

## ANNOUNCEMENTS

### SHORT COURSES on

### Multiphase Flow and Heat Transfer: Bases, Modelling and Applications in: A, The Nuclear Power Industry; B, The Process Industries

Zurich, 23–27 March 1992

Hosted by the Swiss Federal Institute of Technology (ETH), Zurich, Switzerland

THE MODULAR courses feature coordinated, comprehensive series of lectures by experts and are of interest to practising engineers and to researchers who wish to obtain a condensed and critical view of present basic knowledge (Part I) or information on the state of the art regarding applications in specialized industries (Parts IIA and IIB).

The courses aim at an interdisciplinary transfer of knowledge. Applications cover nuclear and chemical plant safety (with an emphasis on severe accidents), steam generators, pipelines, etc.

For further information contact

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#### THE LECTURERS

Sanjoy Banerjee, Professor at the Dept. of Chemical and Nuclear Engineering, Univ. of California–Santa Barbara.

Michael L. Corradini, Professor of Nuclear Engineering and Engineering Physics at the Univ. of Wisconsin–Madison.

Gad Hetsroni, Danciger Professor of Engineering at Technion–Israel Institute of Technology.

Geoffrey F. Hewitt, Professor of Chemical Engineering at Imperial College, London.

George Yadigaroglu, Professor of Nuclear Engineering at the Swiss Federal Institute of Technology in Zurich (ETHZ) and Head of the Thermal-Hydraulics Laboratory at the Paul-Scherrer Institute.

#### CONTENTS OF LECTURES

##### *Part I. Bases*

1. Introduction and basics
2. Basic equations
3. Flow regimes, pressure drop and void fraction
4. Two-phase flow in vertical pipes
5. Two-phase flow in horizontal and inclined pipes
6. Closure relationships
7. Two-phase heat transfer
8. Post-dryout heat transfer
9. Numerical methods
10. Multidimensional modelling
11. Computer codes
12. Instabilities in two-phase flow

##### *Part IIA. Water reactor applications*

- 13A. LOCA phenomena
- 14A. Severe accidents
- 15A. Codes for transient and accident analysis
- 16A. Severe accident codes
- 17A. Steam generators
- 18A. Vapor explosions

##### *Part IIB. Process and petroleum industry applications*

- 13B. Multicomponent heat and mass transfer
- 14B. Emergency relief system vent sizing
- 15B. Two-phase flow in pipelines
- 16B. Dense gas and mist dispersions
- 17B. Oil/water/gas flows: characteristics and measurement
- 18B. Vapor-cloud explosions

## JOINT WORKSHOP OF EURO THERM & ERCOFTAC

### Benchmark Computation and Experiment for Turbulent Natural Convection in a Square Cavity

Delft, The Netherlands, 25–27 March 1992

Hosted by the J. M. Burgers Centre for Fluid Mechanics

#### SCOPE

THE AIM of this workshop is to obtain both computational and experimental benchmark results for the turbulent natural-convection flow of fluid in the square cavity with differentially heated vertical side walls. It is an extension of the

earlier laminar benchmark by De Vahl Davis and Jones. A standard two-dimensional case, including a  $k-\epsilon$  turbulence model, is defined for the computations. Also experiments preferably have to be performed for the standard configuration. In addition to the standard case, participants are requested to extend their calculations and/or experiments to

somewhat modified configurations, conditions and turbulence models. Also extension to three-dimensional computations is requested. Both the standard and additional results will give a complete picture of the state-of-the-art knowledge of turbulent natural convection in heating-from-the-side cavities.

A book of extended abstracts will be distributed during the workshop. Full papers will be published by Springer-Verlag afterwards in a bound volume.

#### **PARTICIPATION**

Participants who have already informed the workshop secretariat that they will contribute calculations and/or experiments will receive a registration and accommodation

form. New contributions can no longer be accepted. The workshop, however, is open to all those who are interested in the subject; these participants should ask the workshop secretariat for the registration and accommodation form. The form should be returned to the secretariat.

#### **WORKSHOP SECRETARIAT**

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