Revised Programme

Course Director: Professor Mojtaba Ghadiri
Course Co-director: Dr Sadegh Nadimi
School of Chemical and Process Engineering, University of Leeds

Tuesday 14 May 2019
Characterisation of Physical Properties of Particles
09:00 Registration and Coffee
09:30 Introduction
Professor Mojtaba Ghadiri, University of Leeds
10:00 Sampling and sample preparation for particle characterisation
Professor Mojtaba Ghadiri, University of Leeds
- Origins of problems in particle property analysis
- Sampling from particulate systems
- Sample preparation
10:45 Coffee
11:10 Particle size analysis
Dr Chandresh Malde, Johnson Matthey
- Principles of size analysis
- State-of-the-art instruments for particle sizing
12:40 Lunch
13:25 Particle shape and structure characterisation
Dr Mehrdad Pasha, University of Leeds
- Shape and shape description
- Surface morphology and structure
- Application to density determination
14:25 Suspension rheology
Dr David Harbottle, University of Leeds
- Introduction to the principles of suspension rheology
- Particle structuring in suspensions
- Measurement of suspension rheology
15:55 Tea
16:15 Bulk flow of powders
Professor Norman Harnby, University of Bradford
- Cohesive and free-flowing powders
- Segregation and structure
- Application of characteristics to process design
17:45 End of day one
17:45 Networking Drinks Reception and Poster Session

Wednesday 15 May 2019
Characterisation of Mechanical Properties of Particles
08:30 Mechanical properties of powders
Dr Sadegh Nadimi, University of Leeds
- Introduction to mechanical properties of powder
- Characterisation of deformation and breakage of particles
- Characterisation by nano-indentation
- Particle breakage under brittle and semi-brittle failure modes
- Impact and side crushing of single particles
- Bulk compression and crushing
10:00 Coffee
10:15 Bulk characterisation of powders
Dr Colin Hare, University of Surrey
- Shear cells and powder rheometry
- Frictional properties
- Consolidation and unconfined yield stress
Wednesday 15 May 2019 continued

11:45 **Electrostatics in powder systems**
Professor Mojtaba Ghadiri, University of Leeds
- Fundamentals of tribo-electrification of powders
- Measurements of tribo-electrification of powders
- Industrial applications of electrostatics in powder systems

13:15 **Lunch**

14:00 **Powder characterisation practical demonstrations (Laboratories)**
   a. Lab B13: Nanoindentation and Malvern Mastersizer (Dr Umair Zafar)
   b. Lab 2.14: Shulze Shear Cell (Dr Sadegh Nadimi)
   c. Lab B13a: Freeman FT4 (Wei Pin Goh)
   d. Lab 201: XRT and G3 Morphology (Dr Mehrdad Pasha)

16:15 **Tea**

16:30 **Adhesion**
Dr Umair Zafar, University of Leeds
- Principles
- Measurement techniques
- State-of-art in the field

17:45 **End of day two**

19:15 **Course Dinner**

Thursday 16 May 2019

**Characterisation of Chemical Properties of Particles**

09:00 **Solubility and dissolution of particles**
Dr David Berry, The Centre for Process Innovation (CPI)
- Principles
- Applications

10:30 **Coffee**

10:45 **Tabletting and compaction of powders**
Dr Csaba Sinka, University of Leicester
- Fundamentals of tabletting and compaction of powders
- Industrial use of tabletting and compaction

12:15 **Lunch**

13:00 **Determination of Powder Surface Energy and Surface Chemistry**
Dr Jerry Heng, Imperial College London
- Principles
- Applications to powders

14:30 **End of day three and course**