

IMPERIAL

FACULTY OF ENGINEERING

175 years
of discovery

Royal School of Mines
Department of Earth Science and Engineering
Department of Materials



From 1851 to today

Founded in 1851, the **Royal School of Mines** was the first school of its kind in the UK. Since then, it has shaped global expertise in mining, materials science and geoscience – advancing disciplines that have been instrumental in revolutionising industry and shaping modern society.

Royal School of Mines

1,450+ students

300+ staff

Today, this legacy continues through Imperial's **Department of Materials** and **Department of Earth Science and Engineering**, which are tackling the unprecedented challenges of our time through a convergence science approach – an integration of disciplines, convening of cross-sectoral partnerships and delivering of innovative research and teaching.

About the Department of Materials

Emerged as a degree in 1970 alongside Metallurgy, Materials now builds on core traditional strengths to deliver world-leading science and transformative engineering solutions to today's pressing challenges in energy, healthcare, security, transport, sustainability and future technologies.

Leading department for state-of-the-art shared research equipment

About the Department of Earth Science and Engineering

Since its establishment in 2001, the Department has excelled in pure science, applied science and engineering solutions across its major research areas: planetary science, energy, climate and environment, geohazards, raw materials, and life and health.

One of the world's only integrated Earth Science and Engineering departments





Solving the unprecedented challenges of the 21st century

The world is changing. There is an urgent need for clean energy sources and alternative materials to fuel health and prosperity for all. Research can accelerate solutions that benefit society – such as in healthcare, raw materials, transportation, energy and information systems – while ensuring we still operate responsibly and within our planetary boundaries.

The Royal School of Mines is at the forefront of realising this ambition:

- Since 2015, the **Department of Earth Science and Engineering** has transitioned its MSc courses from subjects centred on petroleum into novel computational courses with an emphasis on environmental sustainability and the energy transition. With a goal of gender equality across its computational MSc courses by 2030, the **Ada Lovelace Academy** is training

future scientists and engineers who will maximise the potential of artificial intelligence and data science.

- The **Department of Materials** is a founding partner of major cross-institutional centres with international reach, including the **London Centre for Nanotechnology**, driving nanoscience and nanotechnology for impact in healthcare, planetcare and IT; and the **Thomas Young Centre**, which advances theory and multiscale simulation of materials across length-scales.

Through a focus on more sustainable alternatives and integration of data and digital tools, research can support the increasing demands of population growth and climate change while safeguarding the wellbeing of Earth and its inhabitants.

Harnessing transformative research, cutting-edge innovations and world-class expertise, the Royal School of Mines is accelerating discoveries and solutions that protect our people and our planet.

Earth sciences for global health

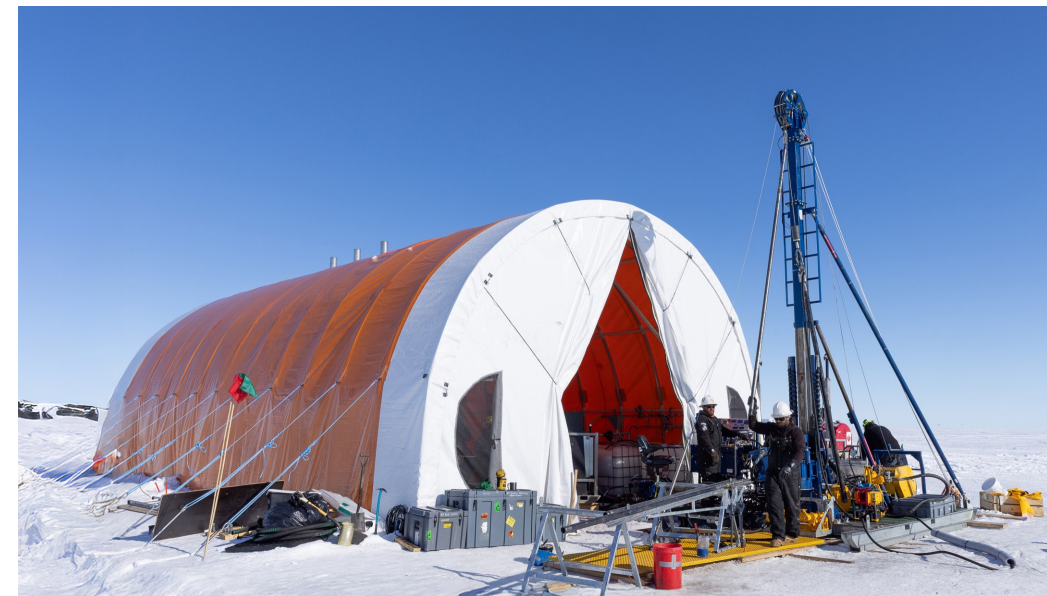
Using advanced seismic imaging techniques, ultrasound and electric fields and supercomputing, Imperial scientists are developing safe, affordable and precise medical devices for diagnosis and intervention. This work will help bridge global disparities in healthcare, particularly in remote and resource-limited regions.

Materials sciences for future transportation

Imperial researchers have developed a novel material to enhance battery performance in electric vehicles. In laboratory tests, these ‘smart’ electrodes demonstrated 30% more capacity and 50% lower degradation rates compared to conventional battery materials. This breakthrough could lead to electric vehicles with longer driving ranges and faster charging times.

Preparing for future sea level rise

Imperial researchers co-lead one of the largest and most impactful drilling campaigns in Antarctica. The SWAIS2C (Sensitivity of the West Antarctic Ice Sheet to Two Degrees Celsius) project studies how ice sheets respond to global warming. This initiative will provide data that help forecast and prepare for sea-level rise, informing global climate policy and resilience planning.



With your support, we can accelerate science that benefits society.

Significant progress has been made, but there is still much to be done – from revealing the history of life on other planets to realising the potential of new technologies to facilitate the low-carbon energy transition.

Your support can help address the challenges facing Earth and populations worldwide, from atoms to planets.

- Empower the next generation of scientists and engineers through **undergraduate and postgraduate scholarships**, particularly for those who have historically been underrepresented in science.
- **Fund leadership academic posts** and help recruit world-class experts who will drive timely research in energy and environmental science.
- **Support state-of-the-art research, teaching and learning facilities**, providing a platform for scientists and engineers from different disciplines to come together, collaborate and solve global challenges.



Ida Caspary (MSc Applied Computational Science & Engineering), recipient of the Ada Lovelace Academy Scholarship for Women (MSc and PhD), has launched her own research group dedicated to improving safety in AI: Imperial Mechanistic Interpretability. Ida leads weekly discussions and podcasts for Imperial researchers working in the field to come together, discuss, train and collaborate on novel ideas.

Thanks to the generosity of supporters, alumni and corporate partners, we have been able to nurture tomorrow's leaders and invest in priority research areas.

The **Rocky Fund** is the Department of Earth Science and Engineering's fund to provide bursaries and prizes, made possible thanks to a donation from an Imperial alumnus. It supports generations of students from all backgrounds to study geosciences at Imperial.

Scholarship gifts such as the Women in Mining Scholarships and Rio Tinto Scholarships have removed barriers for talented students, ultimately strengthening the knowledge and skills needed across science, business and society to adapt to our changing planet.

Philanthropy has been key to securing the academic leadership who are driving advancements in the field. This includes the **Armourers & Brasiers' Chair in Materials Science** which champions pioneering research and education to tackle the climate crisis. This professorship post was established through an endowed gift, ensuring a sustained research focus in this key area.

Thanks to philanthropic support, we have been able to **refurbish the Goldsmith Wing** at the South Kensington Campus, creating new teaching and learning facilities and lab spaces for the Department of Materials. This includes state-of-the-art nanoscale

characterisation suites that are providing continued scientific leadership and spurred recent expansion at White City with the **Royce Atoms-to-Devices labs**.

“Receiving my scholarship has been life-changing – it has motivated me to do my best in my studies and participate in extracurricular activities. In the future, I hope to give back by working in sustainable policy, helping people make greener choices by sharing the science around climate change and environment.”



Francesca Manyonyi, BEng Materials Science and Engineering, Beacon Scholar



Help shape the next 175 years

Accelerate breakthrough
science for a smarter, healthier
and more sustainable future

www.imperial.ac.uk/earth-science/
www.imperial.ac.uk/materials/
