisy. It is very suitable for research work. I am considering settling down in this city, and working and living here for a long time.

Email: Mengmeng.ji@oxford-oscar.cn



“ Collaboration Opportunities



Visiting OSCAR labs



On 2nd June, the newly appointed Secretary of Suzhou Dushu Lake Science and Education Innovation District (SEID) CPC Working Committee, Mr. Wenqing Xu, paid a visit to OSCAR. After a tour of the building, Mr. Xu and several SEID senior leaders met with General Manager Leah He and Industrial Cooperation Manager Alex Yang to discuss OSCAR's development plan and collaboration with partners in Suzhou and the Yangtze River Delta.

A delegation from SIP Investment Promotion Bureau, led by Deputy Director Ms. Xue Xiao, visited OSCAR on 4th June to learn about OSCAR's progress and major concerns regarding external environment and industries.



On 15th June, Lan Shi, the CEO of Y-City, a leading institution in technological training, visited OSCAR. She was joined by the East China Account Manager of Oxford University Press (Shanghai) Ltd., Alina Yan.

Lan Shi (L1),
Leah He (middle),
Alina Yan (R1)

“ SIP News for June

20 Billion RMB Investment to Establish Gusu Lab

Gusu Lab is a new initiative established by Suzhou Industrial Park Administrative Committee and Suzhou Municipal Science and Technology Department. Covering an area of over 300,000 sqm, the Lab is headquartered in SIP and has a total investment of 20 billion RMB. The Lab takes its name from the name for the original city (the new city takes its name ‘Su’ 苏 from Gusu).

Its research will focus on materials science to serve the region and the country’s strategic needs for advanced technologies. Exciting work is to be carried out in R&D in materials, talent development, platform opening and sharing, technology transfer and industrialization and technological consultancy.

The Lab has the ambition to, within a timeframe of 10 years, attract over 3000 top-notch researchers who will help put the Lab on the map as a world-leading one with global impact by delivering emblematic original research outcomes.

The four key research fields – electronic information materials, life and health sciences materials, energy and environment materials, and cutting-edge strategic materials – closely complement OSCAR’s research interests.

OSCAR, with its own Advanced Materials Lab, sees enormous potential for collaboration and resource sharing with Gusu Lab which is sure to further empower OSCAR’s research capacity in materials science.

Prof. Zhanfeng Cui, OSCAR’s founding Director, was appointed to the Gusu Lab Strategic Consultancy Committee together with around 60 other world eminent academicians at the Opening Ceremony of Gusu Lab on 30th June 2020.



Free Trade Zone in SIP Announces Supporting Policies for Professionals and Businesses

The Administrative Committee of China (Jiangsu) Pilot Free Trade Zone Suzhou Area, a free trade zone in SIP, held a press conference on 12th June to issue a package of policies designed to attract and retain professionals in different fields and bolster business development.



The talent policies, targeting professionals in China and abroad, include Opinions on Accelerating Concentration of High-calibre and Urgently Needed Professionals (also known as “30 New Talent Policies”), Measures of Accelerating Concentration of Biomedical Professionals, and Opinions on Implementation of SIP Jinji Lake Plan for Healthcare Professionals.

The policies include provision of tailored support such as financial aids, rewards and subsidies for eligible people to land jobs, start businesses and run projects in SIP. The policies also include privileges eligible people and their families can enjoy in such aspects as house purchasing and renting, household registration and children’s schooling.

For example, under the 30 New Talent Policies, an eligible start-up can receive a subsidy of up to RMB 50 million, while an individual can receive a reward of up to RMB 400,000 each year. Individuals making a special contribution to SIP’s development can receive a reward of up to RMB 1 million per year. The policies for biomedical professionals also include “green channel” services for professional qualification authentication.

Additionally, SIP Administrative Committee issued Measures for Implementation of Rewards for High-tech Enterprises in China (Jiangsu) Pilot Free Trade Zone Suzhou Area and Opinions on Promoting High-quality Development of Headquarters Economy to encourage tech companies to make technology innovation and facilitate development of headquarters economy.

15th June 2020

http://www.sipac.gov.cn/english/news/202006/t20200615_1124515.htm

Suzhou Ranks First in National Business Environment Report

Suzhou ranked in first place in China's Urban Business Environment Report 2019. Released on 18th June 2020, the report gives a comprehensive ranking of all economically active cities in China.

Compiled by China Media Group, last year's report was the first authoritative third-party report on the environment of business issued by China's mainstream media.

The report evaluates Chinese cities according to five criteria: infrastructure, human resources, financial services, government environment and inclusive innovation.

New plan to improve Suzhou's business environment

On 28th March this year, Suzhou released the Innovative Action to Optimize Business Environment in Suzhou, an initiative to make Suzhou an ideal place for investment, development, career, entrepreneurship and living.

Suzhou favoured by international capital

Between January and May of this year, Suzhou attracted USD 5.9 billion of foreign investment. This represented a year-on-year increase of 157.5%, with the total amount and growth both reaching a record high. The investment in manufacturing rose by 29.2%, ranking highly among the eastern cities and "trillion club" cities.

Suzhou the first choice for foreign talent

By the end of 2019, the city had attracted 262 talents with the "National Major Talent Introduction Project", of which 135 were recruited in the entrepreneurship category. The city now has a foreign resident population of over 20,000. It has been included in the "Top 10 Attractive Chinese Cities for Foreign Talents" for eight years in a row.

Suzhou is home to a total of 7,052 high-tech enterprises, ranking fifth in the country. The city government will strive to increase this number to 10,000 during 2020.

Suzhou boasts 58.26 effective invention patents per 10,000 people (ranking fifth across China), demonstrating existing research and innovation strengths and commitment in the city. Up to now, there have been 10 Shanghai Stock Exchange (SSE) STAR Market listed companies from Suzhou.

18th June 2020

https://mp.weixin.qq.com/s/5GEB826h17t_W1SSnNwePA

