TABLE OF CONTENTS

- Description p.1
- Impact Factor p.3
- Abstracting and Indexing p.3
- Editorial Board p.3
- Guide for Authors p.5

DESCRIPTION

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- Hydrodynamics, heat and mass transfer in separation equipment
- Physical properties and thermodynamic models/methods
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- Process equipment characterisation
- Process modelling, simulation and optimisation

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- Reactive flow
- Turbulent flow
- Microfluidics
- Multiphase flow
- Computational fluid dynamics
- Porous media flow
- Interfacial flows, coating & wetting phenomena
- Complex fluids
- Non-Newtonian fluids
- Flow visualization

**Heat and mass transfer**
- Mechanisms of heat and mass transfer
- Multicomponent mass transfer
- Simulation of heat and mass transfer processes
- Simultaneous heat and mass transfer

**Materials processing and product development**
- Fundamental properties of interest to processing of materials
- Injection moulding of materials
- In-line measurement and control of material processes
- Morphological development processes
- Pre-processing, shaping, multi-layering and finishing of final product form
- Product design based on chemical engineering tools
- Structure-function relationships in products and relevant systems
- Tailoring chemical products and materials for end-use applications

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- Crystallisation and precipitation
- Design of particulate systems and processes
- Formation and synthesis of particulates
- Kinetics of particulate processes
- Measurement and characterisation of particulate systems
- Processing, handling and storage of powders and dispersions
- Product formulation and rheology

**Pharmaceutical engineering**
- Design, modelling, operation and control of pharmaceutical (bio)reactors, unit operators and process systems used in the production of (bio)pharmaceuticals
- Application of process analytical technology in pharmaceutical product and process design and characterisation
- Pharmacokinetic and pharmacodynamic modelling
- Design, characterisation and modelling of drug delivery systems

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- Information modelling and analysis
- Process design and integration
- Process modelling, simulation and optimization
- Process operations and control
- Techno-economic analysis

**Reaction engineering**
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- Process intensification
- Reaction kinetics
- Reactive flows
- Reactor development, modelling and scale-up

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• Green processes
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• Phase separation: clarification, flocculation, microfiltration
• Reactive separation processes: hybrid and novel separation techniques
• Separation by phase change

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