

Chemical Engineering Seminars – MT 2007

Week 3: Tuesday 23 October, 4:15-5.15 pm
Lecture Room 2, Thom Building, Engineering Science

Step-change in enhancing extrusion as a unit operation

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Abstract

Extrusion-a unit operation in polymer processing has been in extensive use since the great age of plastic technology. It is a simple operation that enables in a single equipment the sequential conveying of solid polymer chips or powder, their melting, mixing, pumping and shaping via a die into a variety of high tonnage and/or value products. Extrusion is not limited to plastics but is used hot or cold to process soft solids like food, industrial and pharmaceutical pastes, as well as metals and ceramics. Most of the advances in extrusion processing have concentrated in improving the functions of extrusion: solid conveying, melting, pumping and mixing. The literature abounds with descriptions of such advances pushing the limits of the extrusion in an incremental way. In this talk, we describe **step-changes** in enhancing extrusion, which opens up new applications. The new designs presented in this talk have also the potential to develop new reactor technology for viscous fluids.

Bio-sketch

Professor Hadj Benkreira studied Chemical Engineering at Bradford University in the 1970's. After a short spell in the petrochemical industry in Algeria, he returned to Bradford to undertake an EPSRC sponsored PhD in the area of Fluid Mechanics of Coating Flows under the eminent Professor W.L. Wilkinson (FRS, CBE). He became a "New Blood Lecturer" in Chemical Engineering in 1985 at Bradford and worked interdisciplinary with colleagues at Bradford to establish in 1989 the IRC in Polymer Science and Technology jointly with Leeds and Durham. Bradford is now an established centre of excellence in Polymer Engineering and has been awarded the status of a CIC (Centre of Industrial Collaboration) in Polymer Engineering and recently a UK Centre of Micro and Nanotechnology. In 1998, Professor Benkreira was awarded a Personal Research Chair in Coating and Polymer Processing. His work is essentially geared towards understanding the fluid mechanics of coating flows and polymer processing unit operations and developing new processes as a result. Professor Benkreira is a member of several learned societies and of the EPSRC Peer Review College and Vice President of the International Society of Coating Science and Technology. He presently occupies the post of Associate Dean for Research & Knowledge Transfer at the School of Engineering of the University of Bradford. Professor Benkreira is an active member (Fellow) of the IChemE through his accreditation work, external examiner of courses as well the subject groups (mixing in particular).