CHEMICAL ENGINEERING SCIENCE

Volume 183 **29 June 2018**

(*Contents continued on inside back cover*)

Cover Illustration: The role of initial geometry in experimental models of wound closing. Wang Jin, Kai-Yin Lo, Shih-En Chou, Scott W. McCue, Matthew J. Simpson. Chemical Engineering Science 179 (2018) 221–226. "A new experiment, called a *sticker assay*, shows that different initial wound shapes in populations of fibroblast cells lead to different wound closure rates."

INDEXED/ABSTRACTED *in: Curr Cont ASCA/Eng Tech & Applied Sci/Sci Cit Ind/SCISEARCH Data, Chem Eng Biotech Abstr, PASCALCNRS Database, BIOSIS Database, Petroleum Abstracts, INSPEC Data, Aqua Abstr, Current Biotech Abstr, Chemical Abstracts Service, Curr Tech Ind, FLUIDEX, TCEA, Elsevier BIOBASE Current Awareness in Biological Sciences. Also covered in the abstract and citation database Scopus®. Full text available on ScienceDirect®.*

ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

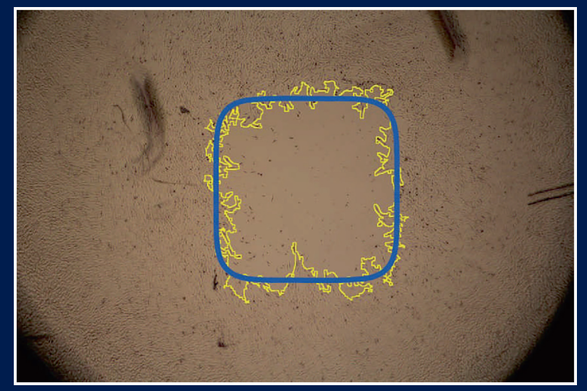
0009-2509(20180629)183:C;1-W

Printed by Henry Ling Ltd., Dorchester, United Kingdom

ELSEVIER

Volume 183 **29 June 2018** **ISSN 0009-2509**

CHEMICAL ENGINEERING SCIENCE



On-line Access via: www.elsevier.com/locate/ces

CYAN MAGENTA YELLOW BLACK

AIMS AND SCOPE

Chemical engineering enables the transformation of natural resources and energy into useful products for society. It draws on and applies natural sciences, mathematics and economics, and has developed fundamental engineering science that underpins the discipline.

Chemical Engineering Science (CES) has been publishing papers on the fundamentals of chemical engineering since 1951. CES is the platform where the most significant advances in the discipline have ever since been published. *Chemical Engineering Science* has accompanied and sustained chemical engineering through its development into the vibrant and broad scientific discipline it is today.

We welcome manuscripts presenting cutting-edge research, of either an experimental or a theoretical nature. While centered in chemical engineering, manuscripts will often have scope that cuts across disciplines, ranges across scales, from the molecular level to the plant level, with impact not only specific research questions but also in global issues. Critical reviews of cutting-edge developments are also considered. Papers submitted to *Chemical Engineering Science* are assessed by the editorial board via a thorough peer-review process only with regard to their quality and potential for fundamental and long-lasting contribution to chemical engineering.

Chemical Engineering Science classifies research into the following main fields: Biochemical engineering, Materials synthesis and processing, Particle technology, Process systems engineering, Reaction engineering and catalysis, Separation processes, Thermodynamics and Soft matter, and Transport Phenomena including Fluid Mechanics. Application areas covered by the journal include Chemicals, Minerals, Energy and Fuels, Water, Environment, Sustainability, Food, Medicine including Pharmaceuticals, and other areas to which chemical engineering applies.

Biochemical engineering – chemical engineering interfacing with the life sciences, including:

- the application of modern tools such as protein and enzyme engineering in biochemical engineering;
- systems biology;
- the use of biology to effect a transformation of material;
- waste treatment;
- bio-reaction engineering;
- high-throughput process development;
- simulation of molecular and process performance;
- downstream processing;
- bioreactor modeling.

Materials synthesis and processing

- Chemical engineering of materials synthesis, characterization, design, control, and scale up of materials synthesis
- Reverse materials engineering (i.e. process-informed definition of materials properties)
- Materials screening and selection
- Materials including particles/nanoparticles, thin films, membranes, multifunctional materials, hierarchical porous structures.
- Synthesis methods include chemical vapor deposition, atomic layer deposition, hydrothermal synthesis, colloidal synthesis, self- and directed assembly, among others
- Synthesis-structure-function relationships of materials or material classes
- Nucleation and growth (or formation) mechanisms of materials

Particle technology – Chemical engineering process steps to manipulate the properties of particles and particulate systems:

- Flow measurement and tomography of particulate processes;
- Fluidization and fluid-particle systems;
- Novel particle synthesis, surface functionalization, production, and characterization;
- Modeling and simulation for fluid dynamics of particulate systems in chemical processes;
- Nucleation, growth, breakage and aggregation, particle population dynamics.

Process systems engineering

- Simulation, analysis, synthesis, optimization, and control of (bio-)chemical process systems based on mathematical modeling approaches;
- Advanced modeling strategies for all levels of the process systems hierarchy (molecular level, phase level, process unit level, plant level; enterprise level);
- Advanced methods for model and parameter identification;
- Methods for the design of experiments in chemical engineering.

Reaction engineering and catalysis

Simulation and experiments on

- reaction kinetics;
- catalyst synthesis, characterization and application;
- reactor design;
- process reaction intensification;
- multifunctional, micro- and multiphase reactors;
- molecular and quantum scale phenomena;
- density functional theory;
- multiscale modeling;
- transport phenomena related to multiphase reactors.

Separation processes

- general principles: phase equilibria, mass transfer, mixing and phase segregation;
- processes and unit operations: distillation, absorption, liquid-liquid extraction, membrane processes, adsorption separation processes, ion-exchange, preparative chromatography, crystallization and precipitation;
- supercritical fluid separation processes;
- biochemical separation processes;
- equipment design.

Thermodynamics and Soft Matter

Fundamental studies in thermodynamics and physical chemistry that have ultimate application in chemical engineering, including:

- equations of state, chemical potential, diffusion, fugacities;
- phase diagrams and the estimation of partial excess properties;
- emulsions, foams and the behavior of surfaces including fluid-fluid interfaces;
- colloidal and self-assembled systems;
- studies purely based on observation or reporting data that do not provide fundamental insight are discouraged; studies that bring fundamental understanding through modern analysis including molecular simulation are encouraged.

Transport Phenomena, including Fluid Mechanics

Core chemical engineering papers concerning transport and rate processes in physical, chemical and biological systems including fundamental insights obtained through the use of computational fluid dynamics, preferably validated experimentally.

Publication information: For 2018, Volumes 175–192 (18 issues) are scheduled for publication. Subscription prices are available upon request from the Publisher or from the Elsevier Customer Service Department nearest you or from this journal's website (http://www.elsevier.com/locate/ces). Further information is available on this journal and other Elsevier products through Elsevier's website (http://www.elsevier.com). Subscriptions are accepted on a prepaid basis only and are entered on a calendar year basis. Issues are sent by standard mail (surface within Europe, air delivery outside Europe). Priority rates are available upon request. Claims for missing issues should be made within six months of the date of dispatch.

Orders, claims, and journal inquiries: Please visit our Support Hub page https://service.elsevier.com for assistance.

Author inquiries: You can track your submitted article at http://www.elsevier.com/track-submission. You can track your accepted article at http://www.elsevier.com/trackarticle. You are also welcome to contact Customer Support via http://support.elsevier.com.

Advertising information: If you are interested in advertising or other commercial opportunities please e-mail Commercialsales@elsevier.com and your inquiry will be passed to the correct person who will respond to you within 48 hours.

Funding body agreements and policies
Elsevier has established agreements and developed policies to allow authors who publish in Elsevier journals to comply with potential manuscript archiving requirements as specified as conditions of their grant awards. To learn more about existing agreements and policies please visit http://www.elsevier.com/fundingbodies

Printed by Henry Ling Ltd., Dorchester, United Kingdom

♾ The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper)

For a full and complete Guide for Authors; please go to:
http://www.elsevier.com/locate/ces

(*Contents continued from outside back cover*)