

Table of Contents

Bubble driven flows

O. Borchers and G. Eigenberger Detailed experimental studies on gas-liquid bubble flow in bubble columns with and without recycle	1
G. Brenn, V. Kolobarić and F. Durst Basic experimental investigations on the hydrodynamics of bubble columns	11
D. Bröder and M. Sommerfeld Examination of bubble collisions and coalescence in bubbly flows	21
Ch. Brücker and W. Schröder PIV-Study on bubble interaction and wakes in multiphase flows.....	37
S. Godo, K. Junghans, A. Lapin and A. Lübbert Dynamics of the flow in bubble column reactors	53
S. Scheid, S. John, O. Bork, H. Parchmann, M. Schlüter, N. Rübiger Improved model for the calculation of homogeneous gas-liquid flows	67
O. Gnotke, R. Jeschke and R. Loth Experimental and theoretical investigation of bubble break-up and coalescence in bubbly flows	85
D. Lucas, E. Krepper and H.-M. Prasser Experimental investigation and modeling of air/water flows in vertical pipes	101
D. Schmitz and D. Mewes Experimental and theoretical investigation of instationary bubble flow and mass transfer in a bubble column	117
A. Seeger, U. Kertzscher, K. Affeld, L. Goubergits and E. Wellenhofer X-ray based particle tracking velocimetry for bubble columns with high void fraction	129

Modelling and numerical calculations

M. van Sint Annaland, N.G. Deen and J.A.M. Kuipers Multi-level modelling of dispersed gas-liquid two-phase flows	139
D. Bothe, M. Koebe, K. Wielage, J. Prüss and H.-J. Warnecke Direct numerical simulation of mass transfer between rising gas bubbles and water	159
M. F. Göz and M. Sommerfeld Analysis of bubble interactions in bidisperse bubble swarms by direct numerical simulation.....	175
D. Kuzmin and S. Turek Finite element discretization tools for gas-liquid flows	191

F. Lehr and D. Mewes	
A transport equation for the interfacial area in bubble columns using a population balance approach.....	203
D. Wiemann, F. Lehr and D. Mewes	
Flow fields in bubble columns with mass transfer.....	217
Three-phase flows	
M. Behling and D. Mewes	
X-ray computational tomography measurement of 3-phase flow in bubble columns.....	233
E. Bourloutski and M. Sommerfeld	
Euler/Lagrange calculations of gas-liquid-solid-flows in bubble columns with phase interaction.....	243
J. H. Enß, J. Schallenberg, V. Michele, H. Dziallas, D. C. Hempel	
Local parameters of three-phase flow in column reactors with high disperse phase hold-up.....	261
S. John, S. Scheid, H. Parchmann, O. Bork, M. Schlüter and N. Rübiger	
Model fundamentals for the design of three-phase loop reactors.....	275
U. Kertscher, A. Seeger, K. Affeld and E. Wellenhofer	
Simultaneous measurement of the local liquid and the local solid velocities.....	287
Stirred vessels	
E. Gharaibah and W. Polifke	
A numerical model of dispersed two phase flow in aerated stirred vessels based on presumed shape number density functions.....	295
V. Ilchenko, R. Maurus and T. Sattelmayer	
Influence of the operating conditions on the bubble characteristics in an aerated stirred vessel.....	307
F. Mayinger and O. Feldmann	
Bubble dispersion in aerated stirred vessels.....	319
A. F. Nassar, G. Zivkovic, B. Genenger and F. Durst	
PDA measurements and numerical simulation of turbulent two-phase flow in stirred vessels.....	337