

Instrumental Methods in Electrochemistry

URL:

https://www.southampton.ac.uk/chemistry/business_partnership/summer_school.page

- Location:** School of Chemistry on the Highfield campus, University of Southampton
- Dates:** 24-28 June 2019
- Costs:** The Electrochemistry Summer School registration fee is £1350. There is a discount of 10% if payment is made before 1 May 2018. The fees include lunches, teas / coffees, course dinner, transport (a bus pass for every day), electrochemistry textbook, lecture notes (hard and electronic copies) and laboratory scripts.
- Housing:** Accommodation is not included in the course fees. The nearest hotel to the Highfield Campus (10 min walk to the Chemistry building) is the Highfield House Hotel. A bus pass is included in the course fees so we recommend choosing a hotel or bed and breakfast within reach of the Unilink bus network which provides a frequent service to and from the Highfield campus.
- Description:** Each year the Electrochemistry Group runs the Instrumental Methods in Electrochemistry course to teach the application of modern electrochemical techniques to problems in chemistry, biology, sensors, materials science and industrial processing.

The one-week residential course, which will be held from 24 to 28 June 2019, comprises a combination of lectures and laboratory work. The course has been organised almost yearly since 1969. Although the course is held in Southampton, it has been run in Canada, the US, Argentina and China and more than 1000 delegates have attended. The Summer School also provides formal and informal opportunities for discussion of topics related to the interests of the participants. The event is an excellent opportunity for networking and many research collaborations have evolved from discussions during the course.

In the Southampton tradition, Instrumental Methods in Electrochemistry will consist of both lectures (with full written supporting material) and hands-on practical sessions. The early lectures will cover core material while the remainder will address specific electrochemical techniques.

All participants select five experiments from a choice of twelve designed to illustrate the core material and the selected techniques.

Courses for PhD Researchers and PDRAs

Next Generation Computational Modelling Academy

- URL: <http://ngcm.soton.ac.uk/summer-academy/>
- Location: University of Southampton
- Dates: 25 - 29 June 2019
- Costs: Free for students (up to 20 UK PhD students working in some form with computational modelling.)
- Housing: Separate
- Participants: This year the NGCM summer school offers 20 fully subsidised spaces available to UK PhD students working with computational modelling. Prerequisites vary from course to course but include at least some programming experience.
- Description: The NGCM Summer Academy is a one-week event bringing together PhD students who work on computer simulation of science and engineering problems and want to extend their training through the workshops available at the Summer Academy. The training is delivered by world-leading experts and key developers of the relevant software tools, and includes courses on VTK and Mayavi, GPU programming using CUDA and Optimisation. There will be a course on scientific software development and software sustainability.

For further information please visit the Summer Academy's main webpage, or if you would like to register please do so by e-mailing to pgrngcm@soton.ac.uk.

Bath Electrochemical Summer School 2019

- URL: <https://www.bath.ac.uk/campaigns/study-at-our-electrochemistry-summer-and-winter-schools/>
- Location: University of Bath
- Dates: 9 to 12 July 2019
- Costs: £1150 (includes all course materials all practical laboratory costs, daily lunches, tea/coffee and a course dinner)
- Housing: Accommodation is not included in the course fee.
- Description: Our Summer School will develop your understanding of electrochemical impedance spectroscopy (EIS). You will be introduced to the theory behind impedance spectroscopy and you will learn how to run impedance spectra in the lab on a wide variety of different electrochemical systems. We will also discuss how to interpret impedance data using equivalent circuit models.

Parallel Programming with MPI

- URL: <https://events.prace-ri.eu/event/864/>
- Location: University of Edinburgh
- Dates: 17-19 July 2019
- Costs: Free to all academics
- Housing: Separate
- Participants: Advanced topic, primarily of interest to the PhD modelling fast starter

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Description: This is a three-day intensive course. The world's largest supercomputers are used almost exclusively to run applications which are parallelised using Message Passing. This course covers all the basic knowledge required to write parallel programs using this programming model and is directly applicable to almost every parallel computer architecture.

Parallel programming by definition involves co-operation between processors to solve a common problem. The programmer has to define the tasks that will be executed by the processors, and also how these tasks are to synchronise and exchange data with one another. In the message-passing model the tasks are separate processes that communicate and synchronise by explicitly sending each other messages. All these parallel operations are performed via calls to some message-passing interface that is entirely responsible for interfacing with the physical communication network linking the actual processors together. This course uses the de facto standard for message passing, the Message Passing Interface (MPI). It covers point-to-point communication, non-blocking operations, derived datatypes, virtual topologies, collective communication and general design issues.

The course is taught using a variety of methods including formal lectures, practical exercises, programming examples and informal tutorial discussions. This enables lecture material to be supported by the tutored practical sessions in order to reinforce the key concepts.

Electromobility and Low Carbon Vehicles

URL: <http://www.ncl.ac.uk/sage.cpd/cpd/lowcarbonvehicles.php>

Location: Newcastle University

Dates: 9 - 13 December 2019 (tbc) (*Please note this date clashes with Faraday Cluster Researcher compulsory training*)

Costs: £1325 with a 30% discount for full time students. The course fee includes tuition, course materials, lunch and refreshments. Formal assessment may be available for this Course. Assessment attracts an additional fee of £365, and delegates will be issued with a transcript and Certificate of Credit Achieved.

Housing: Separate

Participants: This course is aimed at Intelligent Transport System (ITS) practitioners who are interested in how policies are made in the EU and UK and how they can influence policy decisions more effectively or who would like to move into policymaking, and policymakers who are interested in how ITS will affect future policy decisions.

Description: Develop an understanding of the policy background and principles behind intelligent mobility. Find out about the latest research into low-carbon technologies.

You'll gain an understanding of the latest changes in research, legislation, and technology that can be deployed. It complements the core ITS course

Courses for PhD Researchers and PDRAs

(Intelligent Transport Systems) by explaining the political and policy landscape that influence the uptake of electric vehicles and low carbon vehicles. We achieve this through lectures (including guest lectures by experts in the field), site visits, and practical sessions.

The course provides an understanding of the main transport challenges and their interdependencies. You'll explore how Intelligent Transport Systems can be used to address challenges such as:

- supporting the economy with reliable and efficient transport
- minimising environmental impact and energy consumption
- sustaining and extending accessibility

You'll be exposed to the latest research into low-carbon technologies and their implementation, including their use to promote the uptake of electric vehicles and low-carbon vehicles. You'll also find out how technologies can be brought together in future smart cities.

Bath Electrochemical Winter School 2020

URL: <https://www.bath.ac.uk/campaigns/study-at-our-electrochemistry-summer-and-winter-schools/>

Location: University of Bath

Dates: 13 to 17 January 2020

Costs: £1200 (£1000 for students. Includes all course materials all practical laboratory costs, daily lunches, tea/coffee and a course dinner)

Housing: Accommodation is not included in the course fee.

Description: Our Winter School will introduce you to electrochemistry. The course is a mixture of lectures and intensive small group lab teaching. We start by going over the basic theory and techniques of electrochemistry and then move onto looking at a wide range of different electrochemical measurements and how to interpret them.

Surface Analysis: XPS, AUGER and SIMS

URL: <https://www.surrey.ac.uk/department-mechanical-engineering-sciences/short-courses/surface-analysis-xps-auger-and-sims>

Location: University of Surrey

Dates: tbc

Costs: tbc

Housing: Accommodation is not included in the course fee.

Contact: If you are interested in taking this course then please contact the Short Course Administrator, Jenna Flint j.flint@surrey.ac.uk +44 (0)1483 686122

Participants: Postgraduates who need a thorough grounding in these surface analysis methods, both for "trouble-shooting" investigations and longer-term research projects. While the course is open to all, a scientific or engineering

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education to degree level, or a higher education qualification in physics or chemistry is desirable.

Description: This course aims to provide an intensive introduction to the principles of the electron spectroscopic techniques of X-ray photoelectron spectroscopy (XPS or ESCA) and auger electron spectroscopy (AES), together with scanning auger microscopy (SAM) and secondary ion mass spectrometry (SIMS).

The aim is to provide an intensive introduction to the principles of the electron spectroscopic techniques of X-ray photoelectron spectroscopy (XPS or ESCA) and auger electron spectroscopy (AES), together with scanning auger microscopy (SAM) and secondary ion mass spectrometry (SIMS).

The course will be staffed by lecturers with considerable experience in applied surface analysis, drawn from both the University of Surrey and elsewhere.

Each day will comprise lectures, laboratory demonstrations and classes with the course tutors. Attendees with specific problems concerning the applications of electron spectroscopy will have ample opportunity to consult the lecturers.

As the field of surface analysis continues to develop very rapidly, the course provides an ideal opportunity to review the scope and applicability of such methods for specific applications.

Hybrid and Electric Vehicles Introduction

URL: <https://www.cranfield.ac.uk/courses/short/transport-systems/hybrid-electric-vehicles-introduction>

Location: Cranfield University

Dates: tbc

Costs: £2,250. The course fee includes refreshments and lunch during the day. Accommodation is not included and must be booked separately. 10% off if booked 8 weeks in advance.

Housing: Separate

Participants: System and/or component design engineers in auto industry; engineering directors and managers; vehicle tech enthusiasts

Description: This course will provide you with a broad technical knowledge and practical expertise of hybrid and electric vehicle (HEV) technologies, analysis, design, component selection and sizing at both system and vehicle level.

This course is aimed at system and/or component design engineers, working in the automotive industry, that are responsible for HEV design, development and validation.

It is also suitable for engineering directors and managers, and vehicle technology enthusiasts, who wish to obtain more in-depth knowledge of HEV technologies.

ISIS Neutron Training Course

URL: <https://www.isis.stfc.ac.uk/Pages/ISIS-Neutron-Training-Course.aspx#>
Location: Harwell Campus, ISIS Neutron and Muon Source
Dates: (18-27 June 2019 – applications closed). Future dates tbc
Costs: Free for students
Housing: Included
Participants: 35 PhD and post-doctoral researchers
Description: The annual ISIS Practical Neutron Training Course is aimed at PhD and post-doctoral researchers who have little or no experience of neutron scattering, but whose future research program aims to make use of neutron scattering techniques at ISIS. The course runs annually for 10 days at ISIS and takes around 35 students. We stress that this is a hand-on course using the ISIS neutron instruments aimed at complete beginners to neutron scattering.

NOTE: In the assessment of applications, the **statements submitted by the applicant and their supervisor carry the greatest weight**, and so we would encourage applicants to ensure that they **submit a strong statement emphasising the significance of neutron scattering in their research.**

Characterisation of Advanced Materials

URL: <https://www.surrey.ac.uk/department-mechanical-engineering-sciences/short-courses/characterisation-advanced-materials>
Location: University of Surrey
Dates: tbc
Costs: tbc.
Housing: Accommodation is not included in the course fee.
Contact: If you are interested in taking this course then please contact the Short Course Administrator, Jenna Flint j.flint@surrey.ac.uk +44 (0)1483 686122
Description: The aim of this five-day course is to introduce the principles of the most popular materials characterisation methods based on microscopy, chemical, physical and structural analysis and thermal techniques. Consideration will also be given to the analysis of particulate materials and coatings.

The basic principles used for the physical characterisation of materials will be outlined, microscopy by light, electrons and scanned probes will be introduced, and the readily available bulk characterisation methods such as diffraction, X-ray analysis and vibrational spectroscopies will be described.

Surface analysis by electron and ion spectroscopies will also form an important part of the course. Particular emphasis will be paid to the use of a variety of methods in multi-technique approaches for the characterisation of advanced materials.

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The course will be staffed by lecturers with considerable experience in materials characterisation. The programme will comprise lectures, laboratory demonstrations, computer simulations and exercise classes with the course tutors.

Over this week long course we will go through the following:

- Thermal analysis
- X-Ray diffraction
- Infrared spectroscopy
- Light microscopy
- Image acquisition analysis and processing
- Electron interactions
- Scanning electron microscopy
- The use of Focussed Ion Beam (FIB)
- X-ray analysis in electron microscopy
- Electron backscatter diffraction
- Transmission electron microscopy: Imaging and diffraction
- Scanning probe microscopies
- Electron energy loss analysis in the TEM/STEM
- Auger electron spectroscopy and microscopy
- Secondary ion mass spectrometry
- X-Ray photoelectron spectroscopy
- Ion beam analysis: RBS and PIXE.