Chemical Engineering Seminars – HT 2007

Week 3: Tuesday 30 January, 4:15-5.15 pm
Lecture Room 2, Thom Building, Engineering Science

Flux Response Technology

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Abstract

Flux Response is a sensitive and economical method of measuring very small changes in gas flow rates utilising a differential pressure transducer. Detectable differences are about 1 part in 10^5 in typical flows of 0.5 mL/sec

The technology was invented by Professors Mason and Buffham at Loughborough University in the 1990s whilst studying gas adsorption. Subsequent research has led to the development of FRT as a stand alone technology and the formation of a centre of excellence at Loughborough University.

With careful experimental design a wide variety of useful data can be obtained using the method. Applications include measurement of binary adsorption isotherms and volumes of mixing. There are a variety of further uses in heterogeneous catalysis, where flux response detection can be used as an In Situ method for monitoring reactions and also for catalyst characterisation techniques, such as TPD and chemisorption. The sensitivity is generally higher than for other instruments (e.g. microbalances). Flux Response equipment may also be used as a differential viscometer to rapidly construct plots of viscosity against composition for binary and ternary gas mixtures.

The seminar will give an introduction to the technique and an overview of, the types of experiments completed so far, the equipment used and the data obtained. Possible future uses of Flux Response will also be discussed.

Bio-sketch

Dr Richardson is a research associate at the Department of Chemical Engineering, Loughborough University.