

Tate T. H. Tsang

Department of Chemical and Materials Engineering
University of Kentucky
Lexington, Kentucky 40506-0046
(859) 257-8059; Fax: (859) 323-1929; tsang@engr.uky.edu

EDUCATION

Ph.D., Chemical Engineering, University of Texas at Austin, May 1980.
M.S., Chemical Engineering, University of Texas at Austin, January 1975.
B.S., Chemical Engineering, Chung Yuan University, Taiwan, R.O.C., June 1972.

PROFESSIONAL EXPERIENCE

7/09-12/09 Sabbatical at the Institute for Systems Biology, Seattle, WA (Prof. Ilya Shmulevich, host faculty).
2003-2009 Chair of the Department of Chemical and Materials Engineering.
1997-1999 Director of Undergraduate Studies, Department of Chemical and Materials Engineering.
1996- Professor, Chemical Engineering, University of Kentucky.
1990-1996 Associate Professor, Chemical Engineering, University of Kentucky.
1984-1990 Assistant Professor, Chemical Engineering, University of Kentucky.
1980-1984 Research Associate, Chemical Engineering, University of Texas at Austin.

PROFESSIONAL ACTIVITIES

Member: American Association of Aerosol Research, American Institute of Chemical Engineers, American Chemical Society, American Physical Society, American Meteorological Society, United States Association for Computational Mechanics, American Association for the Advancement of Science, Society of Industrial and Applied Mathematics (SIAM).

Reviewer: Journal of Aerosol Science, Aerosol Science and Technology, Journal of Colloid and Interface Science, AIChE Journal, Chemical Engineering Science, Fuel, Atmospheric Environment, International Journal of Numerical Methods in Fluids, and International Journal of Numerical Methods for Heat and Fluid Flow.

RESEARCH INTEREST

Computational Fluid Dynamics, Heat and Mass Transfer, Microfluidics, Finite Element Methods, Aerosols, Air Pollution Modeling, Chemical Process Modeling and Simulation, Numerical Methods and Parallel Algorithms, Bayesian Statistics and Biological Networks, Systems Biology.

TEACHING ACTIVITIES

Chemical Process Principles, Process Modeling, Separation Processes, Air Pollution, Finite Element Methods, Transport Phenomena, Chemical Reactor Design and Analysis, Chemical Process Dynamics and Control, Applied Mathematics and Analysis of Chemical Engineering Problems, Chemical Process Design.

SELECTED PUBLICATIONS

1. A least-squares finite element method for time-dependent incompressible flows with thermal convection (with L. Q. Tang), *International Journal for Numerical Methods in Fluids*, **17**, 271-289 (1993)
2. Transient solutions for three-dimensional flows in a lid-driven cavity by a least-squares finite element method (with L. Q. Tang and T. Cheng), *International Journal for Numerical Methods in Fluids*, **21**, 413-432 (1995)
3. Temporal, spatial and thermal features of 3D Rayleigh Benard convection by a least-squares finite element method (with L. Q. Tang), *Computer methods in Applied Mechanics and Engineering*, **140**, 201-219 (1997)
4. Large eddy simulations of turbulent flows by a least-squares finite element method (with X. Ding), *International Journal for Numerical Methods in Fluids*, **371**, 297-319 (2001)
5. Large-scale parallel computation of incompressible flows by a domain decomposition-based least-squares finite element method (with X. Ding and Q. Y. Jiang), *Industrial & Engineering Chemistry Research*, **49**, 8080-8085 (2010)

OTHER PUBLICATIONS (over 40 journal publications)

1. Optimal control via collocation and non-linear programming (with T. F. Edgar and D.M. Himmelblau), *International Journal of Control*, **21**, 763-768 (1975)
2. Simulation of condensation aerosol growth by condensation and evaporation (with J. R. Brock), *Aerosol Science and Tech.*, **2**, 311-320 (1983)
3. On parallelization of time-dependent, three-dimensional transport equations in air pollution modeling (with Prasad Pai), *Atmospheric Environment*, **27A**, 2009-2015 (1993)
4. The current state and future direction of Eulerian models in simulating the tropospheric chemistry and transport of trace species: a review (with L. K. Peters, C. M. Berkowitz, G. R. Carmichael, R. C. Easter, G. Fairweather, S. J. Ghan, J. M. Hales, L. R. Leung, W. R. Pennell, F. A. Potra, R. D. Saylor), *Atmospheric Environment*, **29**, 189-222 (1995)
5. On first-order formulations of the least-squares finite element method for incompressible flows (with X. Ding), *International Journal of Computational Fluid Dynamics*, **17**, 183-197 (2003)

LIST OF COLLABORATORS

Prof. Zhaojun Bai (Department of Mathematics, University of California at Davis)

Prof. Graeme Fairweather (Department of Mathematics, Colorado School of Mines)

Prof. Scott Yost (Department of Civil Engineering, University of Kentucky)

Prof. G. R. Carmichael (Department of Chemical and Biochemical Engineering, University of Iowa)

Dr. L. K. Peters (former Director, DOE Pacific Northwest National Laboratory)