aquifers. Multiphase flow functions are important to simulate the flow in such systems. Unfortunately, there are few, is any, reliable estimates of these flow properties from laboratory experiments. A method is presented for simultaneous estimation of three-phase relative permeability and capillary pressure functions from laboratory experiments. The method is not limited by restrictions in the experimental design or assumptions regarding the saturation dependence of shape of the functions to be estimated. The method is demonstrated with simulated experiments. It is shown that with a suitable experimental design, regions of the functions represented by the measured data can be determined accurately.

Analysis of thin film thickness determination in two-phase flow using a multifiber optical sensor
Yu. S.C.M., Tso C.P. & Liew R., *Applied Mathematical Modelling*, 1996, 20/7 (540-548). In English.
Simulation studies has been conducted utilizing the principle of virtual image and vector analysis to demonstrate the possibility of using a multifiber optic sensor to determine the thickness and orientation of a clear liquid film in a gas-liquid two-phase flow situation. The sensor system consists of a central light emitting fiber which is surrounded symmetrically by six light receiving fibers. By analyzing the different patterns of light intensity reflected back at the gas-liquid interface and collected by the six receiving fibers, the thin film thickness and its orientation with respect to the measuring point can be determined.

A thermally stratified wind tunnel for environmental flow studies
Ohya Y., Tatsuno M., Nakamura Y. & Ueda H., *Atmospheric Environment*, 1996, 30/16 (2881-2887). In English.
A wind tunnel was constructed to study the effects of thermal stratification on flow and diffusion in the atmospheric boundary layer. The wind tunnel is of a suction type and has a 1.5 m wide, 1.2 m high, 13.5 m long, rectangular test section. Designed to produce thermally stratified flows, the tunnel is equipped with two independent temperature systems, an air-flow heating unit (AHU) and a floor temperature controlling unit (FTCU).

Simulation of airlift pumps for deep water wells
Nenes A., Assimacopoulos D., Markatos N. & Mitsoulis E., *Canadian Journal of Chemical Engineering*, 1996, 74/4 (448-456). In English.
A mathematical model for the simulation of water airlift pumps is developed, based on the 'interspersed continua' approximation for two-phase flow systems, together with an algorithm that selects the appropriate friction correlation for specific flow regimes. The model presented can either predict the water or air flow rate for a given airlift system. Predictions obtained by the model were compared with a series of experiments performed by the Greek Institute of Geological and Mineral Exploration and were found to be in good agreement. The present predictions are far superior to those obtained by an existing simple model currently in general use.

Liquid phase residence time distribution for two phase flow in coiled tubes
Saxena A.K., Nigam K.D.P., Schumpe A. & Deckwer W.D., *Canadian Journal of Chemical Engineering*, 1996, 74/6 (861-866). In English.
The residence time distribution (RTD) of the liquid phase in air-water flow through helical coils has been studied. Upward and downward cocurrent flows have been investigated in three coils with curvature ratios ranging from 11 to 60.7. The ranges of the Reynolds numbers for the gas and the liquid varied from 1500 to 3000 and 620 to 3200, respectively. A model has been proposed that describes the liquid phase RTD as combination of two different residence time distributions applicable for turbulent and laminar liquid flows.

Horizontal cross flow filtration and rinsing of ice from saline slurries
Dickey L.C., Dallmer M.F., Radewonuk E.R. & McAloon A., *Canadian Journal of Chemical Engineering*, 1996, 74/6 (905-910). In English.
Continuous filtration of ice slurries to generate potable water was investigated. In the filtration process the ice is driven through a stationary channel with liquid draining through narrow slots in the base. Most of the liquid drained from the slurry at ambient pressure and the residual liquid trapped in the pores of the consolidated ice bed was displaced to a vacuum after downstream rinsing with sprayed or melt water. The cost of this approach may be competitive with reverse osmosis if an automated unit is developed.

Effects of pressure and temperature on flow regimes in gas-solid fluidization systems
Bi H.T. & Grace J.R., *Canadian Journal of Chemical Engineering*, 1996, 74/6 (1025-1027). In English.
The effects of operating temperature and pressure on the flow regimes of gas-solids fluidization are predicted based on the recently published flow regime diagram of Bi and Grace (1995b). The predictions are consistent with the evidence available in the literature. At constant superficial gas velocity, increasing system pressure and decreasing system temperature shift the behaviour toward higher velocity flow regimes. The opposite trends are realized if, instead, the gas mass flowrate is held constant.

Special traits of the cavitation technology of stirring highly viscous liquids
Yakhno O.M., Yaske N.N. & Koval A.D., *Chemical and Petroleum Engineering*, 1996, 32/3 (218-221). In English.
When a cavity forms in any region of a flow of a viscous liquid, gas bubbles are liberated. The growth and collapse of bubbles are discussed. The effects of cumulative cavitation on the rheological properties of the raw material during stirring were investigated. Cavitation stirring led to a reduction in the viscosity of the raw material. The dependency of viscosity on temperature could be changed and the stability of disperse petroleum systems against lamination could be enhanced.