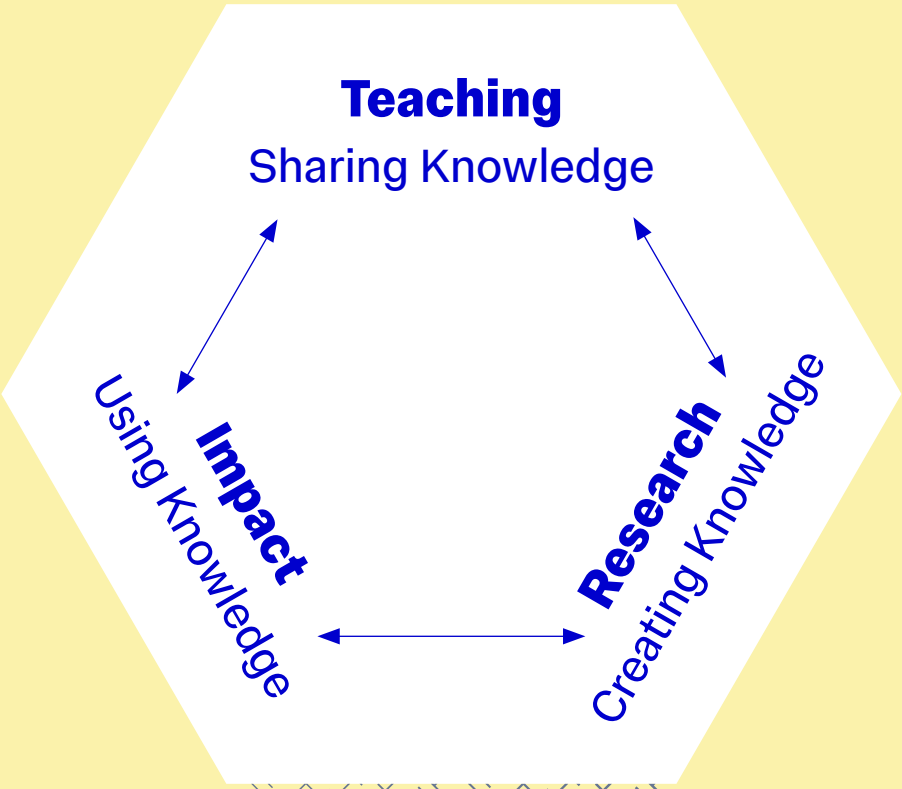
IMPERIAL

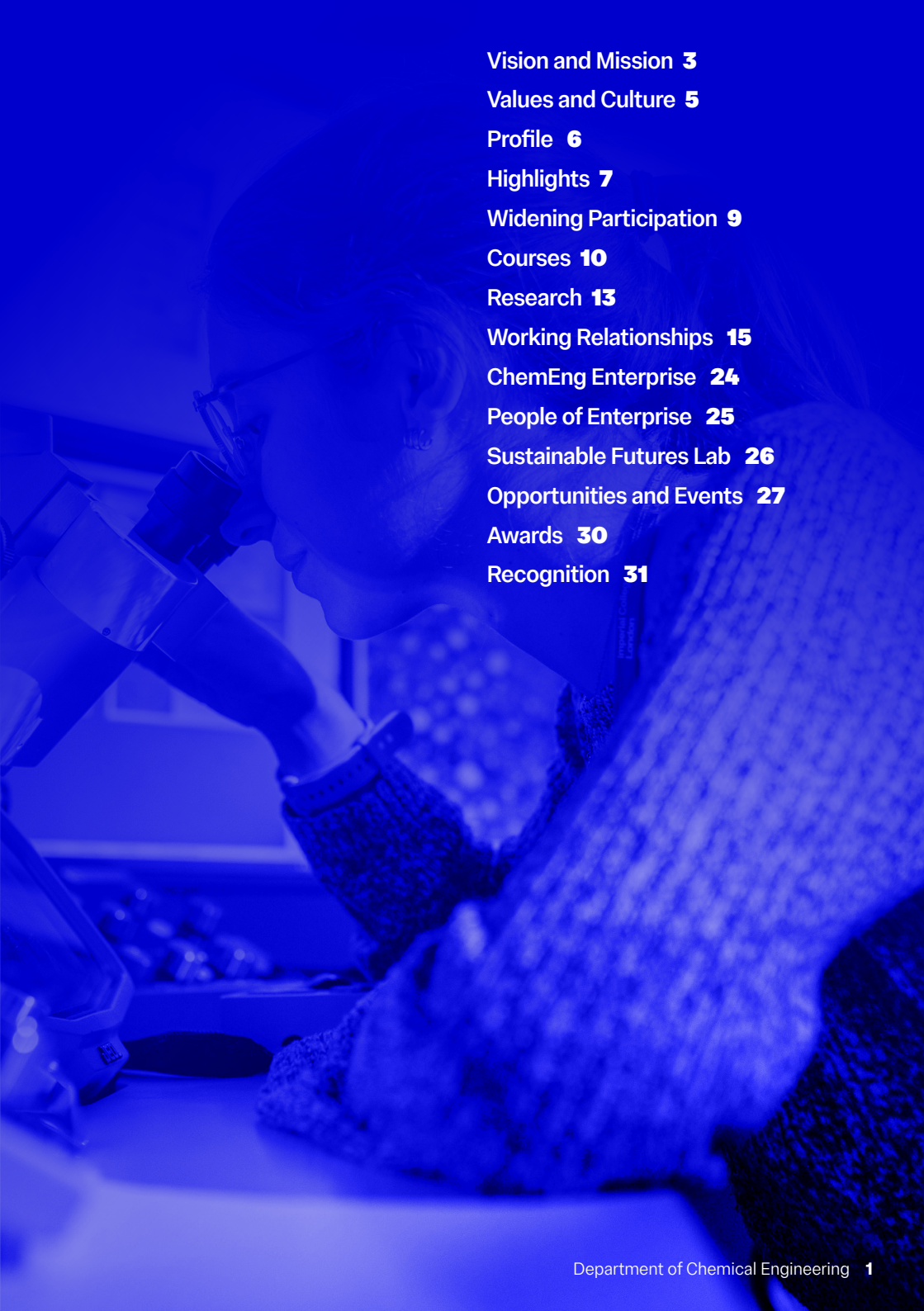
Department of Chemical Engineering

Shaping the future

Imperial College London

imperial.ac.uk/chemical-engineering


Teaching
Sharing Knowledge
Research
Creating Knowledge
Impact
Using Knowledge



Our mission is to deliver world-leading research, education, enterprise, leadership and inspiration in chemical engineering, locally, nationally and globally.

Vision and Mission

Our vision is to be recognised as leading the global chemical engineering community, through excellence in teaching and research, leadership, inspiration, and transformational societal impact.

We aim to have and to nurture:

- Exceptional students
- Exceptional staff
- Exceptional research
- Exceptional teaching
- Exceptional educational and social environment

Athena Swan Silver Award

GENDER CHARTER

The Department of Chemical Engineering were successful in renewing our Athena SWAN Silver Award. The Award reflects our recognition of Equality, Diversity, and Inclusion as fundamental values of our organisational culture.

Find out more

Statement by Professor Omar Matar, Head of Department: tinyurl.com/AthenaSWANStatement

Our departmental values guide our behaviour and underpin everything we do, making us the unique, diverse and thriving environment we are.

Values and Culture

We strongly value the dedication of our staff and student community in working together to fulfil our mission. We are committed to developing a safe environment of wellbeing and productivity within which departmental members develop personally and professionally.

Our Values

Decided collectively by members of the department, are:

Collaboration

Excellence

Respect

Innovation

Integrity

Profile

DEPARTMENTAL PROFILE

ANNUAL RESEARCH INCOME
£20m

621
UNDERGRADUATES

125
TAUGHT POSTGRADUATES (MSc)

120
POSTDOCTORAL RESEARCHERS

283
RESEARCH POSTGRADUATES (PhD)

Highlights

The future of sustainable engineering

We were delighted to receive a £1 million grant from the Wolfson Foundation to help establish the Sustainable Futures Lab (SFL), a pioneering research facility dedicated to tackling climate change and accelerating the transition to net zero.

The state-of-the-art lab will bring together researchers across disciplines to develop sustainable solutions spanning chemicals, energy and environmental technologies.

Designed with sustainability at its core, the facility will become the first UK academic engineering research space enabling truly sustainable research practices.

The initiative reinforces Imperial's commitment to delivering global impact through innovation, collaboration and science for humanity.

Advancing entrepreneurial growth

ChemEng Enterprise continues to lead the charge towards commercialising research.

The unique decentralised Enterprise support programme offered by the department is one of the most successful at Imperial – and is growing at rapid pace.

The annual ChemEng Enterprise Day 2026, attended by 135 invited participants, highlighted the department's dynamic entrepreneurial culture, featuring several early stage spinouts, presentations from investors and updates from recent and upcoming ventures.

The scheme includes early scouting, a pre-seed funding scheme, extensive advice and mentoring, support of interactions with Imperial, external accelerators and funders, and "how-to" workshops to support the entrepreneurial journey.

Highlights

Fostering sustainability

We are driving a bold transformation in sustainable engineering, reimagining how research, teaching and laboratories can support a net zero future.

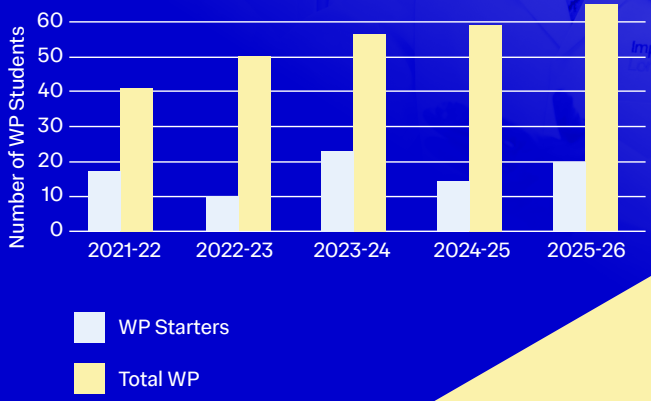
Since 2025, the Department has accelerated investment in cutting-edge sustainability initiatives, with sustainability being embedded across student education and laboratory practice, and our undergraduate teaching laboratories achieving Green Level certification from My Green Lab and the much coveted LEAF Gold Award.

Building on this momentum, the Department has launched an internal drive to achieve sustainability certification across all laboratories by 2027, reinforcing its commitment to sector-leading environmentally responsible research and teaching practices.

LEAF
The Laboratory Efficiency Assessment Framework

Widening Participation (WP)

We have a number of scholarships across the Department of Chemical Engineering and Imperial, to ensure we are enabling education for all, not just a few.



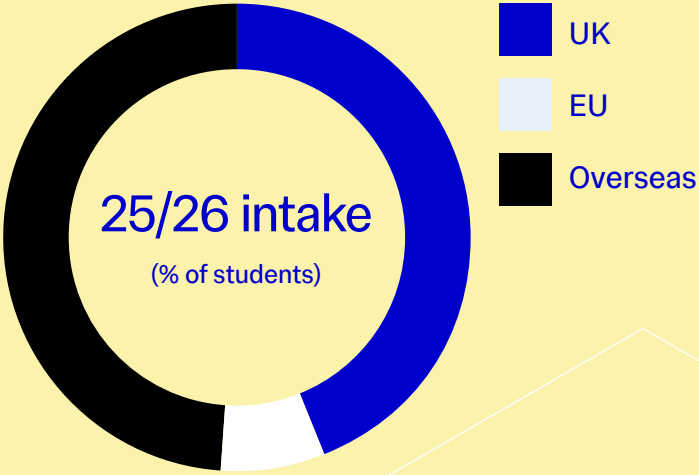
"The funding is incredibly generous and has helped ease the financial burden on my parents and enabled me to accept an internship offer in Turkey."

ESHA LANGI
FORMER DEPARTMENT OF CHEMICAL ENGINEERING STUDENT

UNDERGRADUATE

Undergraduate courses

MEng Chemical Engineering
MEng Chemical Engineering with a year abroad



43 Female | 57 Male

"Our undergraduate programme is built on world-leading research, hands-on experience, and a strong sense of community – equipping students with the skills and confidence to lead in a changing, dynamic and evolving world".

PROFESSOR JERRY HENG
DIRECTOR OF UNDERGRADUATE STUDIES

Our UG provision

qrco.de/ChemEngUG

POSTGRADUATE

MSc courses

Advanced Chemical Engineering

Advanced Chemical Engineering with Biotechnology

Find out more

Find out more: www.imperial.ac.uk/chemical-engineering/courses/postgraduate/msc/

NEW MSC COURSE

Machine Learning and Process Systems Engineering

Recently introduced in 24/25, this programme is designed to equip the next generation of engineers and scientists with advanced coding and mathematical skills.

283
PhD students

105
Female

178
Male

95
Home

176
Overseas

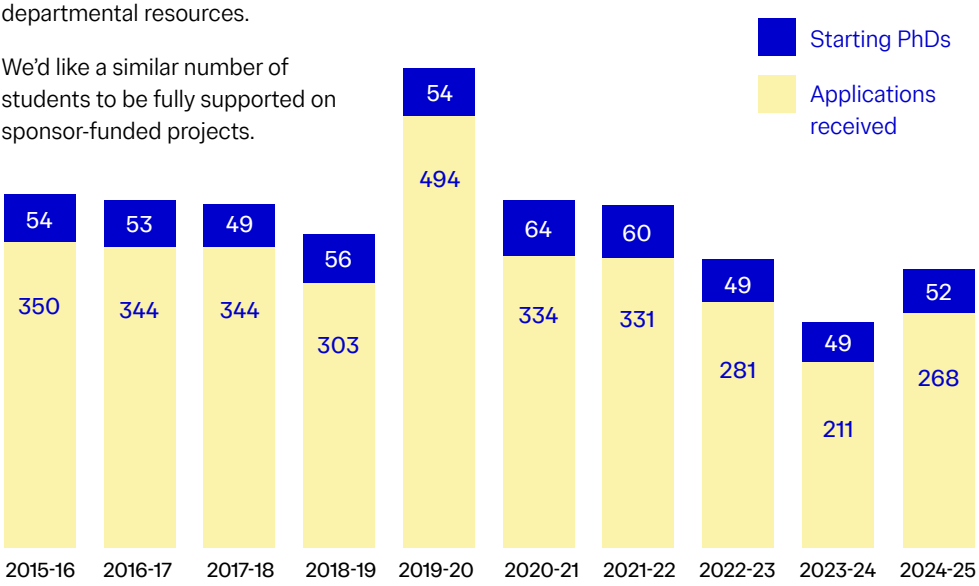
12
EU

PhD programme

We want to be able to take the best students to study, irrespective of their ability to pay.

Our objective is to be able to fully fund over 25% of chemical engineering students from departmental resources.

We'd like a similar number of students to be fully supported on sponsor-funded projects.



Research

"Chemical engineering is central to tackling the world's most pressing challenges – from decarbonising industry to transforming healthcare and developing sustainable materials. At Imperial's Department of Chemical Engineering, research is not just about discovery; it's about making a difference to society, industry and the planet."

PROFESSOR CAMILLE PETIT
DIRECTOR OF RESEARCH, CHEMICAL ENGINEERING

RESEARCH THEMES

Biomedical engineering and industrial biotechnology Engineering biological and biomedical systems to improve the human health, and the world around us.

Energy and environmental engineering Delivering materials, methods, processes and technologies in support of a sustainable future.

Materials Making materials matter: understanding the behaviour of materials for optimising technological processes and product applications.

Multiphase transport processes Creating the next generation of multi-scale modelling tools and measurement techniques for complex multiphase flows.

Multi-scale computational chemical engineering Computational and systems approaches for the analysis, design and optimisation of chemical, physical and biological processes across length and time scales.

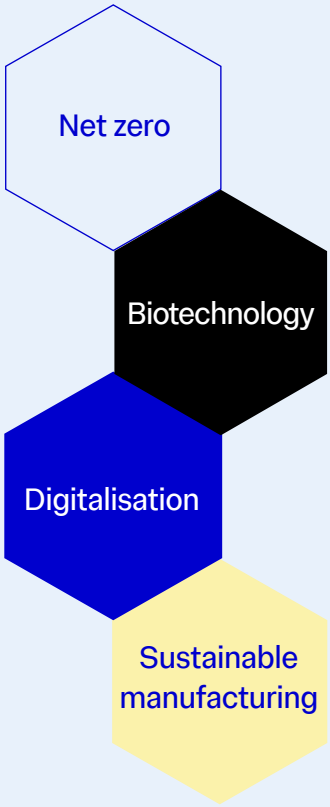
Separations Developing energy efficient separations across a range of industrial applications.

Reaction engineering and applied catalysis Developing novel, clean and efficient chemical processes while minimising negative impacts on the world and its resources.

Multi-scale computational thermodynamics and molecular systems Quantative prediction of the thermophysical properties and phase behaviour of matter to provide insight into its behaviour.

Soft matter engineering Designing, synthesising, assembling, characterising and modelling soft materials for applications ranging from healthcare to energy.

Priority areas



Working Relationships

We welcome and enjoy our relationships with partners including:

- Postgraduate (MSc and PhD) programmes
- Strategic leveraged research projects
- Fellowships and Professorships
- Visitors and staff exchanges
- Recruitment/development for our graduates

CASE STUDY

Beyond the cold chain

Professor Rongjun Chen is leading pioneering research at Imperial College London in collaboration with GSK to address one of the biggest barriers to global vaccine access: cold-chain storage. Building on a successful first phase, their partnership now focuses on advancing in vivo testing of GSK's mRNA vaccines to develop thermostable nanoparticle formulations that remain effective at room and even tropical temperatures, eliminating the need for freezing or ultra-cold chain storage.

Prof Chen's team has engineered virus-inspired lipid nanoparticles that protect and deliver mRNA while maintaining long-term stability even in liquid form. These formulations can enhance delivery efficiency and substantially reduce the required RNA dose. They can retain potency at temperatures up to 40°C, enabling vaccines to be transported and stored in regions where refrigeration infrastructure is limited or unreliable.

The impact of this work is significant. Cold-chain logistics can represent a substantial share of vaccine delivery

Continued...

costs, often between 20% and 60%, and even higher in remote or resource-limited settings. By eliminating this requirement, the collaborative research has the potential to expand global vaccine accessibility and equity.

This case highlights how academia–industry collaboration can translate cutting-edge biomaterials research into scalable healthcare solutions, accelerating the delivery of life-saving RNA-based vaccines and therapeutics worldwide.

CASE STUDY

Powering the future with sustainable batteries

Professor Magda Titirici is a leading researcher in next-generation battery technologies, advancing sustainable, low-cost energy storage through Imperial College London and the Faraday Institution.

Her work focuses on sodium-ion batteries as a scalable alternative to lithium-ion systems, using abundant and geographically accessible materials to strengthen energy security and support the transition to net zero.

A defining feature of her research is translating sustainable battery materials from the laboratory into industrial reality. Through Faraday-funded programmes and the Industrial Sprint project, Professor Titirici leads the development of scalable, low-energy manufacturing routes that transform agricultural waste biomass into high-performance carbon anodes, helping to close the materials loop.

Her interdisciplinary collaborations with Council for Scientific and Industrial Research, Coventry University, industry partners such as VARTA, and biomass suppliers including Westfalia Fruit are accelerating the design, testing and industrial validation of novel battery materials for real-world deployment.

Professor Magda Titirici pictured with her research group

CASE STUDY

InFUSE: A Prosperity Partnership for the energy transition

In 2021, Imperial College London, Shell and Diamond Light Source launched a 5-year EPSRC-funded programme on materials and processes for the energy transition.

The EPSRC Prosperity Partnership, known as InFUSE, examines how technologies like batteries, electric vehicles, chemical production, and carbon capture and storage (CCS) can be improved by understanding interfaces in these systems, enhancing sustainability and enabling a transition to a green economy.

At Imperial, the programme is co-led by Professor Mary Ryan (Materials), Professor Daniele Dini (Mechanical Engineering) and Professor Ronny Pini (Chemical Engineering). The scientific aim of the programme is to deliver a step change in understanding how materials interfaces form, evolve and degrade under real operating conditions by developing new operando and correlative characterisation approaches across length and time scales.

The InFUSE group

By designing bespoke experimental environments and fusing data with multiscale modelling, InFUSE enables unprecedented insight into solid–liquid interfaces. The ambition is to transform the capacity to design and, eventually, control these interfaces – enabling rapid improvement in materials to be more sustainable, durable and safer – from rechargeable batteries to catalysts for chemical production, and to sorbents for carbon capture.

CASE STUDY

NAPIC

The National Alternative Protein Centre (NAPIC) is a dynamic hub of innovation, uniting academia, industry, and the third sector to advance the field of alternative proteins. NAPIC is an Innovation Knowledge Centre funded by BBSRC, Innovate UK, national and international partners including academia, industry, regulators, and third sector.

NAPIC addresses the unmet scientific, commercial, technical, and regulatory needs of the alternative protein sector. The Centre is structured around four interdisciplinary knowledge pillars—PRODUCE, PROCESS, PERFORM, and PEOPLE—each focusing on different aspects of the alternative protein supply chain.

Professor Karen Polizzi from the Department of Chemical Engineering plays a pivotal role in NAPIC, serving as Co-Director of the 'PROCESS' Pillar. Her expertise in precision fermentation and cultivated meat is instrumental in driving forward NAPIC's mission to scale up alternative protein production methods.

Imperial's contribution is further strengthened by colleagues serving as 'Champions' within NAPIC's mission:

- Professor Jerry Heng | Future Leaders Champion
- Professor Jason Hallett | Industrial Advisory Board Champion
- Dr Maria Papathanasiou | Sustainability Champion
- Dr Francesca Ceroni | Equality, Diversity, and Inclusion Champion

CASE STUDY

BEZOS CENTRE

The Bezos Centre for Sustainable Protein at Imperial College London is a pioneering research initiative established with a $30 million grant from the Bezos Earth Fund. Its mission is to transform global food systems by developing sustainable, nutritious and affordable protein alternatives.

The Centre focuses on advanced technologies such as precision fermentation, cultivated meat, bioprocessing, automation, nutrition, and artificial intelligence. Recently, Imperial celebrated the lab opening for Bezos Centre for Sustainable Protein. The Centre is the European hub for the Bezos Earth Fund's Future of Food programme, and represents a significant development for the sustainable protein field, bringing together leading researchers, industry partners, investors, and policymakers under one roof.

The Department of Chemical Engineering's Professor Karen Polizzi serves as the Vice Director of the Bezos Centre. In this role, she contributes to the Centre's overarching goal of advancing sustainable protein research and innovation.

Through this, and NAPIC's critical leadership positions, Professor Polizzi plays a crucial role in driving interdisciplinary research and fostering collaborations aimed at creating viable alternatives to traditional animal-based proteins.

INDUSTRY, FUNDERS, COLLABORATORS


UKRI
Engineering and
Physical Sciences
Research Council


cytiva


cpi


CHEMSPEED


NEOBE
THERAPEUTICS

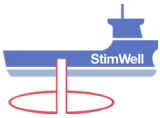

ROLLS
ROYCE


MITSUBISHI
CHEMICAL
GROUP


SIEMENS


Met Office


Heart
Research
UK


StimWell


Department
of Health &
Social Care


Schmidt Sciences


DARPA


first light


BRITISH
COUNCIL


Rosetrees
Supports the best medical research


The Wolfson
Foundation


UKRI
Medical
Research
Council


GATSBY


UKRI
Economic
and Social
Research Council


BUCHEM BV®


altilium
clean technology


SOLARFLOW


Royal Brompton and
Harefield hospitals

DIGIBAT

DIGIBAT is a £1.6 million EPSRC funded project to accelerate alternative fuel and batteries research.

The aim is to accelerate the discovery and development of novel sustainable batteries and electrodes for sustainable e-fuels. Led by Professor Magda Titirici, with the lab managed by Dr Jingyu Feng, DIGIBAT is a cross-college collaboration between Imperial, industrial partners, and national and international higher education institutions.

By bridging the gap between materials discovery, electrochemical testing, and device fabrication, DIGIBAT significantly enhances our knowledge and progress in energy materials and devices. This will enable us to provide a clear pathway to developing the sustainable and high-efficiency batteries of the future.

ATLAS

ATLAS is a knowledge-driven automated high-throughput synthesis and analysis suite, which utilises high-throughput workflows and data driven experimental design to unlock and access vast materials design space.

A unique facility for the research community, ATLAS provides researchers from academia and industry with the tools and expertise to address global challenges, and boost innovation and productivity for the development of energy materials, sustainable polymers and new medicines.

This EPSRC funded facility is led by Professor Camille Petit and managed by Dr Lana Lee.

Virtual tour

Virtual tour of the lab: tinyurl.com/ATLASVirtualTour

CARBON CAPTURE PILOT PLANT

Our Carbon Capture Pilot Plant is a unique, dynamic and one of the most advanced educational facilities of its kind.

Designed to mimic the operations of a real industrial plant, it allows students to gain hands-on experience with carbon capture processes in a controlled, yet fully functional setting. The scale and complexity of the plant provides a rare opportunity for students to engage directly with cutting-edge chemical engineering technology.

The Plant is embedded with an advanced digital control system, giving students access to industry-standard automation tools. Combined with ongoing research and public engagement efforts, the facility plays a key role in demonstrating our commitment to tackling climate change while also serving as a model for how engineering education can adapt to the demands of a low-carbon future.

The Carbon Capture Pilot Plant is sponsored by our long-standing partners, ABB, a global technology leader in electrification and automation.

ChemEng Enterprise

Tackling global challenges a spinout at a time

We have developed a thriving and successful Enterprise culture within the Department of Chemical Engineering.

Our mission is to help build access to the best resources, talent and expertise to support student and staff entrepreneurship, and we have a wonderful history of spinouts emanating from the department.

In the past two years alone, ChemEng Enterprise has launched a new website, a Spinout Workshop series, 6 deep-tech spinouts, and generated a pipeline of a dozen high quality spinouts at various stages.

www.imperial.ac.uk/chemical-engineering/enterprise/

25/26 highlights

ChemEng Enterprise

ChemEng Enterprise named finalist at IChemE Global Awards 2025.

Nanomox

Nanomox raises £2.4m to scale sustainable ionic liquid platform for advanced materials and critical minerals.

SOLVE Chemistry

London-based SOLVE Chemistry secures £4m to modernise chemical production.

Brilliant Dyes

From lab to global stage: Brilliant Dyes win global award.

DyeRecycle

STEM meets style: Imperial spinout showcased in leading fashion publication.

Orthogonal Peptides

New Imperial spinout developing breakthrough drugs for world diseases.

People of Enterprise

Meet some of our ChemEng Enterprise leaders

Professor Sandro Macchietto

Dr Apanpreet Kaur

Dr Aida Rafat

Md Tabish Noori, Redwan Rahman

www.imperial.ac.uk/chemical-engineering/enterprise/people-of-enterprise/

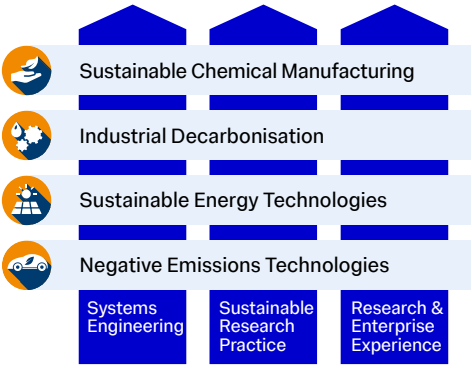
Sustainable Futures Lab

Vision

We will soon be launching world-class facilities to undertake research in the field of transition to zero pollution, one of Imperial's strategic initiatives. We are entering a golden age of chemical engineering, and the Sustainable Futures Lab (SFL) will help us achieve our ambitions to eradicate pollution, prioritising interdisciplinary, globally collaborative research and innovation, and setting the standard for the sustainable research of the future. As of June 2026, Imperial officially approved the construction of the SFL. Find out more about this exciting development, including project timeline.

Unique space

This space will be a 500 m^2 sustainably constructed and operated research space in the Department of Chemical Engineering at Imperial's South Kensington Campus. It will host state-of-the-art experimental equipment arranged in a modular and flexible fashion to answer mission-oriented questions related to sustainability. The facilities will go from synthesis reactors to high-throughput manufacturing platforms and pilot scale testing rigs. Adjacent networking spaces will create a collaborative, flexible set up designed to complement and propel research activities and act as a blueprint for the sustainability research facilities of the twenty-first century. The space will house experts working at the forefront of cutting-edge research around 4 themes:



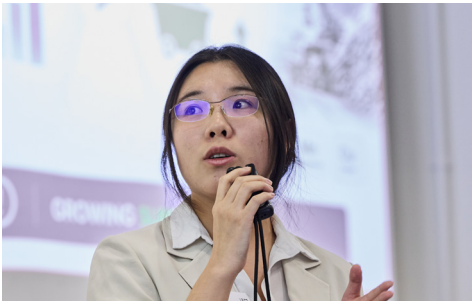
WATCH Find out more about our vision and motivation

qrco.de/ChemEngSFLVideo

UPDATE SFL news 2026

tinyurl.com/SFLupdate

Opportunities and Events



ChemEng Enterprise Day

ChemEng Enterprise Day is one of the department's stand-out events, bringing together pipeline starter-uppers with more seasoned spinouts emanating from Chemical Engineering. Hosted annually, highly anticipated and with a stellar line-up, we encourage our community to showcase their entrepreneurial flair, and our stakeholders and partners to engage with the opportunities they present. Interested in participating or attending ChemEng Enterprise Day 2027? Get in touch with Professor Sandro Macchietto, s.macchietto@imperial.ac.uk

Distinguished Seminar Series

Our Distinguished Seminar Series is an annual opportunity to host esteemed academics from around the world who are shaping the future of chemical engineering, the profession and its research agenda. Talks are published on our website each year and are open to academics, researchers and PhD students, with an option for external persons to join on request. www.imperial.ac.uk/chemical-engineering/news/ distinguished-seminar-series-2026/

ADDITIONAL OPPORTUNITIES AND EVENTS

Lister Prize Fellowship Lecture Dr Yuval Elani

23 June

Life, reimagined: Building a new biology from the ground up through synthetic cells

Presented by Dr Yuval Elani as part of the Lister Institute's Lister Research Fellowship prize, this talk will describe efforts to address a new approach to engineering biology.
www.imperial.ac.uk/events/210546/synthetic-cells-as-an-alternative-paradigm-for-biological-engineering/

London Protein Design Day

23 June 2026

A one-day symposium bringing together the protein design scientific community from London and beyond. Event is led by the Department of Chemical Engineering's Sormanni Lab.
www.imperial.ac.uk/events/209589/london-protein-design-day/

Optimisation Accelerator: Improving Decisions through Optimisation

7-10 September 2026

An intensive, hands-on course taught by leading optimisation experts from Imperial College London and University College London. The programme is designed for industry practitioners seeking practical optimisation skills with immediate real-world relevance, PhD students and postdoctoral researchers.
www.imperial.ac.uk/events/209871/optimisation-accelerator-improving-decisions-through-optimisation/

Thermodynamics Conference 2026

13-15 September 2026

Held biennially, this conference brings together researchers, industry professionals, and early-career scientists from across the globe to share advances, foster collaborations, and shape the future of thermodynamics. Conference chairs – J P Martin Trusler & Erich A Muller, Department of Chemical Engineering
www.imperial.ac.uk/events/201570/thermodynamics-conference-2026/

NAPIC Conference

14-15 October 2026

The NAPIC Conference aims to convene a diverse group of stakeholders, including industry leaders, innovators, researchers, investors, and policymakers, to explore and advance the latest developments in alternative protein innovation.
napic.ac.uk/napic-conference-2026/

AIChE 2026

8-12 November 2026
Minneapolis Convention Center, Minneapolis, MN

Team #ImperialChemEng will again be out in force for the annual AIChE 2026. We look forward to engaging with alumni, the broader chemical engineering community and prospective students.
www.aiche.org/conferences/aiche-annual-meeting/2026

Awards

Highlights

The Royal Society Yusuf Hamied Visiting Fellowship

Professor George Jackson

L'Oréal–UNESCO For Women in Science highly commended in the Engineering category

Dr Giulia Tarantino

IChemE Sharma Medal 2026

Professor Claire Adjiman

Ared Cezairliyan Best Paper Award 2025

Professor J. P. Martin Trusler and Dr Riley V. Latcham

BUPA everywoman in Technology AI Champion Award

Dr Nausheen Basha

The Royal Society Mullard Award 2025

Professor Jason Hallett

Recognition

- Recipients of the Athena SWAN Silver Award
- Conferred the LEAF Gold Award for sustainable lab practices
- Consistently ranked top ten across multiple world-recognised university rankings

2025/2026 league tables

QS World University Rankings for Chemical Engineering
Top 4

Complete University Guide
Top 3

The Times & Sunday Times
Top 3

News – a snapshot

ChemEng Enterprise Director named Enterprise Champion

Four IChemE Global Award nominations for Enterprise and Sustainability

Imperial alumnus wins EU Sustainable Energy Innovation Award 2025

Imperial and GSK extend collaboration to tackle global vaccine cold-chain limits

Imperial and BASF step up effort to turn breakthroughs into real-world solutions

https://tinyurl.com/ChemEngNews26

CONTACT US

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PhD studies: chem-eng-phd-admin@imperial.ac.uk

Social media

qrco.de/beN6BN

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