

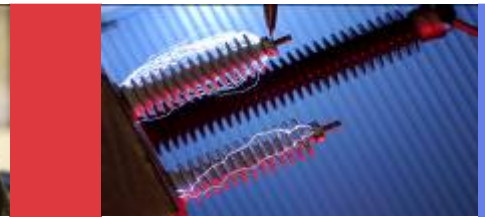
MANCHESTER
1824

The University
of Manchester

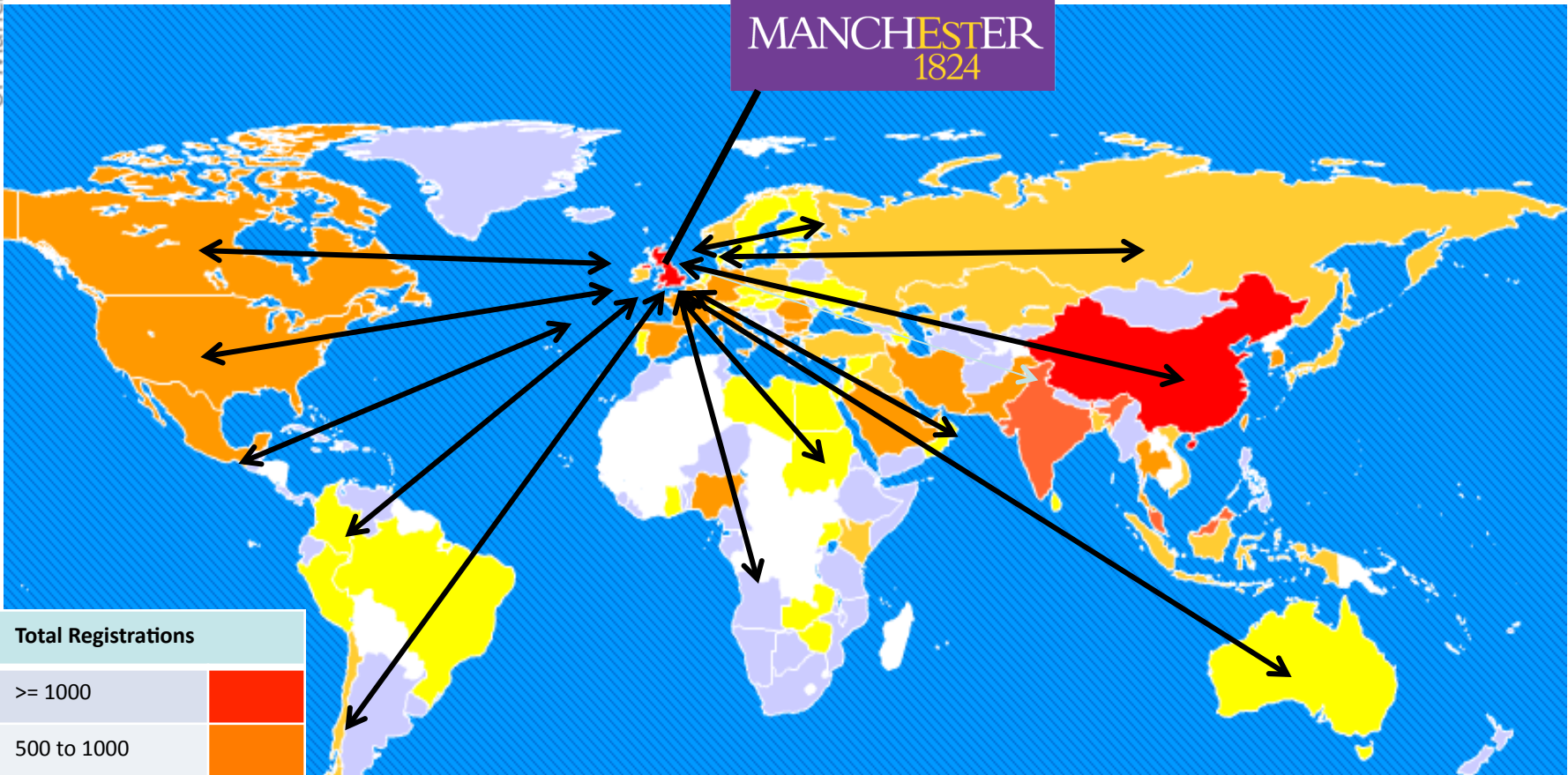


The University of Manchester

The Faculty of Engineering & Physical Sciences



MANCHESTER
1824



Total Registrations	
>= 1000	Red
500 to 1000	Orange
100 to 500	Light Orange
50 to 100	Yellow
10 to 50	Light Yellow
1 to 10	Light Purple
0	White

10,000 international students,
UK's largest alumni community – 400,000
graduates around the world

The University of Manchester

History and Achievements

- Historic merger in October 2004 brought together UMIST and the Victoria University of Manchester
- Associated with 25 Nobel prize winners
- Where Rutherford split the atom.
- First programmable computer was built.
- Birth place of the Reynolds Number
- In 1824 Manchester pioneered courses in Mechanical Engineering
- Where the principles of modern economics were formulated.
- Home to the SKA Project Office



Ernest Rutherford

- Largest university in the UK - 40,000 students
- 10,000 international students, > 5,000 UK students from poorest backgrounds
- More subjects than any other UK institution
- 10,500 staff, > 5,500 academic and research staff
- Turnover > £800m
- UK's largest alumni community – 400,000 graduates around the world
- Home to gallery, museum, Library and Jodrell Bank Observatory.
- Student intake grades up (A*A*A – Physics)
- Foundation year increased – with scholarships



Recent Achievements

- Nobel Prizes for graphene pioneers
- 351 disclosures pa, 28 spin outs and 100 inventions licensed in past 4 years
- Research alliances including BP, Tesco, GSK, EDF, Rolls-Royce, National Grid
- Queen's award for Enterprise, Queen's Anniversary Prize, Jubilee Regius Professorship
- 90% of graduates in employment or further study 6 months after graduating
- Strategic investment in >120 new, world leading scholars



Recent Awards and Successes

- BP International Centre for Advanced Materials £64m
- National Graphene Institute £61m
- HEFCE new cancer building £13m
- ESRC UK Data Service share of £17m
- Dalton Cumbria Facility £10m
- E-health £5m
- Nuclear Manufacturing £14m
- ERC two advanced ~£6m
- Corrosion Centre (BP & AkzoNobel) £5m
- ERC Synergy ~£5m
- ESRC Social Sciences funding ~£3m
- Multidisciplinary Characterisation Facility (MCF) £18m

Andre Geim and Konstantin Novoselov were awarded the 2010 Nobel Prize for Physics



25 Nobel prize winners associated with
The University of Manchester



National Graphene Institute: £61m
£38m grant from UK Government
£23m from European Union

BP-International Centre for Advanced Materials

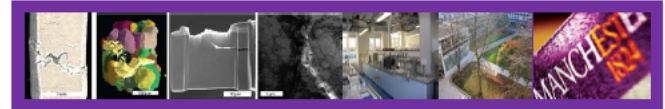
\$100m from BP to set up Hub in Manchester



ORIGINAL

BP – INTERNATIONAL CENTRE FOR ADVANCED MATERIALS (ICAM)

THE UNIVERSITY OF MANCHESTER'S
RESPONSE TO CONFIDENTIAL REQUEST FOR
PROPOSAL ("RFP"): HUB INSTITUTION SELECTION

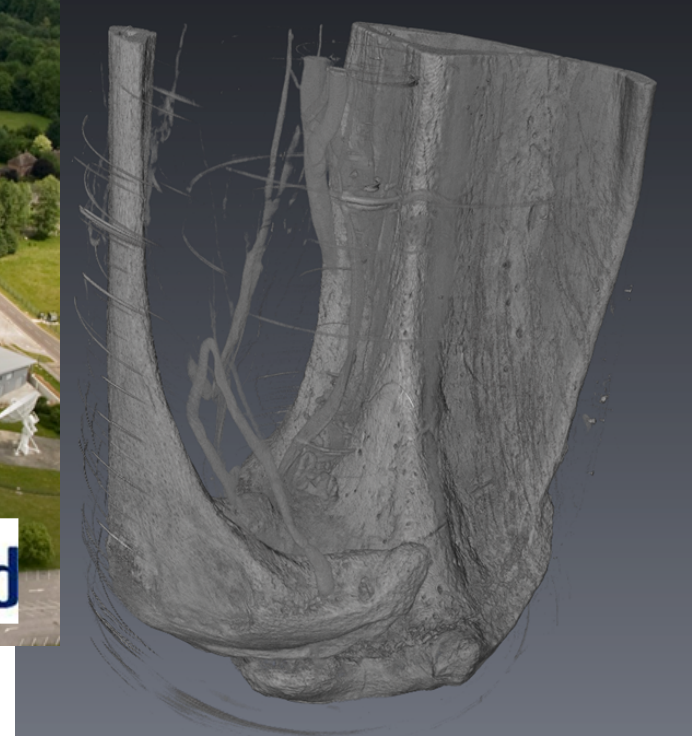
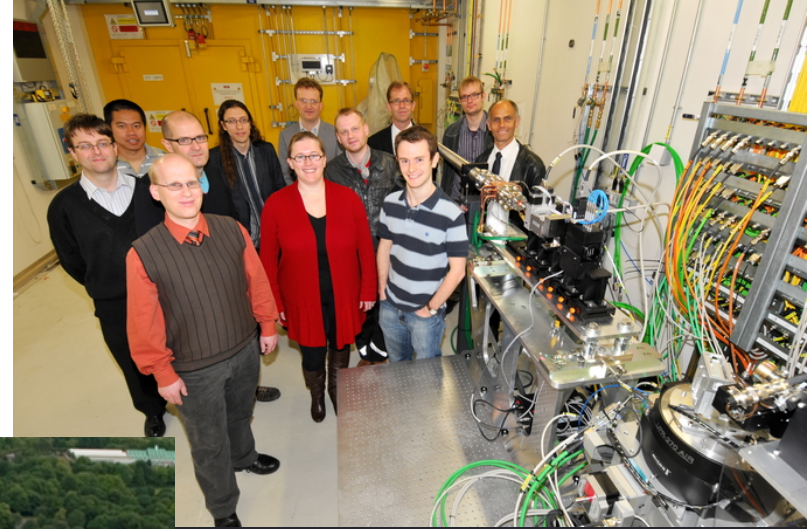


SIGNED: 

PROFESSOR COLIN BAILEY
VICE PRESIDENT AND DEAN OF FACULTY OF ENGINEERING AND PHYSICAL SCIENCES
THE UNIVERSITY OF MANCHESTER, OXFORD ROAD, MANCHESTER, M13 9PL

21ST DECEMBER 2011

Diamond-Manchester Collaboration & the Manchester X-ray Imaging Facility (MXIF)



Vascular cast showing blood vessels
around the knee joint of a mouse

Dalton Cumbrian Facility



Access to active facilities
Radiation science capability

Industry's 'partner' of choice

Links with over 300 companies

Some examples:

- Rolls-Royce
- National Grid
- EDF
- Waters
- BP
- Westinghouse
- HSE
- Solvay
- AkzoNobel
- Areva
- Siemens
- Electricity North West



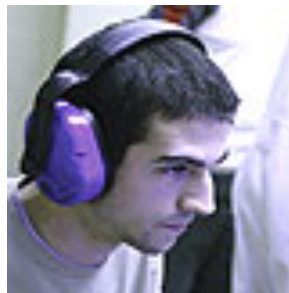
Manchester's Academic Structure

- Faculty of Engineering and Physical Sciences
- Faculty of Medical and Human Sciences
- Faculty of Life Sciences
- Faculty of Humanities

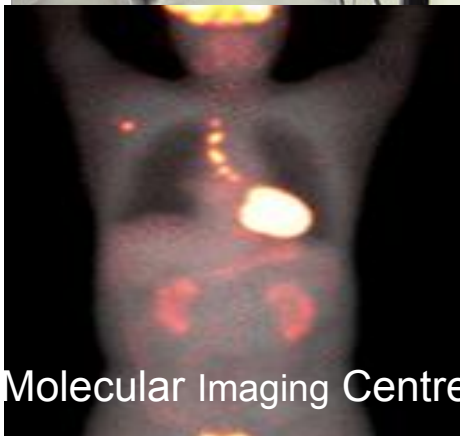


Schools in Faculty of EPS

- Chemical Engineering & Analytical Science
- Chemistry
- Computer Science
- Earth, Atmospheric & Environmental Sciences
- Electrical & Electronic Engineering
- Materials
- Mathematics
- Mechanical, Aerospace & Civil Engineering
- Physics & Astronomy



Research Institutes at Manchester

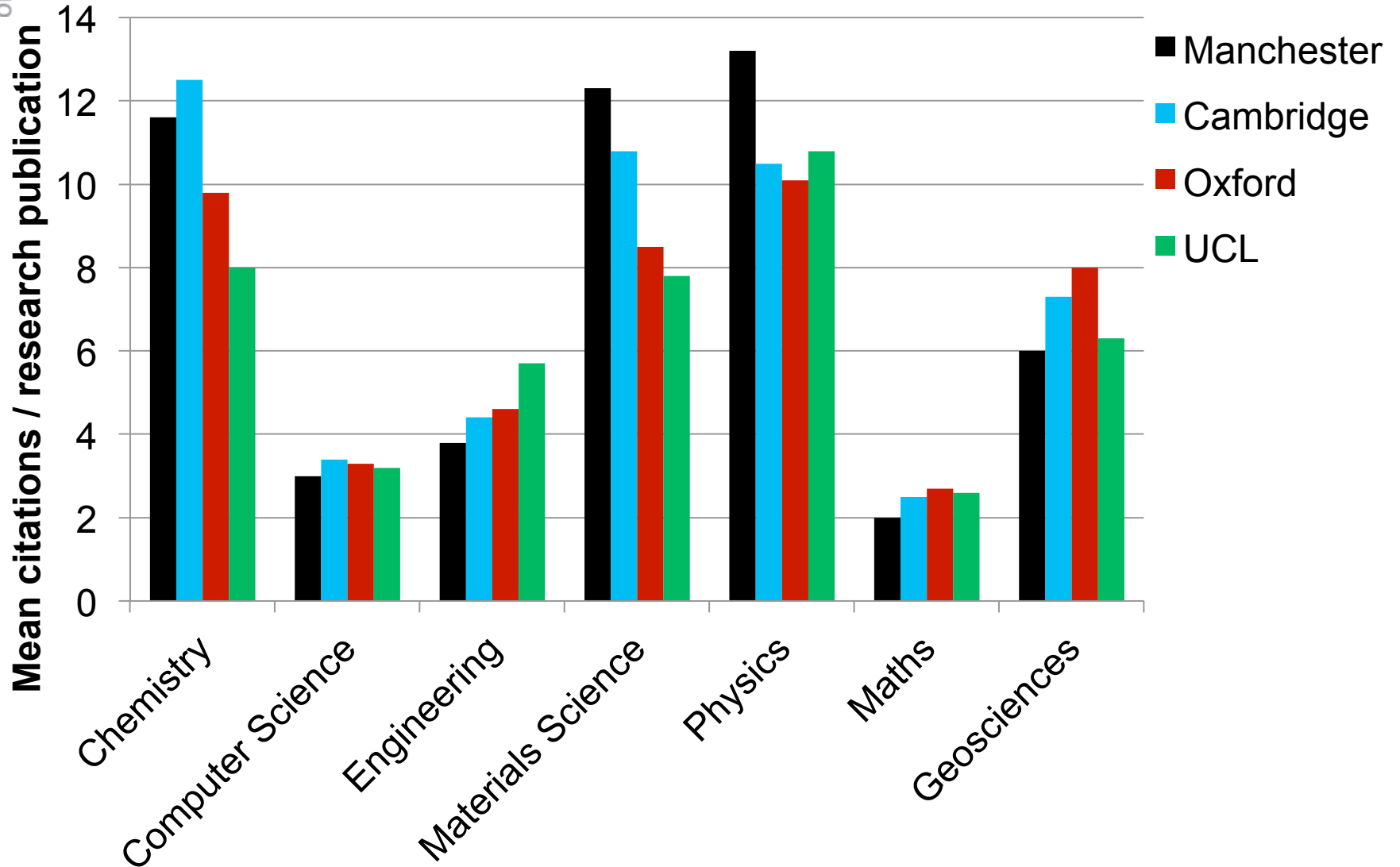


- UMARI (Aerospace)
- Dalton Nuclear Institute
- Manchester Institute of Biotechnology (MIB)
- Photon Science Institute
- Wolfson Molecular Imaging Centre
- Brooks World Poverty Institute
- The Tesco Sustainable Consumption Institute (TSCI),

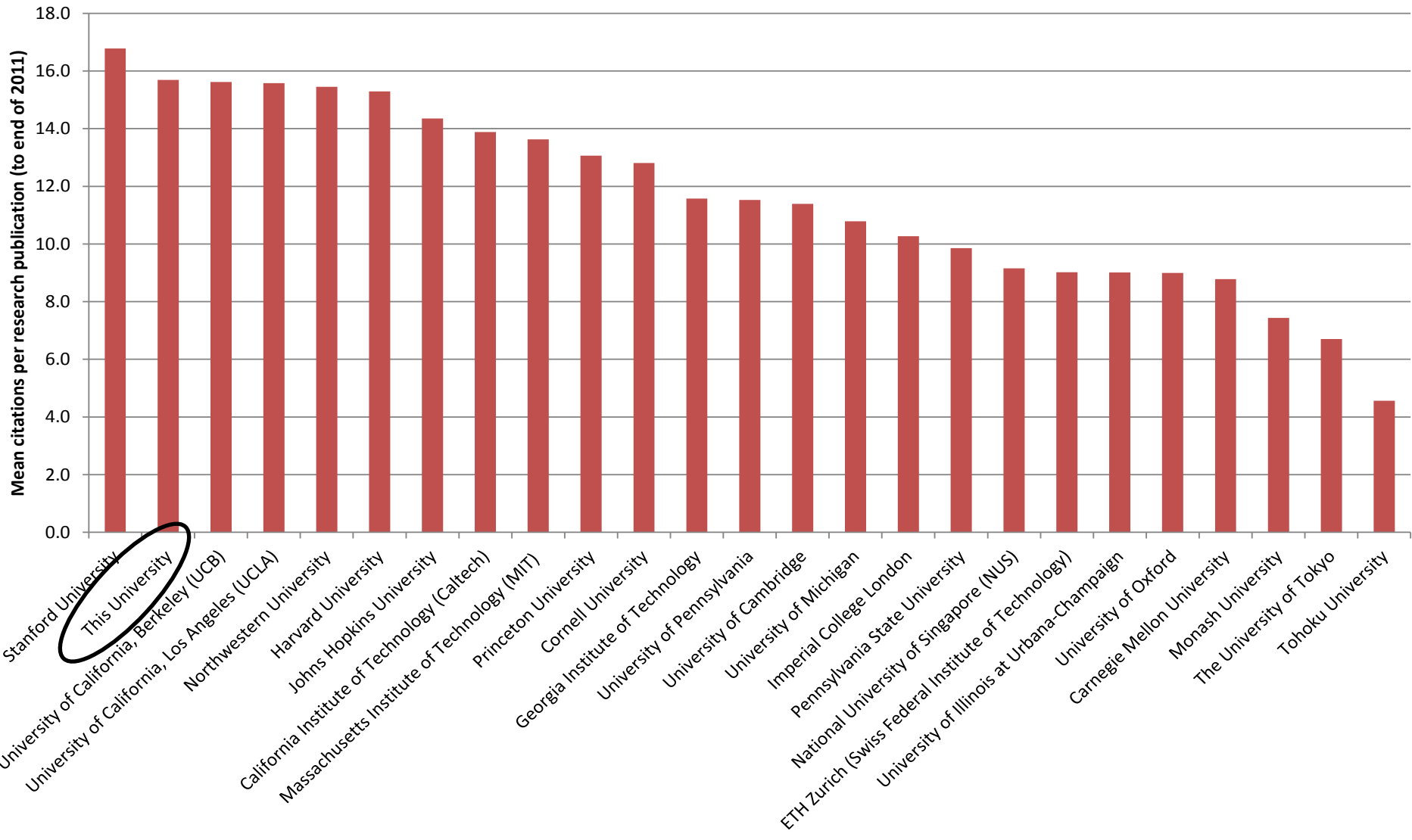
Pursuing Areas of collaborative and interdisciplinary research in:

- Nuclear
- Energy
- Imaging and visualization
- Security
- Computing and digital science and technology
- Nano-science and technology
- Bioscience, pharmaceuticals and biotechnology
- Photon science and photonic materials
- Materials
- Sustainability
- Urban infrastructure (including built environment, utilities, transport and climate change mitigation and adaptation)

Mean citations for research publications 2007-2011



Materials Science (Multidisciplinary) research publications 2007-2011



Top global institutions producing leading publications in the area of materials science (multidisciplinary) from 2007-2011 (source web-of-science).

Manchester Energy

Developing world-leading technologies and solutions

www.energy.manchester.ac.uk

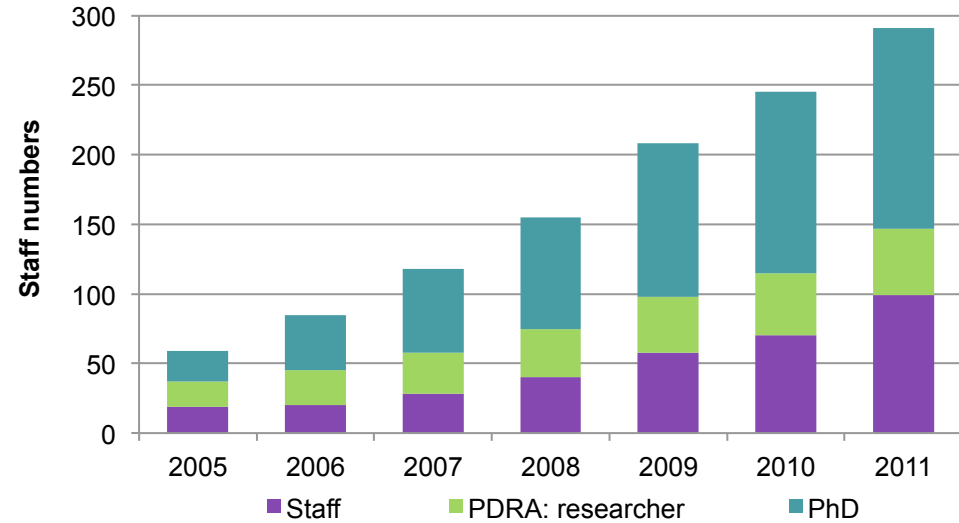
The University of Manchester has the ability to make a major contribution in 8 challenge areas:

- Nuclear
- Future Networks
- Bio-energy
- Solar
- Offshore Renewables
- Sustainable Hydrocarbons
- Cities
- Affordable Energy





Nuclear Achieved Growth

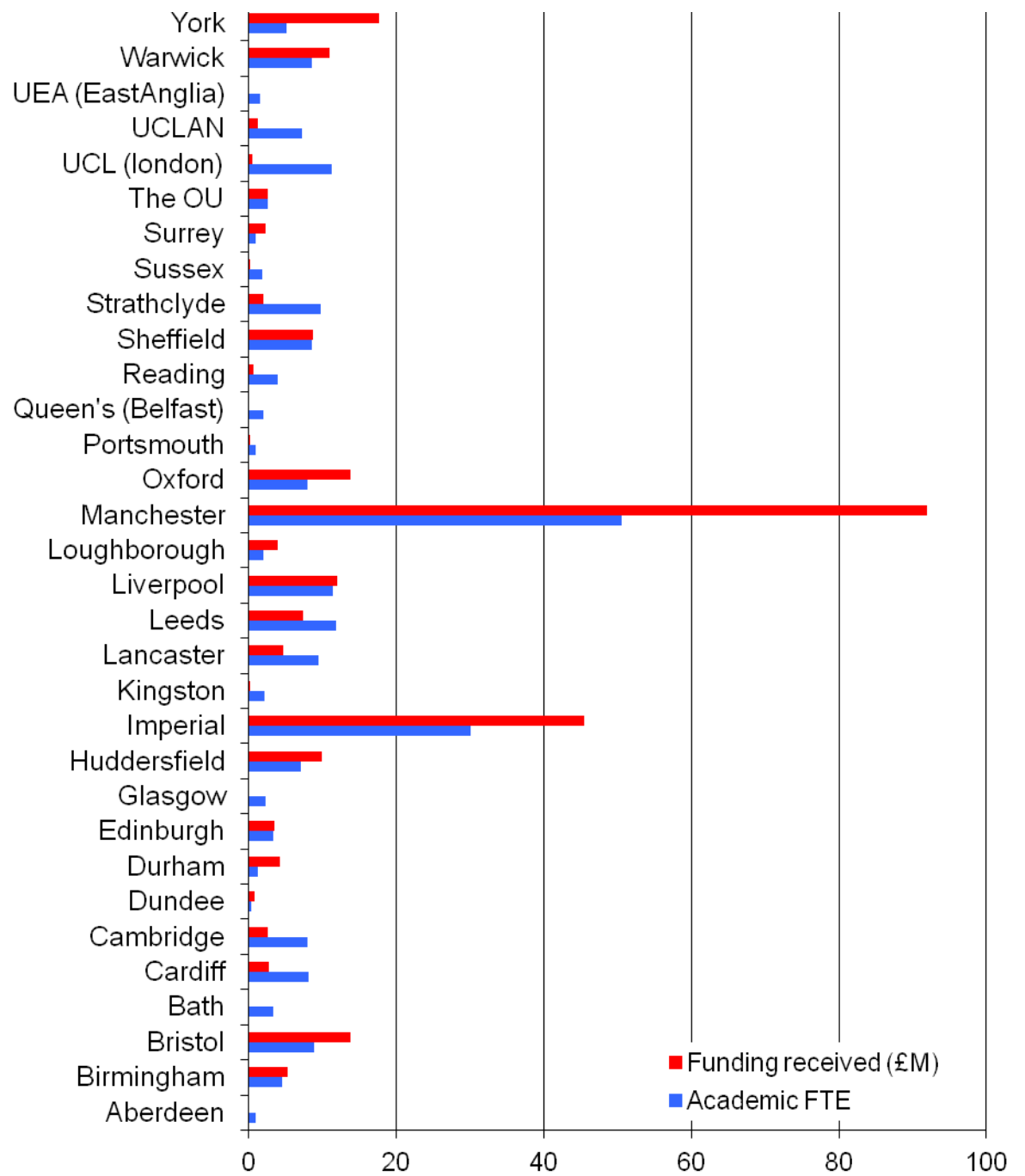


Our Nuclear portfolio has grown from £4M to >£20M research income/year

Nuclear Advanced Manufacturing Centre - £13.8M



The capacity and funding of academic nuclear R&D



Funding received Jan 2006-May 2012 (£M) and Academic FTE



EPS Student Population

~10,000 Total Students

7,200 undergraduates (24% international)

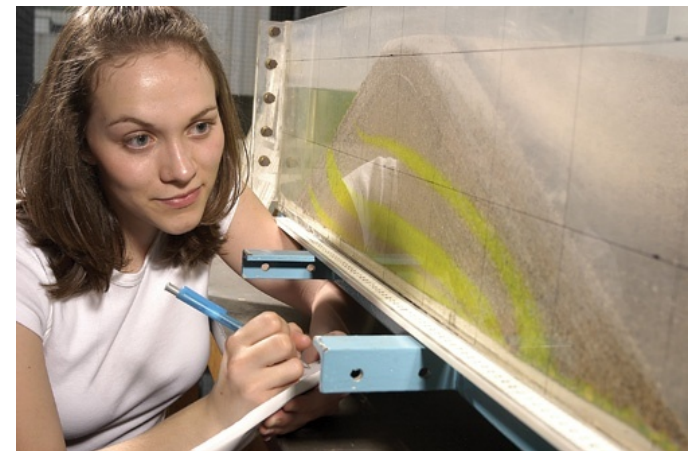
1,800 taught postgraduates (67% international)

1,400 research postgraduates (40% international)

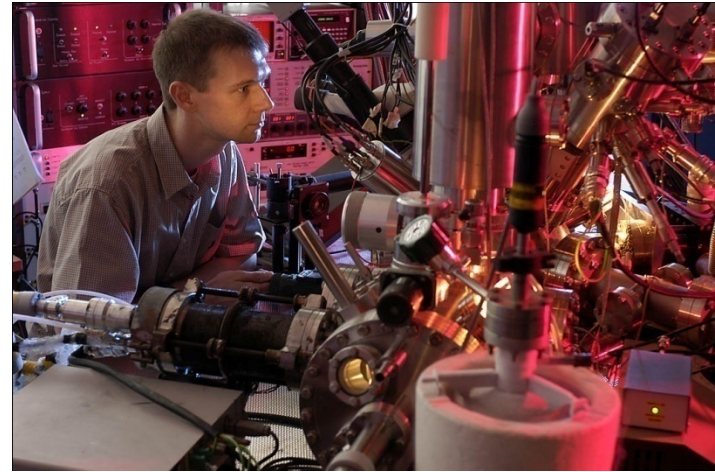
~3,500 international students (included in the above)

Professional Accreditation

British Computer Society (BCS)
Geological Society of London
Institute and Faculty of Actuaries
Institution of Chemical Engineers (IChemE)
Institute of Materials, Minerals & Mining (IoM3)
Institute of Mathematics
Institute of Measurement & Control (InstMC)
Institute of Physics
Institution of Civil Engineers (ICE)
Institution of Engineering & Technology (IET)
Institution of Mechanical Engineers (IMechE)
Institution of Structural Engineers (IStructE)
Royal Aeronautical Society
Royal Society of Chemistry
The Textile Institute



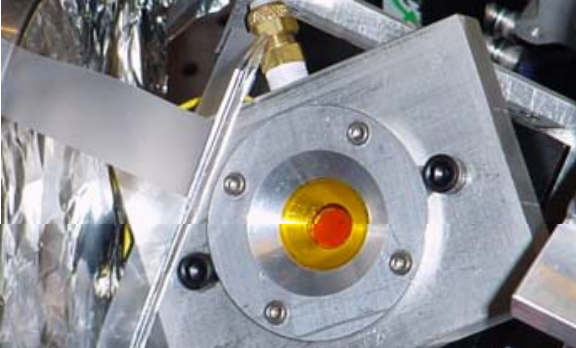
Chemical Engineering & Analytical Science



Key facts:

- Birth place of Chemical Engineering through Professor George E Davis in 1887
- Unique pilot plant facility
- Interdisciplinary staff from Chemical Engineering, Chemistry, Life Scientists, Physicists and Mathematicians.

Research Areas



Sustainability

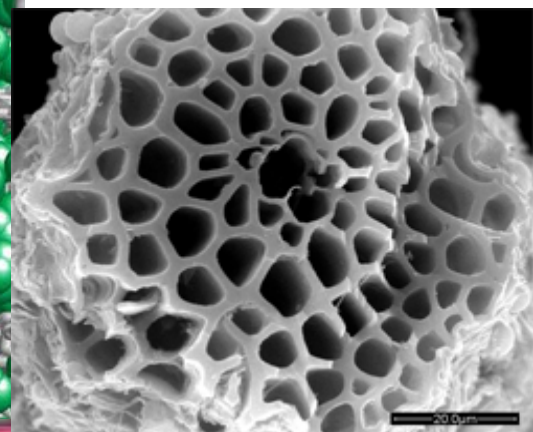
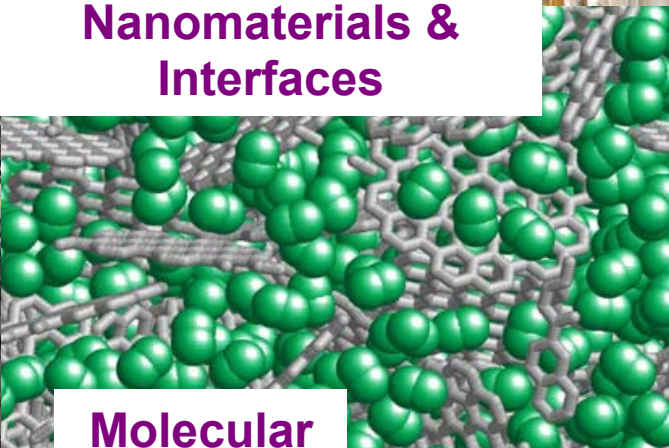


Complex Chemical & Biology Systems



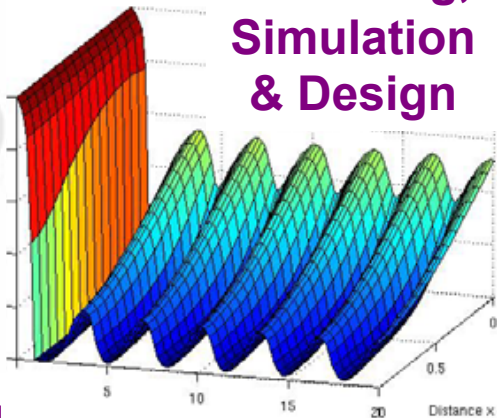
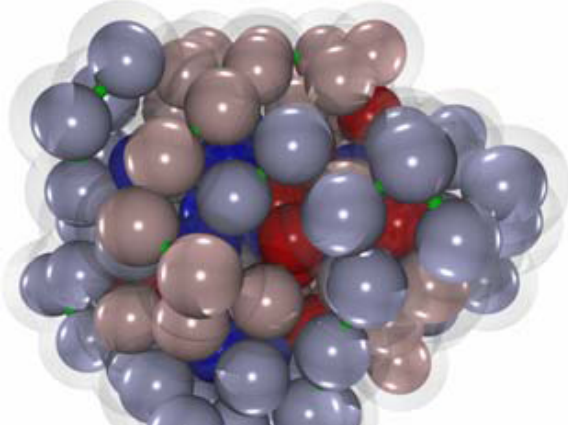
Process Integration

Nanomaterials & Interfaces



Molecular Modelling, Simulation & Design

Energy



Instrumentation & Analytical Science

Biorefinery Engineering

Chemistry

- History of Nobel Prize success
- Over 60 Academic staff
- 224 postgraduates
- 145 postdoctoral workers

Research Themes:

- Analytical and Physical Methods
- Chemical Biology
- Computation
- Materials Chemistry
- Nuclear and Radiochemistry
- Synthesis
- Energy and Environment
- Life and Health
- New Technologies
- Sustainability

NOWNANO Doctoral Training Centre

Nuclear FiRST Doctoral Training Centre

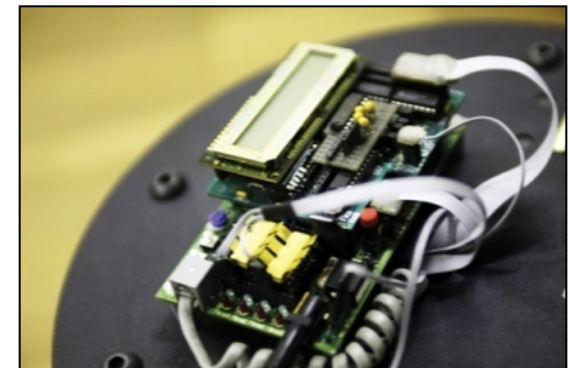


Computer Science



Key facts:

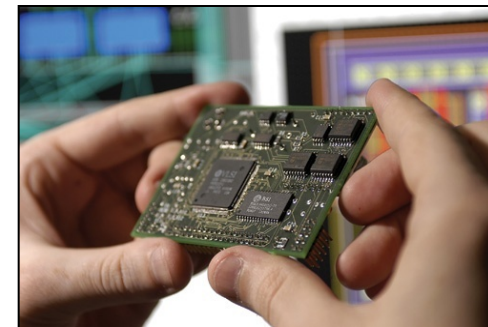
- One of the largest Schools of Computer Science in the UK; and the first.
- World's first programmable computer 1948
- 60 Years at the forefront of computing
- A wealth of expertise in knowledge and technology transfer creating 7 successful spin out companies since 1996



Computer Science

Our research groups are as follows:

- Advanced Processor Technologies
- Bio-Health Informatics
- Formal Methods
- Information Management
- Machine Learning & Optimisation
- Nano Engineering & Storage Technology
- Software Systems
- Text Mining
- Visual Computing



Earth, Atmospheric & Environmental Sciences



Key facts:

- Geology and related Earth Sciences have been studied at Manchester since 1851
- Highly interdisciplinary
- Practical and field-based study
- Facilities include Aerosol Chamber, Cloud Chamber and airplanes for atmospheric research
- Large number of papers in Science & Nature



Electrical & Electronic Engineering

Key points:

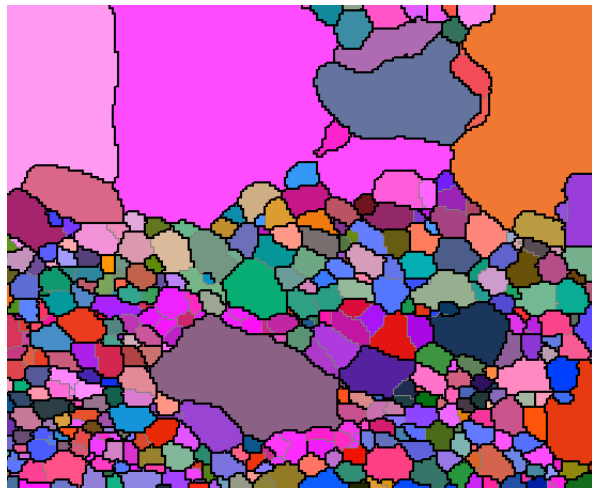
- First to teach Electrical Engineering (1905)
- One of the largest in the UK
- Strategic partnerships with, National Grid, Rolls Royce, Syngenta, Oxford Instruments, EDF

Research groups are as follows:

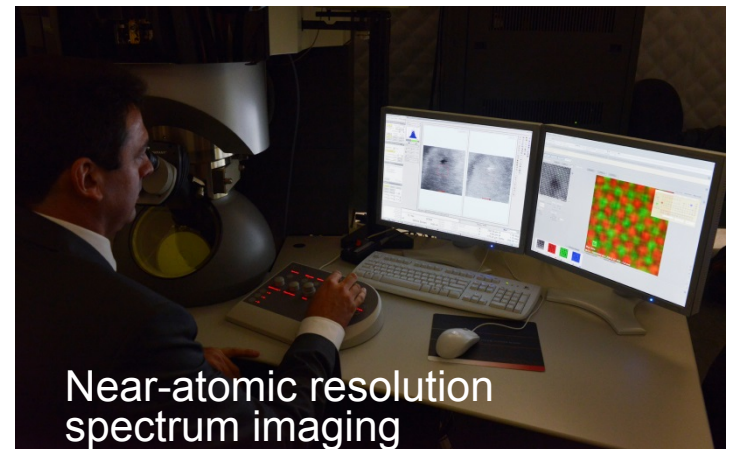
- Communication & Microwave Engineering
- Control Systems
- Sensing, Imaging and Signal Processing
- Electrical Energy and Power Systems
- Power Conversion
- Microelectronics and Nanostructures



Materials



- The largest University Materials Department in Europe
- Consistently in top rank of UK Materials Departments at all UK Research Assessment Exercises (RAE)
- RAE 2008: 1st for Research Power in Metallurgy and Materials
- World leading Corrosion Science & Engineering
- Origins of the University in Textiles
- NW Composites Centre
- Henry Moseley X-ray Imaging
- State of art electron microscopy



Materials

Research Groups:

- Engineering and Process Metallurgy
- Corrosion & Protection
- Polymers, Composites & Carbon
- Ceramics and Inorganic Materials
- Biomaterials
- Textiles Technology
- Textiles Design, Fashion & Business

Associated Centres & Institutes

- Materials Performance Centre
- University of Manchester Aerospace Research Institute
- Photon Science Institute
- BP ICAM
- Manchester Institute for Biotechnology
- Graphene Research Centre



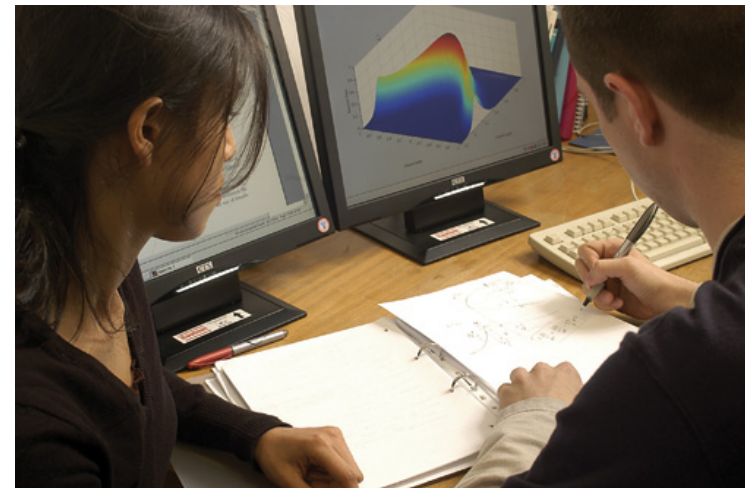
Mathematics

Key points:

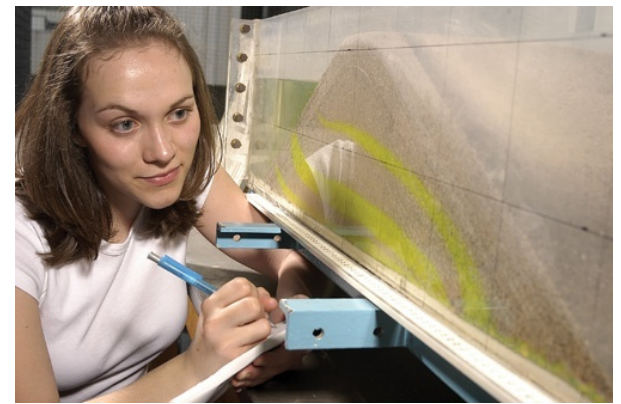
- One of the largest and most research-active Mathematics Departments in the UK
- 70 academic staff
- A wealth of expertise in knowledge transfer and business collaboration
- A history of distinguished colleagues, including Alan Turing and Sir Horace Lamb

Our research areas are as follows:

- Applied Mathematics
- Financial Mathematics
- Mathematical Logic
- Numerical Analysis/Scientific Computing
- Probability & Statistics
- Pure Mathematics

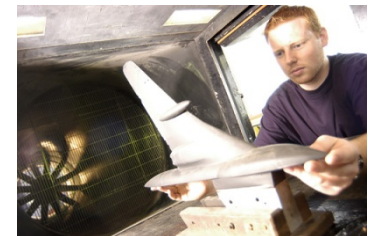
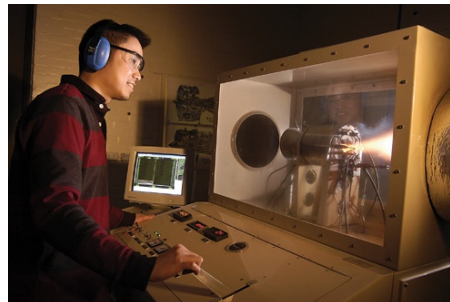


Mechanical, Aerospace & Civil Engineering



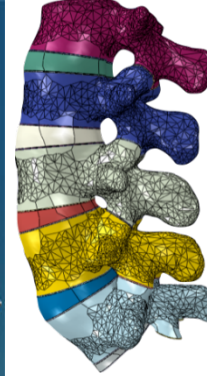
Key points:

- One of the largest engineering schools in Europe
- Strong links with industry
- Professor Levermore contributed to the 2007 Nobel Peace Prize on Environmental Change; Professor Launder is considered the leader in turbulent flow modelling.
- Exceptional research facilities; including the largest tilting flume in the World





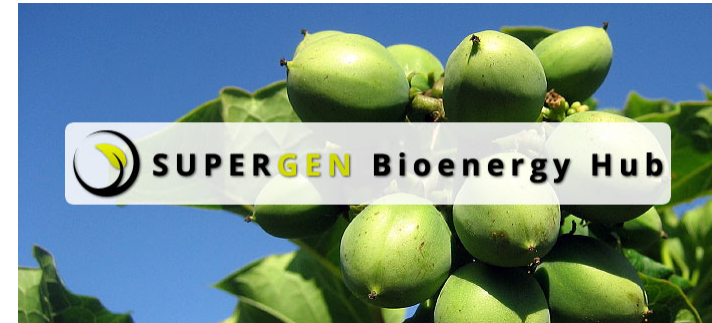
Aerospace



Bio-engineering

Mechanical, Aerospace & Civil Engineering

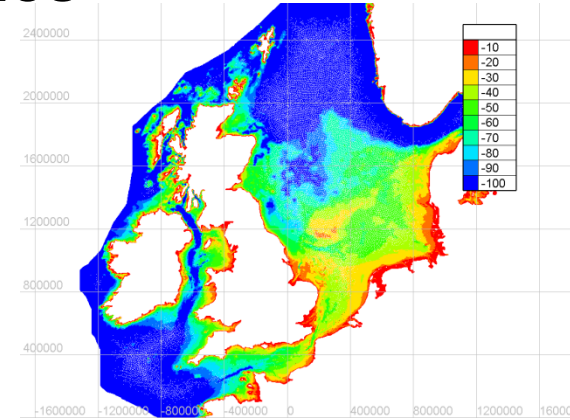
Research & Partner Engagement Themes



Bio-energy



Innovative manufacturing



**Offshore Renewable
Energy; Modelling &
Simulation**



Climate Change



Nuclear Engineering



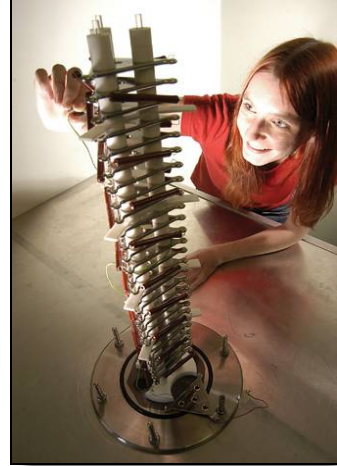
**Management of
Projects**

Contact: Director of External Affairs
mace-business@manchester.ac.uk

Physics & Astronomy

Key points:

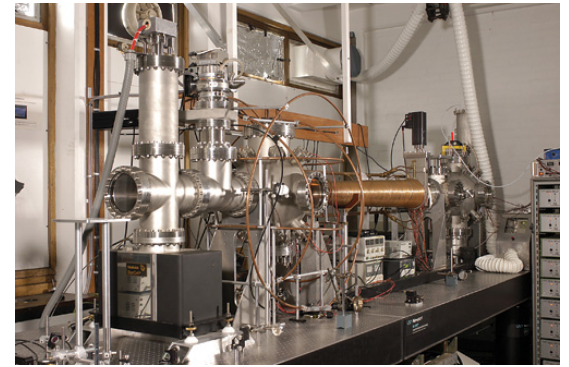
- One of the largest and most active schools of Physics
- Discovered Graphene, the first 2-D material
- Many 'firsts' in astronomy (double pulsars etc)
- Strong involvement in ATLAS
- The University where Rutherford split the atom; Geiger also worked in his research team



Physics & Astronomy

Our research areas are as follows:

- Astronomy & Astrophysics
- Atomic & Molecular Processes
- Biological Physics
- Condensed Matter Physics
- Nuclear Physics
- Particle Physics
- Photon Physics
- Theoretical Physics



Thank you

