Int. J. Multiphase Flow Vol. 5, pp. 497–500
Pergamon/Elsevier, 1979. Printed in Great Britain

ANNOUNCEMENTS

TWO PHASE SHORT COURSE 1980

Stanford University
Department of Chemical Engineering

4–8 August 1980

EXPERIMENTAL METHODS IN TWO-PHASE FLOW

Two-phase flow and heat transfer continue to focus the attention of researchers, and to frustrate and thwart the engineer, in the nuclear, chemical and other industries. New data and information, ideas and hypothesis, facts and erroneous theories, continue to be produced.

The purpose of this course is to provide the practicing engineer with:

- An up-to-date condensed and critical view of the state of knowledge.
- Highlight of salient points.
- Experimental philosophy and methods.
- The outstanding areas of uncertainties.

The course will consist of:

- A series of coordinated lectures by well-known experts.
- Lecture notes to be distributed prior to the course.
- Discussions.
- Selected movies and slides to illustrate physical phenomena.
- Excellent and convenient accommodations on Stanford Campus.

Lecturers

S. Banerjee, Professor of Engineering Physics, McMaster University, Canada.
R. B. Duffey, Program Manager, Electric Power Research Institute, Palo Alto, Calif.
P. Griffith, Professor of Mechanical Engineering, M.I.T., Cambridge, Mass.
G. Hetsroni, Professor of Mechanical Engineering, Technion, Haifa, Israel.
G. F. Hewitt, Manager, HTFS, AERE Harwell, England.
R. T. Lahey, Chairman, Department of Nuclear Engineering, Rensselaer Polytechnic Inst., Troy, New York.
V. Schrock, Professor of Nuclear Engineering, University of California at Berkeley, Calif.

MONDAY, 4 AUGUST: BASICS

(1) Introduction—G. F. Hewitt
General philosophy of experimental work. Importance of right question. Classification of quantities and methods.

(2) The nature of two phase flow—S. Banerjee
Flow pattern-characterization—basic quantities and analytical treatments.

(3) Averaging—S. Banerjee
Differences in types of average of time varying quantities. Averaging methods. Mathematical bases.

(4) Statistics of measurement—G. Hetsroni
Precision vs accuracy. General statistical bases, etc.

TUESDAY, 5 AUGUST: MEASUREMENT OF PHASE CONTENT

(5) Review of available methods—V. Schrock
Listing and discussion of alternatives (radiation, impedance, NMR, quick-closing valves, etc.). Discussion of relative merits.

(6) Radiation method—V. Schrock
Bases of radiative methods, gamma, X-ray, neutron, and discussion of relative merits of methods.

(7) Detailed system design for gamma systems—R. T. Lahey
Calculation of required source size, shielding, etc. for gamma absorption system. Detailed design with example. Ditto for gamma scattering.

(8) Local void probes—R. T. Lahey
Conductance probes, optical probes, signal processing.

WEDNESDAY, 6 AUGUST: MEASUREMENT OF FLOW

(9) Review of methods for flow measurement—R. B. Duffy
Listing and appraisal. Velocity and mass flow measurement. Advantages and disadvantages of various methods.

(10) Force and torque methods—R. T. Lahey
Turbine meter, drag disk, true mass flow meter (Coriolis and turbine).

(11) Differential pressure-related methods—R. B. Duffey
Orifices, Venturies, Pitot probes, isokinetic probes, etc.

(12) Transit time techniques—R. T. Lahey
Trace measurements, cross correlation of signals from two instruments.

THURSDAY, 7 AUGUST: HEAT AND TRANSFER EXPERIMENTATION

(13) Introduction to temperature measurement—P. Griffith
Sensors, accuracy, problems of temperature measurement in non-equilibrum fluids, etc.

(14) Heat transfer experimentation—P. Griffith
Heater design, indirect/direct heating. Transient response. Fluid heated or cooled system.

(15) Mass transfer experimentation—P. Griffith
Electrochemical methods, gas absorption, interfacial area measurement.

(16) Mechanistic studies of CHF and heat transfer in annular flow—G. F. Hewitt
Film flow, heat transfer coefficient, visualization. Onset and suppression of nucleation.

FRIDAY, 8 AUGUST: MEASUREMENT OF FLOW STRUCTURE

(17) Photographic methods—G. F. Hewitt
High speed photography, holography, X-ray photography, etc.

(18) Local velocity measurement—G. Hetsroni

Laser Doppler anemometry, optical probes, stereo-photography, etc.

(19) Particle size measurement—G. Hetsroni

Photographic methods, scattering methods, laser methods, etc.

RESERVATIONS

The course fee including room and board is $800 per registrant. Accomodations will be made on campus at one of Stanford's newest and most comfortable student residences (w/o private baths). Three meals per day will be provided. The course fee EXCLUSIVE of room and board is $600. Course fee includes printed lectures.

Please make checks payable to Stanford University and mail to:

Department of Chemical Engineering,
Stanford University,
Stanford, CA 94305,
U.S.A.

Reservations to be made by 10 June 1980.

ANNOUNCEMENT AND CALL FOR PAPERS

1980 ASME WINTER ANNUAL MEETING

Chicago, Illinois

16–21 November 1980

FUNDAMENTALS OF SCALING IN TWO-PHASE FLOWS

The K-8 Committee of the ASME Heat Transfer Division is sponsoring a technical session on Fundamentals of Scaling in Two-Phase Flows at the 1980 ASME Winter Annual Meeting, Chicago, Illinois, 16–21 November 1980.

Papers are being solicited for this session which should focus on the new developments in the area of scaling as applied to two- or multi-phase flow systems. Both analytical and experimental studies are welcome. Appropriate topics include, but are limited to: effects of size and/or geometry of apparatus on constitutive relations, fluid-to-fluid scaling, dimensional analysis, scaling from conservation equations, and others. A broad coverage of the subject with application to the nuclear, power, power, chemical and process industries is intended.

To facilitate planning, the organizers would appreciate receiving a detailed 500 word abstract from the prospective authors as early as possible, but not later than 15 February 1980. Authors of the accepted abstracts will be notified by 29 February 1980, and the complete manuscript will be due by 15 April 1980. All papers submitted will be reviewed according to the ASME policy. Authors of the accepted papers will be notified by 20 May 1980, and the final manuscripts on mats will be due