

Loughborough University Department of Materials

The Science and Technology of PVC

5 Day Short Course



16th - 20th April 2012

at

Burleigh Court, Loughborough University

Programme and Details

An intensive course taught over a one-week period comprising lectures, practicals and informal discussions with staff. This course is specifically designed for people in the PVC industry who need to gain more expert knowledge in their field.



The Science and Technology of PVC

This course is ideal if you are working in the PVC industry and need to increase your knowledge of PVC. It has been designed specifically for industrialists and is particularly aimed at people working in process development/support, QA, product development and technical service.

The course covers the complete range of PVC technology from its polymerisation through to its many and varied applications. It uniquely focuses on the interface between theory and application showing how you can relate key fundamentals to the processing of PVC and the performance of PVC products. In this way you and your company will benefit from being able to:

- **Choose resin type in order to optimise performance**
- **Conclude how formulation and processing conditions influence the gelation and properties of PVC**
- **Correlate material characteristics with mechanical properties**
- **Understand how mechanical properties influence product performance**
- **Participate more fully in your development projects**
- **Confidently discuss and identify requirements with suppliers, customers and workplace colleagues**
- **Understand the position of PVC in the market place and the environment**

Throughout the week you will have ample opportunity to clarify these issues and your specific interests in one-to-one free-time discussions with the lecturers. Our main aim is to give you the knowledge, understanding and confidence that you need to develop your role within your company.



Course delegates in 2010 with Professor Marianne Gilbert and Stuart Patrick

Course Programme

- Introduction to Plastic Materials
- Introduction to Processing of Plastic Materials
- Vinyl Chloride Polymerisation
- Introduction to Mechanical Properties
- Introduction to Practical Sessions

- PVC Grades: Molecular Weight; Structure and Morphology
- Processing: Rheology
- Processing: Mixing; Extrusion; Moulding; Calendering
- Practicals Session 1

- Fusion/Gelation
- Additives: Stabilisers; Lubricants; Modifiers; Plasticizers; Fillers
- Processing: Practical Aspects
- Practicals Session 2

- Applications - Flexibles: Properties and Performance; Film; Sheet; Plastisols
- Applications - Rigids: Properties and Performance 1
- Rigid Foams
- Practicals Session 3

- Applications - Rigids: Properties and Performance 2
- PVC Global manufacturers and Markets
- Environmental: Current attitudes; Life cycles: Recycling
- Feedback tutorial

The practicals are designed to complement the lecture content and have a project theme. Formulations are mixed, processed and then evaluated thus ensuring full understanding of the whole process. There are three separate sessions:

- Processing: Mixing; milling; extrusion
- Material Characteristics: Thermal analysis of stability and fusion; Rheological evaluation of mixing
- Mechanical performance: Tensile and impact measurement

Lecturer Profiles and Main Areas of Expertise

The lecturers are Loughborough University and Industry based. In this way we ensure that the key elements relevant to industry are brought out and developed.

Marianne Gilbert – Professor of Polymer Technology at Loughborough University Department of Materials. Over 30 years experience in PVC research and with particular expertise in characterisation and structure.

Brian Brooks – Professor in Chemical Engineering. Extensive experience in vinyl chloride polymerisation having set up the only polymerisation unit now operational in European Universities.

Barry Haworth – Senior Lecturer in Polymer Processing at Loughborough University Department of Materials. Specialising in the rheology and processing of PVC compounds having previously worked in industry on PVC processing.

Dave Hitt – Research Fellow at Loughborough University Department of Materials and Manager of the Polymer Processing Laboratory. Main area of expertise is in the characterisation and mechanical testing of PVC.

Noreen Thomas – Senior Lecturer in Polymer Technology at Loughborough University Department of Materials. Extensive industrial experience of PVC manufacturing and applications relating to building products.

Stuart Patrick – Consultant: Chairman of the IOM³ PVC Committee and a recognised industrial expert having specialised in supplying additives to the PVC industry.

Plus – an invited industrial speaker (to be confirmed)

For further information:

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Please visit our PVC Short Course web page for more information about fees, booking and availability:
www.lboro.ac.uk/departments/materials/industry/short-courses/

This event has been recognised by the Institute of Materials Minerals and Mining for PD.

'Professional development is the systematic maintenance, improvement and broadening of knowledge and skill, and the development of personal qualities necessary for the execution of professional, managerial and technical duties throughout the practitioner's working life.'