



PUBLIC ENGAGEMENT AND OUTREACH STRATEGY

DEPARTMENT OF MATERIALS

JUNE 2025



Image courtesy of Wychwood School



OUR PUBLIC ENGAGEMENT AND OUTREACH MISSION

To enhance the impact of oxford materials research through effective public engagement and by inspiring and empowering diverse talent to become the next generation of leaders in science.

FOREWORD

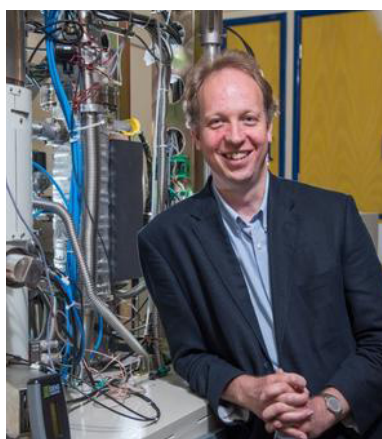
In an era defined by rapid scientific advancements and complex global challenges, the importance of effective public engagement with research cannot be overstated. Our mission at Oxford Materials is not only to push the boundaries of scientific knowledge but also to ensure that this knowledge benefits society at large. This public engagement and outreach strategy represents our commitment to making our research accessible, engaging, and impactful for diverse audiences.

Public engagement is critical in bridging the gap between scientific enquiry and societal needs. By fostering meaningful connections with local communities, policymakers, and future scientists, we aim to inspire a culture of curiosity and inclusion within the fields of science, technology, engineering, and mathematics (STEM). We recognise the vital role that diverse talents play in shaping the future of science, and we are dedicated to empowering the next generation of STEM leaders, including raising the aspirations of talented young people from all backgrounds to access an Oxford education and improving science capital. This strategy outlines our approach to enhancing the impact of our inspirational

research, stimulating interest and raising knowledge of the importance of materials developments for technologies of the future.

“MATERIALS SCIENCE IS KEY TO OVERCOMING MANY OF THE CHALLENGES FACED BY HUMANITY, BUT THIS CAN ONLY BE ACHIEVED BY WORKING IN PARTNERSHIP WITH COMMUNITIES AND BY ATTRACTING THE BEST AND MOST DIVERSE TALENT.”

Prof. Peter Nellist FRS
Head of Department



Department of Materials public engagement and outreach strategy working group

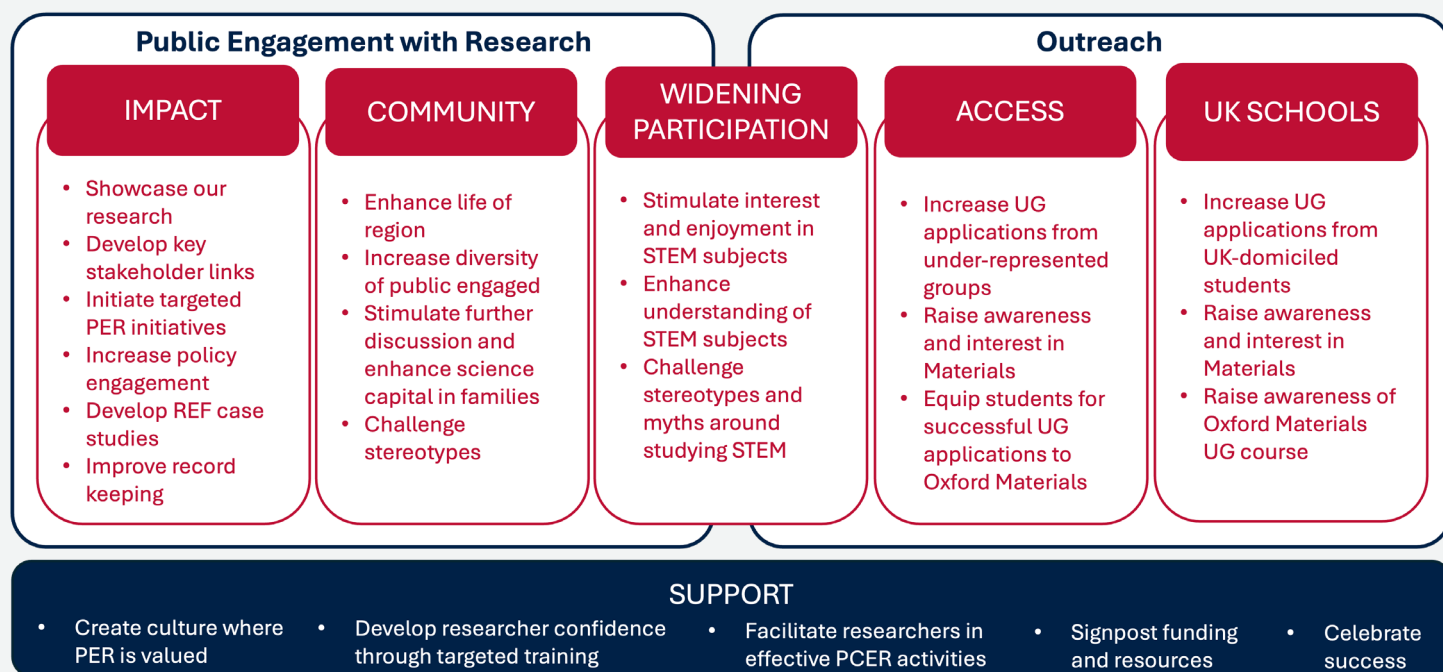
Susie Speller, Helena Cotterill, Lorraine Laird, Oliver Thomas, Joseph Fihosy, Yige Sun

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OUR STRATEGY

The strategy is divided into five different pillars which span all aspects of public engagement and outreach: impact, community, widening participation in STEM, access for under-represented groups and UK schools. Supporting all of these themes is a combination of initiatives designed to embed effective public engagement into the Department's culture, including new researcher training, improving communications, celebrating success and providing strong leadership in this area. Using this strategic framework, we have developed an action plan which will be reviewed and updated regularly to maximise impact.

In the University of Oxford context, public engagement with research (PER) encompasses activities that engage members of the public with design, conduct and dissemination of research, whereas outreach involves widening access and participation through student recruitment.



Left: Prof Susie Speller at the CogX festival, O2 Arena 2024 (image credit: CogX)

Right: Audience with 3D glasses at a public lecture by Prof Siful Islam (image credit: S. Islam)

ENHANCING IMPACT

The aim of this pillar is to increase the impact of our research through effective public, business and policy engagement.

Our main objectives are:

- a. Showcasing the department's research to the public.
- b. Understanding the current level of PER activity in the department and develop a system for maintaining an up-to-date record.
- c. Establishing and attracting funding for undertaking new PER initiatives and sustaining existing PER activities, and generating case studies (e.g. for REF) from these activities.
- d. Supporting research groups to develop links with public stakeholders relevant to their research portfolios.
- e. Increasing the level and effectiveness of policy engagement undertaken by members of the department.

Key strategies for enhancing impact are:

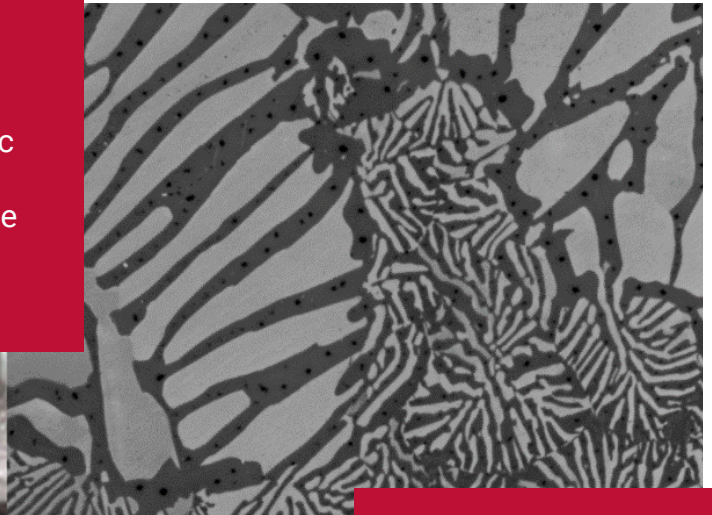
- Tapping into existing initiatives in the University (e.g. the annual Meeting Minds Alumni programme), Colleges and Institutes we collaborate with (e.g. Harwell Campus Open Day, Royce/Faraday events).
- Generating off-the-shelf resources for research groups to use at public exhibitions and festivals.
- Holding termly "idea jams" to come up with new initiatives, create a shared list of ideas and catalyse teams to develop the most promising ideas.
- Improving the outwards-facing aspects of the departmental website to showcase our research activities.

CyberSEM

Operate a Scanning Electron Microscope (SEM) from anywhere using our remote access CyberSEM. Explore the microscopic structure of a variety of materials, from seashells to superconductors. With a simple interface, kids can experience the power of the SEM from their own classrooms!



SEM image of spruce wood used to make violins (image credit: S. Speller and A. Heaver)



SEM image of phase separation in a Zr-Hf-V-Ti-Ta alloy (image credit: S. Speller)

CONTRIBUTING TO THE COMMUNITY

The aim of the community pillar is to enhance the life of the region by engaging local communities with Oxford Materials research.

Our main objectives are:

- Stimulating interest, enjoyment and learning in STEM.
- Increasing the diversity of the public engaging with the department.
- Encouraging discussion and participation in STEM to develop science capital within the region.

d. Helping to strengthen young people's interest in STEM subjects outside the school environment.

Our key initiatives for connecting with the local community include:

- Building relationships with diverse local community groups.
- Instigating an annual family-friendly department open day.
- Showcasing our research at local events organised by the University, such as "Night at the Museum".

Superconductors Inc!

A new immersive, hands-on event game set in the world of the superconductor industry. Teams aim to find the path of least resistance to be the most successful start-up, with the team who have the most money at the end deemed the winner! The game involves buying raw materials, processing them into products, and selling them at a profit. It culminates in the assembly of the superconducting magnets for a tokamak fusion reactor!

Designed for entire year groups of key stage 3 pupils, the game engages and inspires groups that are under-represented in STEM, showing them that science and engineering can be fun, showcasing engineering industry careers and raising aspirations to study STEM subjects to a higher level. Bitesize nuggets of educational information are fed to the participants during the game.



Pilot of Superconductors Inc! at Wychwood School.

Image credit: Wychwood School



Making Materials Matter

Making Materials Matter (MMM) is an outreach programme which aims to inspire the next generation of materials scientists and engineers through early and sustained engagement. The core programme focuses on Year 8 (Y8) students and is centred on independent research projects completed over a period of 2-6 months with guidance and support from student ambassadors from Oxford Materials and our university partners.

MMM was launched in 2017 and ran as a joint venture between Oxford and Cambridge Materials departments, with much appreciated support from The Worshipful Company of Ironmongers. Since its launch, the programme expanded yearly to include 10 schools from London and Sheffield, 4 partner universities (Cambridge, Imperial College, Sheffield, & Oxford), a teachers' conference, and a follow-on programme for MMM students when they are in Y9 and Y10.

Following a break imposed by the pandemic, the programme has been relaunched in 2025.



Image credit:
Nicholas Joinson

WIDENING PARTICIPATION IN STEM

The long-term aim of this pillar is to increase diversity within STEM careers, using exciting Materials research and how it can advance technology and solve key societal challenges to improve children's attitudes towards STEM subjects and aspirations to study and work in STEM.

Our objectives include:

- Stimulating interest, enjoyment and learning in STEM subjects, particularly Materials.
- Helping primary and secondary school pupils to better understand topics covered in the STEM curriculum.
- Communicating to young people before they make GCSE and A-level choices that STEM is for everyone, STEM is exciting, relevant and important, and studying STEM subjects broadens career options.

We will work with college outreach teams to provide a suite of activities and opportunities for sustained contact with pupils from target schools to maximise impact. Our focus will be on early intervention, targeting primary and

key stage 3 (11-14 year old) pupils because research has shown that interest in STEM amongst under-represented groups starts to decline by the end of primary school (e.g. Aspires project). Examples of activities that we will be promoting in the short-term include:

- Revitalising and expanding the "Making Materials Matter" programme for Year 8 students.
- Developing a toolkit to help research groups design new hands-on workshops for primary, key stage 3 (KS3) pupils and teacher CPD.
- Revitalising the "CyberSEM" for remote accessing a SEM in the department from schools and producing supporting resources.
- Increasing our interactions with initial teacher training programmes (e.g. Primary Ed course at Brookes).
- Rolling out "Superconductors Inc", a new KS3 event game, to priority schools and developing a model for sustaining the programme.

Northwest Science Network

The North West Science Network is a partnership between Corpus Christi College, Cheshire Colleges South and West (Crewe), Xaverian College (central Manchester), and Blackburn College (Lancashire). This outreach activity aims to engage Year 12 students from the North West with research-level science and scientists, and is designed to further equip them to make informed choices in relation to higher education, and to support them in their application and entry into university. Events take place across the year both locally in the northwest of England and in Oxford including with Oxford Materials which strongly supports the Network. Activities include lectures, laboratory visits, skills enhancing workshops and residential schools.



Impact testing of chocolate bars

IMPROVING ACCESS

Our aim is to increase applications and offers to our undergraduate Materials Science degree programme from talented students from disadvantaged backgrounds and under-represented groups by:

- Raising awareness of application requirements and details of our undergraduate course.
- Increasing interest in pursuing Materials at Oxford.
- Increasing visibility of diverse role models in the department to enable prospective students to be able to “see” themselves at Oxford.
- Developing problem-solving skills and increase confidence to help students succeed in the admissions process and once they arrive in Oxford.
- Promoting the Astophoria Foundation Year Programme and the Opportunity Oxford scheme to increase offers to access candidates.

Key strategies will involve:

- Working in line with the University of Oxford’s Access and Participation Plan.
- Collaborating with access staff from across the University and Colleges to deliver high-quality large-scale events and projects (e.g. contributing to St Catherine’s/Mansfield/St Anne’s Women and Non-Binary event programme). Key strategies involve:
 - Running events targeting access groups (e.g. UNIQ summer school) and prioritising places at events for students and teachers from target access audiences.
 - Providing additional support for access target schools and groups to enable them to engage in departmental activities such as our Youth Summit (see below).

ATTRACTING APPLICANTS FROM UK SCHOOLS

Although the total number of applicants to the Materials undergraduate degree programme has increased considerably in recent years, the number of applicants from UK schools has remained fairly steady in recent years. In this pillar we will target KS3, KS4 (GCSE) and KS5 (A-level) students studying at UK schools, and their teachers.

Our main objectives are:

- a. Raising awareness in UK schools of Materials Science as a subject, and the application requirements for studying our undergraduate programme.
- b. Increasing interest and appetite among UK school pupils for studying Materials at Oxford.

c. Increasing the number of applications to our undergraduate degree programme from pupils attending UK schools.

To achieve these goals, we will employ a range of strategies, including:

- Raising awareness among teachers and pupils of where Materials features in school STEM curricular.
- Holding events and activities open to all UK school students/teachers (not just those from access target schools).
- Instigating an annual Materials Youth Summit in hybrid format to reach schools across the UK.



Residentials and open days

Throughout the year, the Department of Materials hosts residential courses for UK school pupils and runs several open days with lectures, hands-on activities and lab tours



Image credit:
Helena Cotterill

SUPPORT

Underpinning all of the pillars of this strategic plan is providing effective support and training for researchers at all levels in the department and rewarding good practice.

Specific objectives include:

- Raising awareness of the value of PER and outreach at all levels within the department and embedding PER into the departmental research culture.
- Developing confidence and skills in preparing, delivering and evaluating high-quality PER and outreach for a wide variety of audiences.
- Increasing the number of researchers who undertake PER that inspires, consults and collaborates with the public.
- Improving the quality, impact and evaluation of PER undertaken by researchers in the department.

Strategies for delivering our objectives include:

- Developing a bespoke training module (hosted on Canvas) for graduate students and allowing public engagement training that will count as part of a portfolio for DPhil students' "Transfer of Status".
- Providing networks, events and platforms to provide opportunities and reduce barriers for undertaking PER and outreach activities.
- Providing high quality training that complements the University and Division's existing provision.

Tensile testing workshop

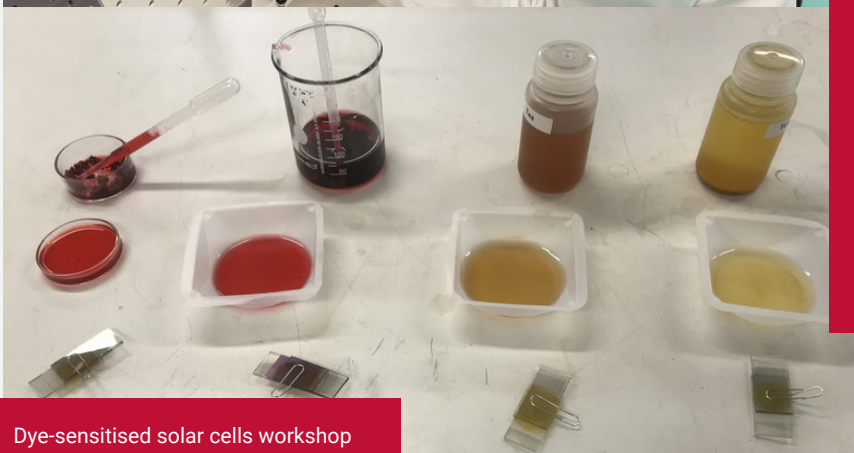


Hands-on workshops

We have developed a range of workshops for groups of 20-30 students. We train student ambassadors to facilitate these workshops.

- Tensile testing (Y10-Y12)
- Materials under the microscope (Y10-Y12)
- Solar cells (Y10-Y12)
- An electrifying experience (Y10-Y12)
- Investigating chocolate (Y7-Y10)
- The science of slime (Y5-Y9)
- Egg drop challenge (Y5+)

Dye-sensitised solar cells workshop



USEFUL LINKS

University of Oxford Public and Community Engagement with Research Strategy (2025)

<https://www.ox.ac.uk/research/using-research-engage/public-engagement/strategy>

Mathematical and Physical and Life Science Division Public Engagement with Research website

<https://www.mpls.ox.ac.uk/public-engagement>

Oxford Materials Department Outreach website

<https://www.materials.ox.ac.uk/admissions/schools/schools-outreach-events.html>

University of Oxford Access and Participation Plan

<https://academic.admin.ox.ac.uk/app>

Noth West Science Network

<https://www.ccc.ox.ac.uk/north-west-science-network>

Aspires Research Project

<https://www.ucl.ac.uk/ioe/departments-and-centres/education-practice-and-society/research/aspires-research>



OXFORD MATERIALS OUTREACH

Scan the QR code to find out more about our outreach activities and opportunities.



Contact us

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www.materials.ox.ac.uk