Chemical Engineering PhD (Food, Health and Nutrition specialism)

Postgraduate PhD doctoral research degree - Chemical Engineering PhD/MSc by research (Food, Health and Nutrition specialism)

The Food, Health and Nutrition group at Birmingham is the largest of its type in any UK academic engineering department (currently consisting of four members of staff, four post doctoral research fellows and 30 PhD and Engineering Doctoral students).

Research in food processing is carried out in partnership with key companies such as Nestlé, Unilever and Cadbury, and through visiting professorships.

Chemical Engineering is dynamic and evolving. It provides many solutions to problems facing industries in the pharmaceutical, biotechnological, oil, energy and food and drink sectors. It is vital to many issues affecting our quality of life; such as better and more economical processes to reduce the environmental burden, and more delicious and longer lasting food due to the right combination of chemistry, ingredients and processing.

Birmingham is a friendly, self-confident, School which has one of the largest concentrations of chemical engineering expertise in the UK. The School is consistently in the top five chemical engineering schools for research in the country.

It has a first-class reputation in learning, teaching and research, and is highly placed in both ***The Guardian*** and ***The Times*** league tables. The School was recently awarded the **Queen's Anniversary Prize for Higher Education.**

THE QUEEN'S ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION
2011

Study here and find out why the University of Birmingham was awarded The Times and The Sunday Times University of the Year 2013-14 (http://www.birmingham.ac.uk/news/latest/2013/09/20-sep-Birmingham-announced-as-University-of-the-Year.aspx)

Course fact file

Type of Course: Doctoral research

Study Options: Full time, part time

Duration: PhD: 3 years full-time; MPhil: 1 year full-time, 2 years part-time

Start date: Research degrees can start at any time by agreement with the supervisor

Related courses

Research degrees - School of Chemical Engineering (/schools/chemical-engineering/postgraduate/research-degrees.aspx)

Contact

Admissions Tutor: Prof Mark Simmons

Contact us online (http://bham.hobsons.co.uk/ask.aspx?cid=1223&did=24) or at +44 (0)121 414 3947.

School of Chemical Engineering (/schools/chemical-engineering/index.aspx)

Details

The design of food processes and microstructures is a major research activity in the Chemical Engineering Department at the University of Birmingham. Within this theme we carry out research to provide underpinning support to the food industry and to drive research forward in the new areas that are demanded by consumers and policy makers eg, healthy foods that are convenient, safe and still fit into a normal diet or are even seen as indulgent (healthy indulgent) and the design of food processes with zero waste and thus lower environmental impact.

The group at Birmingham is the largest of its type in any UK academic engineering department (currently consisting of four members of staff, four post doctoral research

fellows and 30 PhD and Engineering Doctoral students). Research in food processing is carried out in partnership with key companies such as Nestlé, Unilever and Cadbury, and through visiting professorships. Joint research takes place with food science departments at Nottingham, Leeds and Reading universities.

Current work is aimed at developing reaction engineering approaches to food processing, and incorporation of research on food flavour, texture and microbiology into fluid mechanical and thermal models for food processes. The long-term aim is to model product safety and quality, allowing minimal pilot plant trials of new products.

Current work (carried out in many of the science groups described elsewhere) includes:

- Interaction between process history and product structure and flavour, including thermal and crystallisation events in chocolate tempering, and development of computer models for such processes
- Online measurements of physical and quality parameters in biscuit baking
- Models for structured foods
- Flavour development in brewing processes
- Surface fouling, cleaning and food hygiene, including models for bacterial growth in solids under transient thermal conditions and measurement of adhesion of biofilms to surfaces
- Understanding of the role of chemistry and fluid mechanics in agglomeration and fouling of milk-based foods
- Immobilised lipases for production of fatty acids and upgrading of oil quality
- Computer modelling of safety and quality in flowing foods

Related links

School of Chemical Engineering (/schools/chemical-engineering/index.aspx)

Fees and funding

Standard fees (/postgraduate/dr-fees/tuition.aspx) apply, **contact the School (mailto:pg-admis-chem-eng@bham.ac.uk)** for further information.
Learn more about **fees and funding (/postgraduate/dr-fees/index.aspx)**

Scholarships and studentships
EPSRC and BBSRC studentships are available for PhDs. Other sources of funding are the Knowledge Transfer Partnership (KTP), the European Union and industrial funding for UK and EU students.

International students can often gain funding through overseas research scholarships, Commonwealth scholarships or their home government.

For further information contact the School directly or email **sfo@contacts.bham.ac.uk (mailto:sfo@contacts.bham.ac.uk)**

Entry requirements

The normal entry qualification for PhD study is either at least an upper second-class Honours degree, or a first degree of a lower classification, along with an MSc or evidence of substantial relevant industrial experience

Learn more about **entry requirements (/postgraduate/requirements-dr/step1.aspx)**

International students
We accept a range of qualifications from different countries – learn more about **international entry requirements (/postgraduate/requirements-dr/step1.aspx)**

Standard English language requirements (/postgraduate/requirements-pgt/international/index.aspx) apply

How to apply

Learn more about **applying (/postgraduate/requirements-dr/index.aspx)**

Apply now (https://pga.bham.ac.uk/lpages/EPS020.htm)

When clicking on the Apply Now button you will be directed to an application specifically designed for the programme you wish to apply for where you will create an account with the University application system and submit your application and supporting documents online. Further information regarding how to apply online can be found on the **How to apply pages (http://www.birmingham.ac.uk/students/courses/postgraduate/apply-pg/index.aspx)**

Apply now (https://pga.bham.ac.uk/lpages/EPS020.htm)

Related links

Research vacancies and studentships at the School of Chemical Engineering (/schools/chemical-engineering/postgraduate/research-vacancies-studentships.aspx)

Postgraduate degree courses - School of Chemical Engineering (/schools/chemical-engineering/postgraduate/index.aspx)

Related news and events

University of Birmingham wins Queen's Anniversary Prize for Higher Education (/news/latest/2011/11/queens-prize.aspx)

Research interests of staff

Our mission is to carry out research of the highest academic quality, which is novel, challenging and relevant to users.

Our strengths are in design and characterisation of microstructured products, and in heat and mass transfer, fluid flow, particle technology and materials engineering across chemical, biological and physical systems. We collaborate with world-class industry, and with leading edge engineering and science departments nationally and internationally.

Research centres

The Centre for Formulation Engineering

The Centre's mission is to carry out research of the highest academic quality, which is novel, challenging and relevant to users. Particular strengths are in design and characterisation of microstructured products, and in heat and mass transfer, fluid flow, particle technology and materials engineering across chemical, biological and physical systems. We collaborate with world-class industry, and with leading edge engineering and science departments nationally and internationally.

Interdisciplinary Research Centre in Materials Processing - IRC

The primary objective of the research programme in the Interdisciplinary Research Centre (IRC) is the development of materials, through materials processing and of manufacturing technologies so that the properties of the materials are fully exploited. Close interaction with industry is an essential part of this philosophy. The programmes that are in operation with industry vary from long term projects to short term problem-solving.

Related research

- **Food, Health and Nutrition - Formulation Engineering Research - School of Chemical Engineering (/research/activity/chemical-engineering/food-nutrition/index.aspx)**
- **The Centre for Formulation Engineering (/research/activity/chemical-engineering/index.aspx)**

Employability

University Careers Network

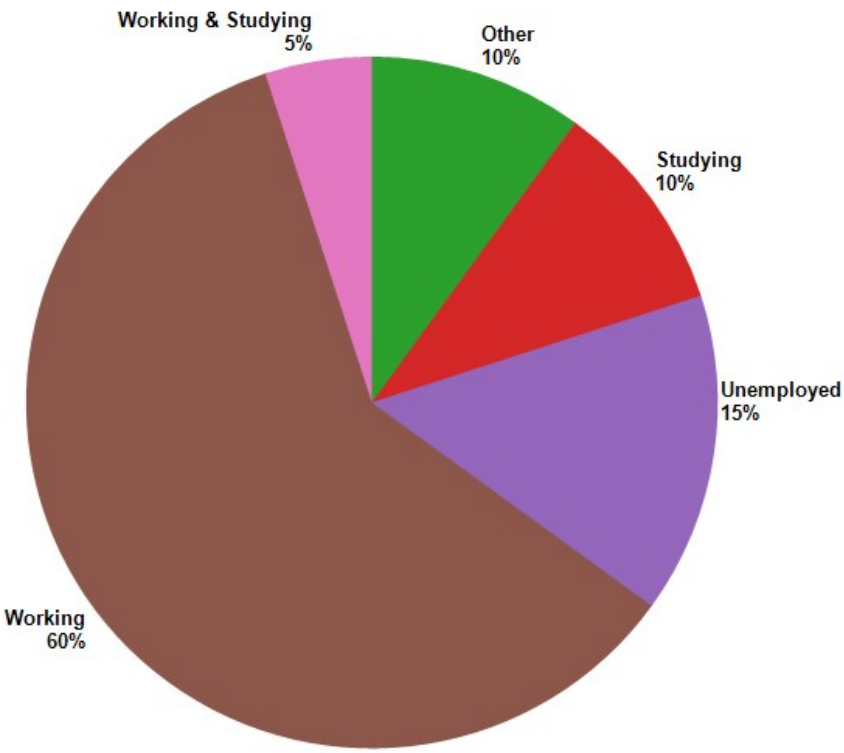
Preparation for your career should be one of the first things you think about as you start university. Whether you have a clear idea of where your future aspirations lie or want to consider the broad range of opportunities available once you have a Birmingham degree, our Careers Network can help you achieve your goal.

Our unique careers guidance service is tailored to your academic subject area, offering a specialised team (in each of the five academic colleges) who can give you expert advice. Our team source exclusive work experience opportunities to help you stand out amongst the competition, with mentoring, global internships and placements available to you. Once you have a career in your sights, one-to-one support with CVs and job applications will help give you the edge.

If you make the most of the **wide range of services (https://intranet.birmingham.ac.uk/as/employability/careers/college/eps/index.aspx)** you will be able to develop your career from the moment you arrive.

Destinations of Leavers from Higher Education (DLHE) 2011/12 (postgraduate taught graduates)

The DLHE survey is conducted 6 months after graduation.



Examples of employers:

- BP
- British Gypsum
- Citi
- Coca-Cola
- Foster Wheeler Energy
- Jacobs Engineering
- Johnson Matthey
- KBR
- Pepsico
- RBC Capital Markets

Examples of occupations:

- Chemical Engineer
- Development Engineer
- Finance Analyst
- Market Analyst
- Performance Engineer
- Process Engineer
- Process Development Technologist
- Process Support Engineer
- Team Leader
- Test and Validation Engineer

Further study - examples of courses:

- MRes Chemical Engineering Science
- MSc Advanced Chemical Engineering
- MSc Biochemical Engineering
- MSc Chemical Engineering
- PhD Chemical Engineering
- PhD Formulation Engineering
- PhD Regenerative Medicine

- PGCE Mathematics

Visit the **Careers section of the University website (https://intranet.birmingham.ac.uk/as/employability/careers/college/eps/index.aspx)** for further information.

© University of Birmingham 2015