

Registration form

Please register as soon as possible for this course as spaces are limited to a maximum of 15.

	Early Bird Registration on or before 10.09.18	After 10.09.18
Registration Fee (CPACT members)	£800 + VAT <input type="checkbox"/>	£1150 + VAT <input type="checkbox"/>
Registration Fee (non-members)	£1200 + VAT <input type="checkbox"/>	£1550 + VAT <input type="checkbox"/>

The above fees include tea/coffee breaks, lunches and dinner on the evening of Wednesday 16th January. Extensive course notes are also included. Fees are refundable only up to eight weeks before the event. Substitution may be made at any time.

Accommodation

The following hotels are conveniently located close to Clairet Scientific (approx 15 minutes by taxi):

- The Park Inn Northampton, Silver Street, Northampton, NN1 2TA
- Hotel Ibis Northampton Centre, Sol Central, Mare Fair, NN1 1SR
- Northampton Marriott Hotel, Eagle Drive, Northampton, NN4 7HW

METHOD OF PAYMENT: PLEASE NOTE THAT WE CANNOT ACCEPT DEBIT/CREDIT CARD PAYMENTS

Cheque (Please make cheques payable to Clairet Scientific)

Invoice will be sent by Clairet Scientific (Please provide a Purchase Order number)

Title Name

Job Title

Department.....

Organisation

Address

..... Postcode

Telephone Fax

e-mail

Special Dietary Requirements

Please return completed form to: Natalie Kerr, CPACT, c/o Pure and Applied Chemistry Department, University of Strathclyde, Thomas Graham Building, 295 Cathedral Street, Glasgow G1 1XL
Email: admin@cpact.com Tel: +44 141 548 4836 Fax: +44 141 548 4713

Course Certificate

Course certificates will be available on request.

Location

Centrally located, Northampton has direct rail links to London Euston, Birmingham and Birmingham International Airport and the course hotel is ten minutes walk from the station. By road, access is via the M1 from the South or North and the A14 from the East.



**PROCESS SPECTROSCOPY
COURSE**

**Tuesday 15th January -
Thursday 17th January 2019**

**Clairet Scientific,
Northampton**



Introduction

Process Analysis is an integral part of process optimisation, process control and performance monitoring. Rapid analytical measurements are increasingly required in industry to monitor progress of a reaction, know when the end-point of a process has been reached, check reaction kinetics, detect impurities or control blending, granulation, etc. All these activities and many more require timely qualitative and quantitative information. This can often be provided through at-line, on-line, in-line or non-invasive application of molecular spectroscopy techniques.

The course provides an introduction to molecular spectroscopy through a series of presentations and practical exercises/demonstrations on process spectroscopy techniques, including NIR, MIR, UV-visible, Raman spectrometries. Developments in complementary process analysis procedures based on light induced fluorescence spectrometry, mass spectrometry, NMR spectroscopy and acoustic measurements will also be described. Emphasis will be given to the practical application of spectroscopy to process analysis.

Who should attend?

This course will be for those required to develop and/or use spectroscopic techniques for process analysis. Exposure to up-to-date developments in instrumentation and procedures will provide practical appreciation of the attributes of different techniques.

Demonstrations

The following topics will be covered during the course:

- NIR at-line and in-line analysis
- MIR in-line analysis
- Raman in-line and non-invasive analysis
- UV-visible in-line analysis
- Non-invasive reflectance NIR spectrometry
- Multivariate calibration model building

Additional one-to-one or company specific training, project discussions or sample measurements are available immediately after the course by arrangement with Clairet Scientific.

Course Leaders

Dr John Andrews, Clairet Scientific
Dr Paul Dallin, Clairet Scientific
Prof David Littlejohn, University of Strathclyde
Dr Alison Nordon, University of Strathclyde

Provisional Programme

DAY 1 - Tuesday 15 January 2019

Morning session Welcome
Introduction to process analysis and sampling issues
Introduction to spectroscopy and measurement modes (absorption, fluorescence, emission)

Lunch

Afternoon session Introduction to UV-visible spectrometry
Applications of UV-visible spectrometry in process analysis
Introduction to Light Induced Fluorescence
Break
Demonstration sessions with instruments: UV-visible spectrometry and intrinsically safe operation of instruments

DAY 2 - Wednesday 16 January 2019

Morning session Introduction to MIR and NIR spectrometry
Applications of MIR and NIR spectrometry in process analysis
Break
Terahertz spectrometry
Introduction to Raman spectrometry
Applications of Raman spectrometry in process analysis

Lunch and group discussion session

Afternoon session Demonstration sessions with instruments: MIR spectrometry, NIR spectrometry, Raman spectrometry

Course dinner

DAY 3 - Thursday 17 January 2019

Morning session **Overview of complementary and developing techniques**
Acoustic spectrometry
Process NMR spectrometry
Process mass spectrometry
Strategies for selection of process analysis techniques
Break
Data pre-processing procedures
Regression analysis procedures for multivariate calibration
Design of experiments

Lunch

Afternoon session Demonstration sessions: Design of experiments, Multivariate calibration model building for NIR spectrometry, Advanced Raman spectrometry