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 30.10.17	After 30.10.17
Registration Fee (CPACT members)	**£750 + VAT** ☐	**£1040 + VAT** ☐
Registration Fee (non-members)	**£1100 + VAT** ☐	**£1450 + VAT** ☐

The above fees include tea/coffee breaks, lunches and dinner on the evening of Wed 17th January. Extensive course notes are also included. Fees are refundable only up to eght weeks before the event. Substitution may be made at any time.

Accommodation has been reserved at The Park Inn Northampton, Silver Street, Northampton, NN1 2TA (15 minutes by taxi to Clairet Scientific)

PLEASE TICK BOXES BELOW FOR ROOM RESERVATIONS.
IMPORTANT: ROOM RATE TO BE PAID TO CPACT WITH REGISTRATION FEE

15th Jan B&B rate £85.00 ☐ 16th Jan B&B rate £85.00 ☐ 17th Jan B&B rate £85.00 ☐

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.

CPACT
CENTRE FOR PROCESS ANALYTICS AND CONTROL TECHNOLOGY

PROCESS SPECTROSCOPY COURSE

Tuesday 16th January - Thursday 18th January 2018

Clairet Scientific, Northampton

CLAIRET SCIENTIFIC LIMITED

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 16 January 2018

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 **Break** Demonstration sessions with instruments: UV-visible and intrinsically safe operation of instruments

DAY 2 - Wednesday 17 January 2018

Morning session	Introduction to MIR and NIR spectrometry Applications of MIR and NIR spectrometry in process analysis **Break** 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 18 January 2018

Morning session	**Overview of complementary and developing techniques** Acoustic spectroscopy and NMR spectroscopy Light induced fluorescence (LIF) and mass spectrometry **Break** Strategies for selection of process analysis techniques Data pre-processing procedures Regression analysis procedures for multivariate calibratrion Design of experiments
	Lunch
Afternoon session	Demonstration sessions: Design of experiments, Multivariate calibration model building for NIR spectrometry, Advanced Raman spectometry