

# CHEMICAL ENGINEERING JOURNAL

## An International Journal of Research and Development

### Co-Editors:

Environmental Chemical Engineering:

**Professor Laurence Weatherley**, University of Canterbury, Dept. of Chemical and Process Engineering, Private Bag 4800, Christchurch, New Zealand

Chemical Reaction Engineering:

**Professor Jesus Santamaria**, University of Zaragoza, Dept. of Chemical and Environmental Engineering, 50009 Zaragoza, Spain

### Editorial Board:

**Prof. J.M. Asua**, Universidad del Pais Vasco, San Sebastian, Spain

**Prof. D.V. Boger**, Univ. of Melbourne, Melbourne, Australia

**Prof. G. Casamatta**, Institut National Polytechnique, Toulouse, France

**Dr. R. Cerro**, Univ. of Alabama, Huntsville, AL, USA

**Prof. D.P.Y. Chang**, University of California Davis, Davis, CA, USA

**Prof. P. Forzatti**, Politecnico di Milano, Milano, Italy

**Prof. Dr. H. Hofmann**, Universität Erlangen Nurnberg, Erlangen, Germany

**Prof. H.H. Kung**, Northwestern University, Evanston, IL, USA

**Prof. G. McKay**, Hong Kong University of Science and Technology, Hong Kong, China

**Prof. E.B. Nauman**, Rensselaer Polytechnic Institute, Troy, NY, USA

**Prof. J. Petera**, Technical University of Lodz, Lodz, Poland

**Prof. Dr. R.P. Pohorecki**, Warsaw Technical University, Warsaw, Poland

**Prof. D. Reible**, Louisiana State University, Baton Rouge, LA, USA

**Prof. A.E. Rodrigues**, Univ. of Porto, Porto, Portugal

**Dr. J. Spivey**, Louisiana State University, Baton Rouge, LA, USA

**Prof. G. Stevens**, Univ. of Melbourne, Melbourne, Australia

**Prof. K.-L. Yeung**, Hong Kong University of Science and Technology, Hong Kong, China

### Aims and Scope

The *Chemical Engineering Journal* provides an international forum for the presentation of original research, interpretative reviews and discussion of new development in the areas of Environmental Chemical Engineering and Chemical Reaction Engineering. Papers which describe novel theory and its application to practice are welcome, as are those which illustrate the transfer of techniques from other disciplines. Reports of carefully executed experimental work, which is soundly interpreted are also welcome.

The *Environmental Chemical Engineering* section presents papers dealing with topics in environmental chemical and process engineering. Treatment processes, environmental risk analysis, environmental process control and measurement, clean process technology and sustainability are covered. Papers in which knowledge from other disciplines is integrated with chemical engineering are especially welcome.

The *Chemical Reaction Engineering* section presents papers on a wide range of topics including reaction kinetics, applied catalysis, simulation and optimization of different types of reactors, unsteady-state reactors, multiphase reactors, and fundamental investigations of the processes of heat, mass and momentum transfer that take place along with chemical reaction. Research works addressing critical areas of reactor engineering (e.g. reactor materials, control strategies, reactor safety and environmental issues), and emerging reactor technologies (e.g. membrane reactors, chromatographic reactors, unconventional fluidized beds, electrochemical reactors, micro-reactors, etc.) are particularly welcome.

**Publication information:** Chemical Engineering Journal (ISSN 1385-8947). For 2004, volume(s) 96–104 are scheduled for publication. Subscription prices are available upon request from the Publisher or from the Regional Sales Office nearest you or from this journal's website (<http://www.elsevier.com/locate/cej>). 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.

**USA mailing notice:** – *Chemical Engineering Journal* (ISSN 1385-8947) is published *monthly*, with the exception of February, June and October, by Elsevier B.V. (P.O. Box 211, 1000 AE Amsterdam, The Netherlands).

Annual subscription price in the USA US\$ 2321.00 (valid in North, Central and South America), including air speed delivery. Second class periodical postage rate paid at Jamaica, NY 11431.

**USA POSTMASTER:** Send address changes to Chemical Engineering Journal, Publications Expediting, Inc., 200 Meacham Avenue, Elmont, NY 11003.

**AIRFREIGHT AND MAILING** in the USA by Publication Expediting Inc., 200 Meacham Avenue, Elmont, NY 11003.

**Orders, claims, and journal enquiries:** please contact the Customer Service Department at the Regional Sales Office nearest you:

**Orlando:** Elsevier, Customer Service Department, 6277 Sea Harbor Drive, Orlando, FL 32887-4800, USA; phone: (+1) (877) 8397126 [toll free number for US customers], or (+1) (407) 3454020 [customers outside US]; fax: (+1) (407) 3631354; e-mail: [usjcs@elsevier.com](mailto:usjcs@elsevier.com)

**Amsterdam:** Elsevier, Customer Service Department, PO Box 211, 1000 AE Amsterdam, The Netherlands; phone: (+31) (20) 4853757; fax: (+31) (20) 4853432; e-mail: [nlinfo-f@elsevier.com](mailto:nlinfo-f@elsevier.com)

**Tokyo:** Elsevier, Customer Service Department, 4F Higashi-Azabu, 1-Chome Bldg, 1-9-15 Higashi-Azabu, Minato-ku, Tokyo 106-0044, Japan; phone: (+81) (3) 5561 5037; fax: (+81) (3) 5561 5047; e-mail: [jp.info@elsevier.com](mailto:jp.info@elsevier.com)

**Singapore:** Elsevier, Customer Service Department, 3 Killiney Road, #08-01 Winsland House I, Singapore 239519; phone: (+65) 63490222; fax: (+65) 67331510; e-mail: [asiainfo@elsevier.com](mailto:asiainfo@elsevier.com)

### Advertising Information

Advertising orders and enquiries can be sent to : Elsevier, 84 Theobalds Rd, London, WC1X 8RR, tel: +44(0)20 7611 4494, fax: +44(0)20 7611 4463, e-mail: [k.barton@elsevier.com](mailto:k.barton@elsevier.com)

Reprints. Reprint orders can be sent to [currentreprints@elsevier.com](mailto:currentreprints@elsevier.com), tel: +44(0)20 7611 4494, fax: +44(0)20 7611 4463

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

Printed in The Netherlands