at the onset of a first boiled-out region. The analysis of computational results indicate that a qualitative tendency exists between the characteristics such as heat generation rate, porosity, effective particle diameter and the temporal development of the liquid volumetric fraction field up to dryout.

Two phase thermalhydraulic code used for fast transient calculations
Prah M., Feretic D. & Grgic D., *International Journal for Engineering Modelling*, 1996, 9/1-4 (21-26). In English.

The thermalhydraulic model was developd as a base for a fast running computer code for the purpose of a nuclear power plant primary system simulation. The model is based on the drift flux theory and integrated momentum equation. It is a nonhomogeneous four-equation model of a two-phase flow. On the basis of the developed theoretical model, the computer code in FORTRAN 77 for PC 386/486 compatible computers was prepared. The results of simulation are quite good and the accuracy of the program for selected test cases is comparable to the accuracy of RELAP5/mod2 computer code with CPU time reduction.

The analysis of nonlinear internal wave induced by arbitrary pressure distribution in a stratified flow
Chin-Hwa Kong & Chieh-Yao Chang, *International Journal for Engineering Modelling*, 1996, 9/1-4 (11-20). In English.

Nonlinear internal waves induced by arbitrary pressure loads in a stratified flow are treated, and the analytical solutions are given. The analytical solutions are supplied by applying Rayleigh and Lamb methods to linear waves on the free surface with infinite depth. It is shown that for a stratified-flow category, a number of differences are influenced by interfacial Froude numbers between the two methods. These variances derived from the Froude numbers are interpreted physically. The purpose of this study is to analyze the effects of the nonlinearity, to compare the different results derived from different pressure distribution functions by the above two analytical methods and to develop the appropriate model which is capable of solving the similar problem under any other conditions.

Numerical prediction of two-phase flow in bubble columns
Boisson N. & Malin M.R., *International Journal for Numerical Methods in Fluids*, 1996, 23/12 (1289-1310). In English.

A numerical model is described for the prediction of turbulent continuum equations for two-phase gas-liquid flows in bubble columns. The mathematical formulation is based on the solution of each phase. The two-phase model incorporates interfacial models of momentum transfer to account for the effects of virtual mass, lift, drag and pressure discontinuities at the gas-liquid interface. Turbulence is represented by means of a two-equation k-ϵ model modified to account for bubble-induced turbulence production.

A multiphase mixture model for multiphase, multicomponent transport in capillary porous media - I. Model development
Wang C.Y. & Cheng P., *International Journal of Heat and Mass Transfer*, 1996, 39/17 (3607-3618). In English.

A new model for multiphase, multicomponent transport in capillary porous media is developed, in which the multiple phases are considered as constituents of a multiphase mixture. This multiphase mixture model consists only of the conservation equations for the multiphase mixture and is derived from the classic multiphase flow formulation without making any approximations. In addition, algebraic relations are found which can be used to back out the individual phase flow fields from the mixture velocity in a post-processing fashion.

New low-Reynolds-number k-ϵ model including damping effect due to buoyancy in a stratified flow field
Murakami S., Kato S., Chikamoto T., Laurence D. & Blay D., *International Journal of Heat and Mass Transfer*, 1996, 39/16 (3483-3496). In English.

A new k-ϵ model which includes damping effect on vertical turbulent transport due to thermal stratification is proposed. The proposed model was tested by application to two kinds of two-dimensional thermally stratified flow fields. One is a high-Reynolds-number open channel flow, and the other is a low-Reynolds-number flow-field within an enclosure. The new model also includes low-Reynolds-number treatment which is effective not only in the vicinity of the wall, but also apart from the wall.

A model for slurry rheology
Shi F.N. & Napier-Munn T.J., *International Journal of Mineral Processing*, 1996, 47/1-2 (103-123). In English.

A semi-empirical model has been developed to predict slurry rheology from easily-measured slurry properties. The model demonstrates the complex influence of these properties on rheology, and also permits rheological information to be predicted in cases where it cannot be measured. It is intended for use with slurries commonly encountered in mineral processing. The model has been applied to 127 sets of Debex viscometer measurements of a variety of slurries totalling more than 1200 data points, with good agreement between the predicted and the measured data. The separate effects of solids volume fraction and particle size on slurry rheological nature, simulated using the model and turbulence-corrected by the TC curve procedure, are demonstrated graphically. The influence of various factors of slurry rheology is discussed, and it is shown that a single slurry can exhibit many different rheological natures, depending only on the concentration and size distribution of the solids.

Measuring the rheology of slurries using an on-line viscometer
Shi F.N. & Napier-Munn T.J., *International Journal of Mineral Processing*, 1996, 47/3-4 (153-176). In English.

This paper presents a new procedure for obtaining a full shear rate-shear stress flow curve for unstable slurries using the single bobbin Debex on-line viscometer. It is based on the use of a calibration algorithm which incorporates a correction for turbulent flow in the measurement vessel. It is shown that torqueoc efficient data from a variety of Newtonian fluids and non-Newtonian slurries fall on a single curve, and it is suggested that this calibration curve (the 'TC curve') is characteristic for a particular instrument configuration. In principle, it can