OSCAR

UNIVERSITY OF
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OSCAR Academic Seminar series: a guide on protecting innovative ideas

OSCAR held its sixth academic seminar, the first of 2021, on January 22nd. These seminars are now a regular monthly event, bringing together the research team in Suzhou with colleagues and Principal Investigators in Oxford to share research, ideas and training.

The session began with a briefing on OSCAR's intellectual property (IP) policy by Chairman of the Board Dr. Richard Liwicki and was followed by a series of invited talks covering varied aspects of the identification, management and protection of intellectual property both in China and the UK.

Dr. Jane Jin

The first speaker, Dr. Jane Jin, is a Senior Licensing and Ventures Manager at the University of Oxford's technology transfer arm, Oxford University Innovation (OUI) and works closely with OSCAR's Research Services Section. In 2020, she was instrumental in supporting the formation and subsequent acquisition of OSCAR's first spinout company, Oxsed.

Dr. Jin, joining remotely from Oxford, spoke about her role at OUI and the technology commercialisation process at OSCAR. Like OSCAR, OUI is a wholly-owned subsidiary of the University of Oxford. OUI manages technology commercialisation, consulting services and spinout activities at the university. In 2020, OUI supported the formation of 19 companies, 204 license deals and over 4700 patents at the university. As OSCAR's research matures and begins to generate marketable ideas and IP, Dr. Jin will work closely with the Research Services Section and research staff. She outlined the path 'from idea to impact' – protecting and incubating ideas, marketing and attracting investment through to commercialisation by licence agreement or spinout.

Yechen Gui

Yechen Gui, OSCAR's IP and Technology Manager, joined the centre in December 2020. Yechen has 8 years' experience in IP examination and management as a Patent Analyzer and a Senior Intellectual Property Officer at the China National Intellectual Property Administration (CNIPA). She followed Dr. Jin's presentation with a talk tailored to due diligence for research outcomes generated at OSCAR. She began by highlighting the different forms that IP can take, including patents, copyright and trademarks to more nebulous designs and trade secrets. Yechen then described the criteria research must fulfil to qualify as IP, and the steps taken to protect it.

For the final talk of the session, OSCAR was delighted to welcome Dr. Wenwen Wang of Advanced China IP Office (ACIP). ACIP has offices across China and overseas and has over 900 IP professionals on its staff. They file over 8000 Chinese invention patents annually and were ranked 1st for PCT filing in China by Managing IP in 2019. Dr. Wang is an experienced patent attorney with 8 years' experience of patent prosecution. She was recognised as an IAM Patent 1000 Recommended Individuals, China (2020).

Dr. Wenwen Wang

Ms. Wang focussed her talk around invention and utility model patents in China, giving definitions and examples of good practice. She described various filing strategies for Chinese and PCT (international) patents, which has relevance for OSCAR's international collaboration model.

With a wealth of novel research projects, including many close-to-market technologies, this seminar provided invaluable training for OSCAR researchers. In the first two years of operation OSCAR has produced its first spinout and already has another in the pipeline. Together, OSCAR's research groups have made different patent applications with support from OUI.

Recent OSCAR honours

2020 Jinji Lake Science and Education Leading Talent

Prof. Cathy Ye

Prof. Wei Huang

OSCAR PIs Prof. Cathy Ye and Prof. Wei Huang have been awarded as "2020 Jinji Lake Science and Education Leading Talents", bringing the total number of OSCAR PIs conferred this title to eight.

Prof. Zhanfeng Cui (OSCAR Director and PI of the Biomedical Science group) and Prof. Donal Bradley (Optoelectronics) were made 'Leading Talents' in 2017, and Deputy Director Prof. Mark Moloney (Functional Materials) and Prof. Jeremy Robertson (Organic Chemistry) were awarded in 2018. In 2019 Prof. David Clifton (AI for Healthcare) and Prof. Luet Wong (Inorganic Chemistry) were awarded under the programme.

The Jinji Lake Talents Programme is an annual scheme from SIP awarded to high-calibre talents in diverse fields. It is intended to attract and retain talented and regarded leaders in industry and academia to Suzhou in order to increase innovation in the region.

Innovative and Entrepreneurial Talent

Gert Mertes, Research Scientist in Prof. David Clifton's group, and Muhammed Kamran Khan, Research Scientist in Prof. Mark Moloney's group achieved recognition as "2020 Jiangsu Innovative and Entrepreneurial Talents", awarded in the DPhil category. The Jiangsu Provincial Double Innovation Talent Program was launched by Jiangsu Province in 2007 with the aim of sponsoring innovative and entrepreneurial high-tech initiatives to accelerate development, and to attract high calibre talents. This is the second time OSCAR's researchers have been awarded this provincial talent award. Senior Research Scientist Dr. Yun Wang of Prof. Wei Huang's group was awarded in 2019.

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经研究，确定　牛津大学高等研究院（苏州）　引进人才 GERTMERTES 入选2020年江苏省“双创博士”。特发此证。

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OSCAR recognised for excellence in media and communications by SEID

As part of its commitment to strengthening outreach, OSCAR has been diligent in creating quality content to publicise its activities. News, research and events are shared via diverse media channels including our monthly newsletter, Linkedin and our active WeChat channel. Over the past year OSCAR has expanded connections to influential media outlets, and has been referenced in articles by major global outlets including CGTV, BBC, the New York Post, CNN, Fox News and the Daily Telegraph.

This is not only a way to celebrate OSCAR's milestones, dynamic research and related outputs; but is also important in cementing the centre's reputation locally and further afield. In tandem with attendance at high-profile events, continued engagement with the public through varied media channels has been critical to increasing OSCAR's visibility and shaping its profile as a paradigm of UK-China cooperation in science and a place towards which innovative resources and great minds gravitate.

Follow OSCAR via Linkedin/WeChat and keep up-to-date with research, events, celebrations and job opportunities via our new and improved website, due to launch later this year.

Website: https://oscar.web.ox.ac.uk/home
Linkedin: www.linkedin.com/company/oxford-oscar/
WeChat: scan the QR code to follow us

OSCAR awarded “Organisation of the Year” by SEID

OSCAR was awarded “Organisation of the Year” by the Administrative Committee of Science and Education Innovation District, Suzhou (SEID), during the SEID CPC Working Committee Extended Meeting held on 29th January. OSCAR was among nine research institutes and universities located in SEID that were conferred this honour.

This honour is a recognition of OSCAR's contribution to SEID's technological advancement and the active role it has served to promote UK-China research collaboration. Since its establishment, OSCAR has been a bond of productive cooperation between the University of Oxford and Suzhou Industrial Park. The synergy between Oxford's scientific research strength and China's industrial resources has generated a huge value with global impact. Oxford's research activities in China leave infinate room for imagination. OSCAR will continue its active engagement with academia and industry to address global technological challenges, and strive to establish itself as a new benchmark for industry-academia collaboration.

OSCAR "Foreign Staff Club" gives voice to international employees

OSCAR's General Manager Leah He sat down with international staff during a meeting of the OSCAR Foreign Staff Club on 14th January to listen to what they have to say about their work at OSCAR and life in Suzhou. During the meeting, Leah reiterated OSCAR's commitment to continued care and support for its international staff both at and outside of work, especially as Covid-19 travel restrictions have prevented them from traveling back home and reunite with their families. Leah also shared helpful information about amenities and resources in Suzhou available to foreign staff to support and encourage them to develop new social circles in the local area.

OSCAR's core premise centres around championing international cooperation and it is proud of its diverse staff. OSCAR currently has seven foreign employees working on site at OSCAR in Suzhou, with others working remotely while travel restrictions persist. Recognising the challenges that international staff can face when adapting to work and life in a new country, OSCAR set up a 'Foreign Staff Club' to ensure the voices of its international team are heard and valued by senior management. The club meets regularly to socialise and share experiences and has been a valuable and friendly point of contact for new incoming foreign staff. Staff also have access to English-language journals, books and magazines in OSCAR's reading room, launched last year in conjunction with Dushu Lake Library.

It is one of OSCAR's objectives to create a people-centred working environment to attract, recruit and retain the world leading researchers fuelled with innovative thinking. Showing its employees that OSCAR cares about their wellbeing will go a long way towards fostering a dynamic, motivated and happy workforce. Initiatives such as the Foreign Staff Club, social events, birthday celebrations and cultural outings form an important part of enrichment activities at OSCAR.

Meet OSCAR's new researcher

Dr. Chenbo Wang
Research Scientist in Prof. Mauro Pasta's group

Dr. Chenbo Wang joined OSCAR in January 2021 as a Research Scientist in Prof. Mauro Pasta's Energy Storage and Conversion group. He studied solid-liquid interface for energy conversion and storage applications at the University of Oxford's physical and theoretical chemistry department. He is interested in the fundamentals of semiconductor electrochemistry. His DPhil research involved photo-electrochemical water splitting, photocatalytic advanced oxidation process, and electrolyte double-layer capacitor electrode materials. Prior to this, he obtained an MPhil in nuclear energy at the University of Cambridge, and a BSc in applied physics from Shandong University.

"I am excited to join the Energy Storage and Conversion group here at OSCAR" Chenbo says. "Combining research excellence with industry connection, OSCAR offers an unconventional research environment that is highly vibrant. My research task here focuses on electrocatalysis with a particular interest in oxygen evolution reaction (OER). I am interested in novel materials for future energy systems and have a firm belief that carbon-based energy must be replaced with something more sustainable and available. Hydrogen energy is a promising alternative and greatly complements Li-battery technology in terms of faster charging capability. However, the majority (~95%, as of 2020) of hydrogen is produced from fossil fuels. To achieve "clean" hydrogen production, efficient water splitting processes using renewable electricity are required. OER is the more problematic half-cell reaction owing to the 4-electron process, which results in sluggish kinetics and need for large overpotentials. Thus our research focuses on finding new materials suitable for OER as well as tackling fundamental issues in charge transfer at electrode-electrolyte interface."

OXFORD SUZHOU CENTRE FOR ADVANCED RESEARCH

Research and Collaboration Spotlight

Dr. Keval Sonigara, OeTL Group

Dr. Keval Sonigara is a Research Scientist in Prof. Paul Stavrinou's Optoelectronic Technologies laboratory (OeTL) which researches and develops soluble semiconductor materials, devices, and their applications. Dr. Sonigara has expertise in the development and application of synthetic organic photoactive materials and aqueous polymer gel electrolytes for advanced photovoltaic and energy storage devices. His work at OSCAR includes development of solution-processible active and charge transport materials for advanced optoelectronic devices, including light emitting diodes and photovoltaics devices.

Last month, Dr. Sonigara published new research arising from his doctoral study, together with colleagues at his alma mater Sardar Patel University and collaborators at University of Chemistry and Technology, Prague, Yeungnam University and the Indian Institute of Technology Guwahati. The paper was published in the Royal Society of Chemistry's journal 'Sustainable Energy and Fuels' (impact factor 5.503).

Photovoltaic devices are critical components in harvesting energy from light. They allow us to utilise solar energy and are integral in the drive to increase contribution of renewable energy sources without compromising consumption or performance. Currently, perovskite solar cells lead the field in terms of efficiency, but their poor stability, low tolerance of humidity and poor reproducibility limit their commercial application. Mesoscopic photovoltaic devices (MPDs) are promising alternatives for light-harvesting in compact designs. While efficiency is typically lower than for perovskite solar cells, their superior processibility and stability make them attractive choices.

In this paper, the researchers present a material that combines the processability and high stability of MPDs with greatly improved efficiency, even exceeding that possible with perovskite materials. The paper introduces a single-route sensitizer and multifunctional organic ionic plastic crystals (OIPCs) for use in a range of electrochemical devices. They employed their OIPCs as a redox couple and light-harvesting contributor in a binary system (sensitizer-electrolyte) enabled via energy transfer in a photovoltaic device. They demonstrated that their OIPCs could give a 'self-regenerative' photovoltaic response in a particular system, without inclusion of the sensitizer.

Their refined OIPC-based device demonstrated a 43% increase in efficiency compared to conventional electrolyte systems. This was achieved by improving both the photocurrent and photovoltage. Further, their single-component OPIC-based solid-state mesoscopic photovoltaic device was found to demonstrate excellent stability (~95%) for up to 5000 hours, exceeding current capabilities.

The improvements to device stability and efficiency, coupled with the single-route manufacturing process, represent an exciting step forward in mesoscopic photovoltaic device technology. The results presented in this paper are part of Dr. Sonigara's wider work to improve such devices to accelerate the capability, readiness level and usage of photovoltaic technologies.

The full article is available to read online or in print:
Soni, S.S., Sonigara, K., Vaghasiya, J.V., Prasad, J., Machii, H.K., Ansari, M.S. and Qureshi, M. (2021). Augmentation in Photocurrent through Organic Ionic Plastic Crystals as Efficient Redox Mediator for Solid-State Mesoscopic Photovoltaic Devices. *Sustainable Energy & Fuels DOI: 10.1039/D0SE01527J*

Outreach and Collaboration

OSCAR Research Scientist gives talk at CIOMP

Dr. Jingsong Huang, Senior Research Scientist in Prof. Paul Stavrinou's group at OSCAR and Head of the Optoelectronic Technology Laboratory (OeTL) was invited to give a lecture on plastic electronics at the State Key Laboratory of Luminescence and Applications, Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP), Chinese Academy of Sciences. OSCAR enjoys a close cooperation with CIOMP, strengthened by reciprocal visits and invited talks such as this.

Dr. Huang's lecture, "Plastic Electronics- the Science and Applications" introduced the OeTL's research fields and progress and presented recent results. Academic exchanges such as this help bring OSCAR's research and innovations to a broader audience, and offer opportunities to cultivate working relationships and explore possible avenues for collaboration.

OSCAR to work with Taixing Economic Development Zone to scale up antimicrobial technology

In January, a delegation from OSCAR visited Taixing Economic Development Zone and Taixing Institute of New Materials (TIM) to strengthen industrial ties and explore opportunities for collaboration and commercialisation. Industrial Cooperation Manager Alex Yang, Research Scientist Dr. Kamran Khan, Research Scientist Dr. Yang Cao and Research Dr. Zhongqing Liu travelled to Taixing to follow up on an earlier visit by the Administrative Committee of Taixing Economic Development Zone to OSCAR. Taixing is a small city approximately 120km north of Suzhou across the Yangtze river, and is known as its strong history of manufacturing and chemical industry.

After a tour of TIM and Taixing Chemical Park, OSCAR researchers presented their research work and discussed possible technology scale-up and industrial collaboration with representatives from Taixing Economic Development Zone.

Dr. Kamran Khan, Research Scientist in Prof. Mark Moloney group presented research from OSCAR's Surface Chemistry and Functionalization group. TIM showed special interest in the antimicrobial technology developed by Prof. Mark Moloney's team and signed a CDA with OSCAR to scale up the technology in Taixing Economic Development Zone. This increased manufacturing capability represents a significant step on the path to commercialisation. TIM also expressed interest in the research from OSCAR's Biotechnology group regarding Cytochrome P40 system, particularly its application in pharmaceutical drug development.

OXFORD SUZHOU CENTRE FOR ADVANCED RESEARCH

SIP News for January

SIP attracts over 1,000 S&T innovation projects in 2020

SIP attracted 1,086 science and technology innovation projects last year, latest statistics released by local authorities show. These projects have played a big part in propelling local industrial growth.

The statistics show that 82% of these new projects focus on emerging industries, and have helped drive the biomedicine, biotech and AI industries in SIP to record a total industrial output value of 249.4 billion RMB last year. This represents a year-on-year increase of 22.9%; a remarkable achievement in the face of pandemic restrictions and uncertainty.

SIP authorities have spared no effort in recent years to develop the area into a world-leading high-tech zone, offering generous incentives to high-calibre tech professionals and their projects. Earlier this year, SIP authorities rolled out a series of new initiatives to accelerate introduction of innovative technology projects.

http://www.sipac.gov.cn/szgyyqenglish/News/202101/c1deff9e27084081a165424f950dd5fb.shtml