

ONE DAY WORKSHOP AND SYMPOSIUM

Principles and Applications of Process Tomography in the Minerals, Chemical and Petroleum Engineering Industry

University of New South Wales, 23rd July 2009

This one day meeting provides an opportunity for industrialist, researchers and students to gain a rapid introduction to the principles and benefits of tomographic methods applied to process engineering. Tomographic methods use sensors positioned outside the process/pipeline to gain information that can be interpreted and often reconstructed to form a quantitative image of the variations in concentration of components within the process. These sensors exploit different properties and examples include electrical impedance, electrical capacitance, electrical inductance, x-rays, ultrasound, magnetic resonance.

The format of the workshop is designed to brief participants on current status of the technology, to highlight research challenges and needs and to provide practical case study examples of benefits in industrial design and operation.

A wide variety of tomographic methods have now been developed for a range of purposes including:

- Development and validation of process models (computational fluids dynamics, distinct elements modelling, liberation analysis)
- Design of equipment (reactors, filters, milling, agglomeration, drying, cyclones etc)
- In-plant fault diagnosis (flow blockage, complex multi-phase flow, powder flow)
- In-plant process optimisation and control (mixing, reaction end points, pneumatic conveying, crystallisation)
- In-plant process measurement (concentration, mass flow, reactions rates, temperature mapping)
- Product quality assessment (powder agglomerates, packaging, mixidness etc).

PROGRAMME

PRINCIPLES

- 9.00 – 9.45 Process tomography – an overview of principles and application benefits
Professor Richard A Williams (University of Leeds/UNSW)
- 9.45 - 10.20 The revolution in desktop X-ray microtomography – an overview of progress in fusing high resolution tomographic data with mineral and particle process models
Dr Roberto Moreno-Atanasio (University of Newcastle)
- 10.20 – 10.55 Reservoir rock properties using high resolution X-ray micro CT
Professor Val Pinczweski (University of New South Wales)
- 10.55 - 11.25 Break**
- 11.25 – 12.00 Computer simulation as a complementary technique in modelling of particulate systems
Professor Aibing Yu (University of New South Wales)

CASE STUDIES

- 12.00 - 12.35 Direct 3D characterisation and modelling of dewatering of flocs and sediments using x-ray tomography
Cordelia Selomulya (Monash University)

- 12.35 – 1.45 Lunch break and demonstrations/exhibits**
- 1.45 – 2.20 Tomography and mineral processing
Lionel Pullum, Consultant
- 2.20 – 2.55 An overview of tomographic work at the JKMRRC
Rob Morrison, JK Centre
- 2.55 – 3.30 Experiences with electrical resistance tomography in suspension pipeline research
Lachlan Graham, CSIRO
- 3.30 – 4.05 Application of electrical tomography for improving design of crystallisers, precipitators, mixers and separation systems.
K Primrose and G Bolton (Industrial Tomography Systems plc, UK)
Richard A Williams and Mi Wang (University of Leeds, UK)

A small registration fee will be payable to cover lunch and refreshments. This will be advised later when all costs are known.

For further details, please contact:

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Chemical and Petroleum Engineering Industry**

UNSW, 23rd July 2009

I would like to attend the above Workshop. My contact details are as follows:

Name:

Organisation:

Address:

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Telephone: **Email:**

Signature:

Please return your registration slip to Professor Rose Amal, at the address above.