## Flexible PU Foam Technology
*Instructor:* M.A. Naqi, Canada  
*Code:* PU-17-21  
*Schedule:* 09.00-17.00 hrs  
- Invention and History  
- Machinery for Flexible Foams  
- Foam Chemistry and the Foaming Process  
- Flexible foam Production  
- Foam Processing Hints.  
- Quality and Testing.

## Polymer Science and Polyurethane Chemistry
*Instructor:* Dr. Joseph Marcinko, USA  
*Code:* PU-17-22  
*Schedule:* 09.00-17.00 hrs  
- Structure-Property Relationships in Polymers  
- Structure-Property Relationships in Polyurethanes  
- Isocyanate Chemistry and Manufacturing  
- Polyurethane Chemistry and Characterization

## Chemistry and Technology of Rigid Polyurethanes
*Instructor:* Grazyna Mitchener, UK  
*Code:* PU-17-23  
*Schedule:* 09.00-17.00 hrs  
- Rigid polyurethanes chemistry theory  
- Types of rigid polyurethanes  
- Applications of rigid polyurethanes  
- Raw materials  
- Formulation principles  
- Processing methods  
- Testing procedures

## Adhesion Science and Polyurethane Adhesives
*Instructor:* Dr. Joseph Marcinko, USA  
*Code:* PU-17-24  
*Schedule:* 10.30-18.00 hrs  
- Overview of Adhesion Concepts and Mechanisms  
- Mechanical Properties of Polyurethanes as Related to Adhesives  
- Non Reactive Adhesives  
- Reactive Adhesives

## Cost Reduction in Flexible PU Foam
*Instructor:* M.A. Naqi, Canada  
*Code:* PU-17-25  
*Schedule:* 13.30-17.00 hrs  
- Introduction  
- Analyzing different areas of waste.  
- Waste prevention and its impact to the bottom line.  
- What management can do about cost reduction.  
- Good Housekeeping.

## Polyols for Polyurethane Formulations
*Instructor:* Grazyna Mitchener, UK  
*Code:* PU-17-26  
*Schedule:* 13.30-17.00 hrs  
- Role of polyols in polyurethane chemistry  
- Types and properties of polyols  
- Polyols production technologies  
- Specific application of polyols for different polyurethanes  
- Polyols quality control procedures

## Thermal Analysis of Polymers and Polyurethanes
*Instructor:* Dr. Joseph Marcinko, USA  
*Code:* PU-17-27  
*Schedule:* 09.00-17.00 hrs  
- Thermal Analysis Instrumentation  
- Experimental Considerations  
- Industrial Problem Solving Using Thermal Analysis  
- Case Studies

## Flexible PU Foam Processing - Troubleshooting & Improvement
*Instructor:* M.A. Naqi, Canada  
*Code:* PU-17-28  
*Schedule:* 09.00-12.30 hrs  
- Introduction  
- Methodology of troubleshooting.  
- Chemical and mechanical troubleshooting.  
- Improving process efficiencies.

## How to develop New Polyurethane Formulations
*Instructor:* Grazyna Mitchener, UK  
*Code:* PU-17-29  
*Schedule:* 09.00-12.30 hrs  
- Role of polyols in polyurethane chemistry  
- Types and properties of polyols  
- Polyols production technologies  
- Specific application of polyols for different polyurethanes  
- Polyols quality control procedures

## Recycling Flexible PU Foam
*Instructor:* M.A. Naqi, Canada  
*Code:* PU-17-30  
*Schedule:* 13.30-17.00 hrs  
- Introduction  
- Analyzing different areas of waste.  
- Waste prevention and its impact to the bottom line.  
- What management can do about cost reduction.  
- Good Housekeeping.

## Polyisocyanurate (PIR) Chemistry and Technology
*Instructor:* Grazyna Mitchener, UK  
*Code:* PU-17-31  
*Schedule:* 13.30-17.00 hrs  
- Introduction  
- Analyzing different areas of waste.  
- Waste prevention and its impact to the bottom line.  
- What management can do about cost reduction.  
- Good Housekeeping.
**Course Instructors**

**Dr. Grażyna Mitchener** is a director and principal consultant in Polychemtech Ltd. – a technical and business consultancy specialising in innovative PIR/PUR and other polyurethane products and technologies. From 1996 to 2008 she worked for Celotex (UK), developing first in Europe PIR rigid insulation products. For the first ten years of her career she was an academic researcher and lecturer in Poland, where she worked on high performance, fire and heat resistant polymeric materials. She gained her Ph.D. in Polymer Chemistry and Technology in 1992. She is the author of 8 patents, 40 scientific papers, conference presentations and training workshops.

**M. A Naqi** is Principal consultant and President of LinQ Tech Inc. based in Canada. A graduate in Science I started my career as ‘Production Manager’ on a continuous Foaming machine at Poly Products LLC (Oman) between 1980 -2001 while directing the company from infancy to market leader in special foams, eventually became CTO in the company. During this period added a molded foam line as well as a rebonded foam line. I have developed formulations for all kinds of special foams, including soft and super soft grades with standard polyol, a unique pre-polymer dispensing system for rebonded foam which preludes cleaning of the pump and pouring tube. Started my own consultation company in 2001 assisting producers in Canada, Middle East and Asia, teaching foam production, adjusting formulations and talking at various shows and been involved in the industry for over 35 years.

**Dr. Joseph Marcinko** is Principal Scientist and President of Polymer Synergies LLC, and Principal Scientist for BioPolymer Technologies, Ltd. Dr. Marcinko has over 30 years of industrial R&D, research management, and academic experience. His interests and expertise are in the areas of polyisocyanate chemistry, biopolymers, adhesion science, composite materials, polymer characterization, solid-state NMR spectroscopy, and polymer structure-property relationships. He is an adjunct professor at Cumberland County College where he teaches Physical Science, Environmental Science, and Principles of Science. He also holds a secondary education teaching certification. Dr. Marcinko has authored over 30 publications, and has 6 patents and 7 patents pending.

**Registration Fee/ Person**

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**Course Outlines**

**Polyisocyanurate (PIR) Chemistry and Technology**

Instructor: Dr. Grażyna Mitchener, UK / Code: PU-17-31
Date: 12 July 2017 / Schedule: 13.30-17.00 hrs
- Polyisocyanurate chemistry theory
- Properties of PIR products
- Differences between PUR and PIR technologies
- Specifics of PIR formulations and raw materials
- Specifics of manufacturing equipment for PIR production

**Recycling Flexible PU Foam**

Instructor: M.A.Naqi, Canada / Code: PU-17-30
Date: 12 July 2017 / Schedule: 09.00-12.30 hrs
- Introduction.
- Methods of recycling.
- Machinery and equipment.
- Process.
- Applications.