Career paths within Chemistry
Career Paths within Chemistry

With Chemistry, you have a wide range of options open to you, both inside & outside science. Here are a few ideas for careers you could enter:

**Research & development (R&D)**

You could work in a wide variety of industries both big (multinationals) and small (start-ups) and all in-between. Commercial R&D is fast paced as projects have a commercial end goal.

**Example industry sectors who have R&D departments:**

- Manufacturing companies (the chemistry behind household products)
- Water companies
- Energy including gas and oil and sustainable energy
- Cosmetics (e.g. fragrance chemist)
- Pharmaceuticals
- Biotechnology
- Food manufacturing
- Defence companies (e.g. BAe Systems, GSK)

**Job role:**

Design & conduct experiments.
Interpret data.
Project management
Writing reports & scientific papers
Developing products
Quality assurance of products

- Beyond a commercial setting, you can also find R&D roles in Universities [jobs.ac.uk/](http://jobs.ac.uk/)
- Laboratory of the Government Chemist (LGC) [gov.uk/government/organisations/defence-science-and-technology-laboratory](http://gov.uk/government/organisations/defence-science-and-technology-laboratory)
- Centre for Applied Science and Technology (CAST) [homeoffice.gov.uk/science-research/cast](http://homeoffice.gov.uk/science-research/cast)
- Research Council labs

**Research Labs**

- Cyprotex discovery [cyprotex.com/careers](http://cyprotex.com/careers)

**Tip:** As well as searching under graduate roles’ also look for lab assistant or entry level chemistry roles.
Small and medium sized companies are often found in clusters of up to around 70 on science parks.

North West Locations

- Manchester Science Park [mspl.co.uk/](mspl.co.uk/)
- Biocity Alderley Park , Macclesfield [biocity.co.uk/whos-here/biocity-companies/biocity-aldery](biocity.co.uk/whos-here/biocity-companies/biocity-aldery)
- Liverpool Science Park [liverpoolsciencepark.co.uk/about/tenant-directory/](liverpoolsciencepark.co.uk/about/tenant-directory/)
- Biocity Nottingham [biocity.co.uk/whos-here/biocity-companies/biocity-nottingham](biocity.co.uk/whos-here/biocity-companies/biocity-nottingham)
- Biocity Edinburgh [biocity.co.uk/whos-here/biocity-companies/biocity-scotland](biocity.co.uk/whos-here/biocity-companies/biocity-scotland)

Tips:

- Contact a company directly with a targeted CV and cover letter.
- A placement or other work experience will enhance your chances of getting a job.
- Consider Post grad study if looking for a long term career in research otherwise you might hit a ‘glass ceiling’
- Look at the jobs section on Royal Society of Chemistry [rsc.org](rsc.org). They also produce the monthly Chemistry in Britain magazine.
- For detailed information on job roles go to: [prospects.ac.uk/job-profiles/analytical-chemist](prospects.ac.uk/job-profiles/analytical-chemist)

Lab Technician

In this role you will work in a scientific team to provide technical support such as sampling, testing, measuring, recording and analysing of results. You could work in Industry, hospitals, government departments, research institutions and Schools/Colleges/Universities. Senior and lead technicians tend to take on more managerial work, including budgeting and ordering resources, risk assessments and staff supervision & training. While work in an educational setting could include providing technical support to teachers and students, making sure the right materials are available for particular lessons and supporting individual students on research projects.

- Read our guide [How to get work experience in a lab](mmu.ac.uk/careers/guides) guides available here:
- [prospects.ac.uk/job-profiles/scientific-laboratory-technician](prospects.ac.uk/job-profiles/scientific-laboratory-technician)

Toxicology and Pharmacology

Toxicologists deal mainly with medico-legal aspects of drugs and poisons, Pharmacology involves the study of the effects of drugs and chemical compounds on humans and animals.

Some key companies include:

- Merck [merck.com](merck.com)
- Pfizer [pfizer.co.uk](pfizer.co.uk)
- BOOTS [boots-uk.com](boots-uk.com) Opportunities in clinical research, packaging, product formulation & development
- Astra Zeneca – [astrazeneca.co.uk/careers.html](astrazeneca.co.uk/careers.html)
NHS Scientific Training Programme (STP)

STP is a three year training programme that includes two thirds work-based and one third academic learning (master's degree). There are around 22 different specialist areas available and the key specialism for chemistry graduates are in the blood sciences (Haematology & Transfusion Science) and Clinical Pharmaceutical Science.

- **Haematology** involves the study of blood and blood-forming tissues - diagnosis and monitoring of patients with disorders of the blood and bone marrow, for example: leukemia.
- **Clinical Pharmaceutical science** is technical pharmacy and involves work in the preparation of sterile medicines, the production of new medicines, quality control and manufacturing and supplying radioactive substances.

For more information about STP go to the NHS website - .nhscareers.nhs.uk

Read more about this job role [prospects.ac.uk/job-profiles/healthcare-scientist-clinical-biochemistry](prospects.ac.uk/job-profiles/healthcare-scientist-clinical-biochemistry)

Tip: Attend the STP open day (held at Manchester University in the autumn term) to find out more about the scientist roles and the application process. The date will be advertised in your Chemistry faculty News email.

Chemical Engineering

Changing the chemical, biochemical and physical states of raw materials into useful products ie oil into plastic is the role of chemical engineers.

There are some taught Masters programmes which accept chemistry as an entry degree e.g.

- Oil and Gas Engineering - University of Central Lancashire
- Energy Engineering with Industrial Management - University of Sheffield
- Chemical Engineering - University of Leeds
- Chemical Engineering - Swansea University
- Advanced Chemical Engineering - Cranfield University

Some employers and professional organisations offer financial sponsorship; look on company websites in the food and drink, oil and gas, pharmaceuticals, plastics, toiletries and water treatment sectors. For details of major chemical engineering employers, (also useful for work experience) [whynotchemeng.com/](whynotchemeng.com/)

For more information on this role read [prospects.ac.uk/job-profiles/chemical-engineer](prospects.ac.uk/job-profiles/chemical-engineer)
Water Quality Scientist

A varied role where you can work in a lab to analyse water but also in the field, taking water samples, investigating pollution incidents and conducting research. Apply speculatively as well as advertised positions as the water industry has a history of developing its own staff and seeking to fill vacancies through internal progression. A driving licence is often required due to site work. If you haven’t got one say in your applications that you are currently learning.

Water companies in the North

- Peel Water Networks – Manchester [peel.co.uk/pwnl/]
- United Utilities Water plc - Warrington [unitedutilities.com/]
- Yorkshire Water Services Ltd- Bradford [yorkshirewater.com/]
- OFWAT For a list of all the water companies in the UK [ofwat.gov.uk/households/your-water-company/map/]

Other key websites:
- Chartered institute of water and environmental management (CIWEM) [http://ciwemjobs.org/]
- ENDS Environmental Consultancy Directory [endsdirectory.com/]
- For a list of Post grad courses [ciwem.org/accredited-courses/]
- For more information read [prospects.ac.uk/job-profiles/water-quality-scientist] and read the glide on Environment Jobs [mmu.ac.uk/media/mmuacuk/content/documents/careers/guides/Environmental-Jobs.pdf]

Green Chemistry

With the move to a low carbon, bio-based economy there are roles within the chemical industry using sustainable chemistry to enable the development of eco-friendly products and processes.

Key websites:
- The Green Chemistry Centre of Excellence (GCCE) [york.ac.uk/chemistry/research/green/]
- Research centre who also run an MSc Green Chemistry at York University.
- The Industrial Biotechnology Leadership Forum (IBLF) [ibts.meeting-mojo.com/]
  An industry led and Government sponsored initiative to drive a bio-economy in the UK.
- NNFCC [nnfcc.co.uk/about-nnfcc/member-benefits]
  A leading bio-economy consultancy and a key advisor to the UK Government, specialising in bioenergy, biofuels and bio-based products.
- For more information about job roles and typical employers read the guide: [http://mmu.ac.uk/media/mmuacuk/content/documents/careers/guides/Environmental-Jobs.pdf]
Forensic Science

Chemistry students tend to work in the area of crimes against property (burglary and arson). This includes the analysis of contact traces in a lab e.g. glass, paint and chemicals, also fire investigation, accident reconstruction & serial number restoration. Patience and concentration are required. Evening and weekend call outs and some unsocial hours are involved. Much work is monotonous, painstaking, detailed and routine. Nothing like CSI!

- Read our guide on Forensic Science for more detailed information, available at mmu.ac.uk/careers/guides
- Also read: prospects.ac.uk/job-profiles/forensic-scientist

Teaching

There is a shortage of chemistry teachers in secondary schools so enhanced bursaries are available for training (up to £25,000 dependent on degree classification). For details go to:

- education.gov.uk/get-into-teaching/funding/postgraduate-funding
- RSC Chemistry Teacher Scholarship rsc.org/Education/scholarships/

There are a variety of ways to train:

- PGCE lasts one year and you can train either in a school or in university http://mmu.ac.uk/secondary/courses/pgce/
- Schools Direct- main training takes place in a school. You may be employed by the School after gaining your PGCE ioe.mmu.ac.uk/initial-teacher-training/school-direct.php
- Teach First 2-year PGCE / leadership programme based in schools. You spend 1 to 3 weeks of the summer in a mini-internship with a company / social enterprise. teachfirst.org.uk/

You will need to show an interest in teaching so a couple of weeks of school based work experience is recommended. You can get help to arrange this through Premier Plus getintoteaching.education.gov.uk/school-experience

You can also teach in primary, FE colleges and Universities prospects.ac.uk/job-profiles/browse-sector/teaching-and-education

Other Careers in Science (not necessarily Chemistry focused)

Many roles in science require scientific skills in a general sense. Some ideas for you to research on the Target-Jobs website are: food science, medical sales, information science, scientific publishing and many others. See targetjobs.co.uk/career-sectors/science-and-research
Here are some others in detail:
**Conservation Science (for museums)**

In this area you could work with the following; ceramics and glass; furniture and wood; gilding and decorative surfaces; historic interiors; metals; paintings; paper and books; photographic materials; stained glass; stone and wall paintings; or textiles. An MSc / PhD will be required, such as:

- Conservation of Fine Art - Northumbria University
- Conservation - University of the Arts London
- Conservation for Archaeology and Museums - UCL

**Patent Examiner**

As well as science you also need an Interest in legal issues as the role involves searching through prior patents and examining the application to decide whether the alleged invention is sufficiently new. This area of work is buoyant as there is increasing demand due to the filing of new applications in China and Japan and a rise in energy technology patents.

Tip: apply speculatively as many jobs are never advertised.

**Key websites**

- UK Intellectual Property Office [ipo.gov.uk](http://ipo.gov.uk)
- European Patent Office (Germany & the Netherlands) [epo.org](http://epo.org)
- Haseltine Lake & Co. [HaseltineLake.com](http://HaseltineLake.com) Large patent attorneys
- Marks & Clerk [marks-clerk.com](http://marks-clerk.com) Large patent attorneys

For more information about this job role go to [prospects.ac.uk/job-profiles/patent-examiner](http://prospects.ac.uk/job-profiles/patent-examiner)

**Science communication and writing**

Work as a scientific journalist, editor or writer to help non-scientists understand science, e.g. the production of product manuals for cars and computer software.

**Tips:**

- Get some writing experience in student journalism as you need good written English as well as scientific knowledge.
- Send speculative CVs to technical publishers, Manufacturing / Computer companies.
- Read the guide on Researching Employers for help. [mmu.ac.uk/careers/guides](http://mmu.ac.uk/careers/guides)
- Postgraduate courses are available for example:
  - Science Communication - Manchester Metropolitan University
  - Chemistry with Scientific Writing, - University of Warwick
Key Websites:

- Harcourt  [harcourtscience.com/](http://harcourtscience.com/)
- Royal Society of Chemistry  [rsc.org/](http://rsc.org/)
- Elsevier Health  [elsevierhealth.co.uk/?sgCountry=GB](http://elsevierhealth.co.uk/?sgCountry=GB) Scientific, technical and medical publisher
- For more details of this job role go to the Prospects website  [prospects.ac.uk/job-profiles/science-writer](http://prospects.ac.uk/job-profiles/science-writer)

**Want to Step Outside of Science?**

As a chemist, you will be used to handling and analysing large volumes of data; using IT and technology with alacrity, keeping records, undertaking research and problem-solving. These skills can open up opportunities for you in other non-scientific areas. As these are transferrable skills and so can be applied to another career area outside of science. Here are a few ideas, there are many more and some career research is needed.

**Big Data**

The financial sector is one of the largest contributors to UK GDP, and offers numerous opportunities for chemists to apply their knowledge of analysing and modelling data. The [efinancialcareers.co.uk/](http://efinancialcareers.co.uk/) site lists many of these roles.

Management consultants often recruit chemists due to their numerical and problem-solving skills. Other sectors, such as the environment, healthcare, retail and marketing also offer opportunities for working with and analysing large data sets.

For more information about job roles in data analysis  [prospects.ac.uk/job-profiles/data-analyst](http://prospects.ac.uk/job-profiles/data-analyst)

**Computing**

Manchester is home to one of the most vibrant digital and technology communities in Europe. There is currently a skills shortage in digital forensics and security, with skills in programming being especially in demand. There are conversion courses available, such as the MSc Computing at Manchester Met aimed at graduates from a non-computing discipline.  [mmu.ac.uk/study/postgraduate/taught/2018/16785/](http://mmu.ac.uk/study/postgraduate/taught/2018/16785/)

For an overview of this job role:  [prospects.ac.uk/job-profiles/browse-sector/information-technology](http://prospects.ac.uk/job-profiles/browse-sector/information-technology) (Prospects)
**Engineering**

Demand for graduates in engineering, data science, cybersecurity, and software engineering is growing in the economy and conversion courses are now available. For example:

- University of Salford - MSc Data Science (conversion)
- University of Southampton - Data science conversion courses
- University of Chester - MSc Cybersecurity
- University of Hull - MSc Energy Technologies: Chemical Engineering
- Queen Mary, University of London - MSc Big Data Science
- University of Sheffield - MSc Data Analytics

There are several others and the three available at Manchester Met are MSc Rail Engineering, MSc Automotive Engineering and MSc Nuclear Engineering. Check with each institution for their entry requirements and for details of all courses available.

For an overview of the jobs in this sector read prospects [prospects.ac.uk/job-profiles/browse-sector/engineering-and-manufacturing](prospects.ac.uk/job-profiles/browse-sector/engineering-and-manufacturing)

**Law**

It is possible for a chemistry graduate to become a solicitor or barrister and conversion courses are available such as the Graduate Diploma in Law available at Manchester Met. For more information read, our law careers guide: Information for Intending GDL students available at [mmu.ac.uk/careers/guides](mmu.ac.uk/careers/guides) You can book an appointment to talk with the Law Careers Consultant Nick Touati by calling 0161 247 3483.

For more information about the job roles of solicitor and barrister read the Prospects Careers in Law profile: [prospects.ac.uk/jobs-and-work-experience/job-sectors/law-sector/law-careers](prospects.ac.uk/jobs-and-work-experience/job-sectors/law-sector/law-careers)

**Finance, Banking, Insurance and Accountancy**

Employers are attracted to Chemistry graduates due to the range of transferable skills that you have acquired in your academic studies. There are many traineeships available for new graduates irrespective of degree subject. Some of the key places where these are advertised include:

- Prospects [prospects.ac.uk](prospects.ac.uk)
- Milkround [milkround.com](milkround.com)
- Target Jobs [targetjobs.co.uk](targetjobs.co.uk)
- Career Hub [mmu.ac.uk/findajob](mmu.ac.uk/findajob)

For an overview of the many job roles in this sector read [prospects.ac.uk/jobs-and-work-experience/job-sectors/accountancy-banking-and-finance](prospects.ac.uk/jobs-and-work-experience/job-sectors/accountancy-banking-and-finance)
Local Government

This covers many specialist areas including environmental health and trading standards. Personal qualities and skills are more important than your degree subject. Relevant work experience in a council is an advantage and many graduates gain entry through temping as you can access the internal job bulletins.

There is a two-year Graduate training scheme: ngdp.org.uk/ and many Local Authorities also run their own in-house graduate training schemes - look at Local Government Jobs lgjobs.com/

Central Government

The Civil Service is a significant employer nationally and almost ¾ of civil servants work outside London and the South East. It is made up of a large number of different departments, which implement government policies and deliver services to the public. Some examples are Government Science & Engineering and Department for Environment Food & Rural Affairs.

For vacancies go to civilservicejobs.service.gov.uk/csr/index.cgi (the majority enter as Executive Officer positions).

The Civil Service Fast Stream is an accelerated leadership development programme for graduates where you gain a variety of experience through different placements or postings faststream.gov.uk

NHS Graduate Management Training Scheme

There are six specialisms available: Finance, Health Analysis, Health Informatics, Human Resources, Policy and Strategy, and General Management.

The Match Me tool will help you to find which graduate scheme is right for you and gives information about the working environment, and the types of challenges you might face. nhsgraduates.co.uk/the-scheme/is-this-for-me/

For more details access nhsgraduates.co.uk/

Researching other career options

- Visit our website for information and resources to help you explore your options: mmu.ac.uk/careers/students/how-we-can-help-you/explore-your-career-options/
- Look at the variety of options with your chemistry degree prospects.ac.uk/careers-advice/what-can-i-do-with-my-degree/chemistry
Postgraduate Study

Many chemistry graduates from Manchester Met opt to do postgraduate study for a PhD or Master’s degree. Here are a few of the courses past students have gone on to study:

- MPhil by Research (Chemistry)
- PGCE Secondary Chemistry
- MSc Biomedical Research
- MSc Chemistry
- MSc in Medicinal chemistry & pharmaceutical science
- MA Human Resource Management
- MSc Computer Science

See the Postgraduate Study section for more ideas www.prospects.ac.uk

Job Hunting Tips for Scientific Roles

- Use a variety of methods and resources.
- Look for advertised variances on both vacancy sites (Prospects Target Jobs etc.) and on company websites.
- Send your CV and a professional cover letter speculatively to key employers that interest you (not all organisations advertise their opportunities)
- Use recruitment agencies.
- Look for entry-level schemes, as well as for graduate schemes
- CVs - include the relevant units studied in the BSc or MSc. Give detail about what the units involved (rather than just giving the title), as units with the same title can be very different between universities.
- Interviews – these involve a technical interview, which is likely to be synonymous to exam questions plus a capability interview.
- Placements – if no work experience consider some relevant work experience to consolidate your academic skills in a work place environment.

Scientific Recruitment Agencies

The following list is a starting point:
- Reed Scientific reedglobal.com/scientific
- Gradcracker gradcracker.com/
- Chemistry World Jobs jobs.chemistryworld.com/
- SRG - srg.co.uk/
- VRS - vrsrecruitment.com/
- HRS (hyper recruitment solutions) - hyperec.com/
- Kelly Scientific kellyservices.co.uk/uk/careers/areas-of-expertise/science-jobs/
- Sci-temps onrec.com
- Network Scientific Ltd. networkscientificrecruitment.com/
- Interaction Recruitment interactionrecruitment.co.uk/
- Scintillant Life Sciences scint.co.uk
Other useful Websites:

- New Scientist Jobs [jobs.newscientist.com/](jobs.newscientist.com/)
- Society of Chemical Industry [soci.org](soci.org)
- Engineering and Physical Sciences Research Council [epsrc.ac.uk](epsrc.ac.uk) - Main funding body for postgraduate study in Chemistry
- The Guardian - [jobs.theguardian.com/](jobs.theguardian.com/)
- My Career Hub - [mmu.ac.uk/careers/my-career-hub](mmu.ac.uk/careers/my-career-hub)

Companies who recruit chemistry graduates (from Gradcracker brochure)

Google these companies to find out about job & placement opportunities.

- Abb
- Adti
- Aecom
- Aggregate Industries
- Air Products
- Airbus
- Airbus
- Alstom
- Alstom
- Amec
- Anglian Water
- Aquaterra Energy
- Arup
- Asr Group / Tate & Lyle Sugars
- Atkins
- Babcock
- Bae Systems
- Balfour Beatty
- Bechtel
- Bg Group
- Bilfinger
- Boc
- Bp
- Bpi
- Cargill
- Ccfe
- Centrica
- Centrica
- Ch2Mhill
- Chevron
- Conocophillips
- Croda
- Cummins
- Cundall
- Delphi
- Desg
- Dnv.Gl
- Dstl
- Edwards
- Era Technology
- Exxon Mobil
- Ford
- Fw
- G3 Baxi Partnership
- Ge
- Gsk
- Heatric
- Heraeus
- Imi
- Jacobs
- Johnson Matthey
- Kbr
- Kca Deutag
- Lockheed Martin
- Lucite International
- Mbda Missile Systems
- Mondelez International
- Morgan
- Mott Macdonald
- National Grid
- National Nuclear Laboratory
- Nov
- Nuclear Graduates
- Perenco
- Petrofac
- Phillips 66
- Royal Navy
- Safran
- Schlumberger
- Selex Es
- Sellafield Ltd
- Shell
- Siemens
- Tata Steel
- Technip
- Thales
- United Utilities
- Urs
- Wood Group
- WorleyParsons
- Wrc
- Wsp
Careers & Employability Support

The Careers & Employability Service offers a range of support to Manchester Met students and graduates:

- **Detailed careers guides**: Our full range of careers guides, including information on finding and applying for opportunities are available on our website. [mmu.ac.uk/careers/guides](http://mmu.ac.uk/careers/guides)
- **Ask a Careers Question Online**: Get online advice through My Career Hub, ask your question at any time and receive support via email. [mmu.ac.uk/careersquestion](http://mmu.ac.uk/careersquestion)
- **Careers Consultant Appointments**: Book a 30 minute appointment with a Careers & Employability Consultant by calling 0161 247 3483.
- **Careers Events**: Meet employers and enhance your employability by attending our workshops, employer events and careers fairs. [mmu.ac.uk/careers/events](http://mmu.ac.uk/careers/events)