

Curriculum Vitae

INFORMAZIONI PERSONALI

Nome ALBERTO
Cognome BRUCATO
Recapiti Vaile delle Scienze - Edificio 6 - terzo piano
Telefono 320-4328587
091-23863716
E-mail alberto.brucato@unipa.it

FORMAZIONE TITOLI

Laureato in Ingegneria Chimica nel 1980 presso l'Università di Palermo e, presso lo stesso ateneo, ricercatore (1983) professore associato (1992), straordinario (2001) e infine ordinario di Impianti Chimici dal 2004.

Ha trascorso periodi di studio e di ricerca presso le Università di Bath (UK) e di Santa Fé (Ar) e ha condotto numerose collaborazioni scientifiche internazionali.

ATTIVITA' DIDATTICA

E' attualmente titolare dei corsi "Biochemical Plant Design" (Corso di laurea magistrale in Ingegneria Chimica, in lingua Inglese) e dell'Ateneo di Palermo.

Nel corso degli anni ha tenuto corsi di: Impianti Chimici, Operazioni Unitarie e Impianti Chimici, Progettazione di Apparecchiature per l'Industria Chimica, Principi di Ingegneria Chimica, "Impianti Biochimici" (Corso di laurea specialistica in Biotecnologie per l'Industria e la Ricerca) presso l'Ateneo di Palermo) nonché corsi di "Apparatus Design" e "Simulation Dynamics and Control of Chemical Plants" (presso l'Università di Addis Abeba (Etiopia).

INCARICHI / CONSULENZE

- Coordinatore di AIDIC Sicilia
- Membro del Consiglio Direttivo di AIDIC
- Membro del Consiglio Direttivo ANIMP - Sezione Flussi Multifase (dal 2007 al 2011)

ASSOCIAZIONI SCIENTIFICHE

- Membro del Working Party on Mixing della European Federation of Chemical Engineering (EFCE)
- Membro del Working Party on Education della European Federation of Chemical Engineering (EFCE)

PUBBLICAZIONE

PUBBLICAZIONI SU RIVISTE ISI

Scargiali F, Busciglio A, Grisafi F, Brucato A (2014). Mass transfer and hydrodynamic characteristics of unbaffled stirred bio-reactors: Influence of impeller design. BIOCHEMICAL ENGINEERING JOURNAL, vol. 82, p. 41-47, ISSN: 1369-703X, doi: 10.1016/j.bej.2013.11.009

Tamburini A, Cipollina A, Micale G, Brucato A (2013). Particle distribution in dilute solid liquid unbaffled tanks via a novel laser sheet and image analysis based technique. CHEMICAL ENGINEERING SCIENCE, vol. 87, p. 341-358, ISSN: 0009-2509

Tamburini A, Cipollina A, Micale G, Brucato A, Ciofalo M (2013). CFD simulations of dense solid–liquid suspensions in baffled stirred tanks: Prediction of solid particle distribution. *CHEMICAL ENGINEERING JOURNAL*, vol. 223, p. 875-890, ISSN: 1385-8947, doi: 10.1016/j.cej.2013.03.048

Scargiali F, Busciglio A, Cipollina A, Grisafi F, Micale G, Tamburini A, Vella G, Brucato A (2013). Modelling and Simulation of Gas–liquid Hydrodynamics in a Rectangular Air-lift Reactor. *International Journal of Chemical Reactor Engineering*. *INTERNATIONAL JOURNAL OF CHEMICAL REACTOR ENGINEERING*, ISSN: 1542-6580, doi: 10.1515/ijcre-2012-0040

Busciglio A, Grisafi F, Scargiali F, Brucato A (2013). On the measurement of local gas hold-up, interfacial area and bubble size distribution in gas–liquid contactors via light sheet and image analysis: Imaging technique and experimental results. *CHEMICAL ENGINEERING SCIENCE*, vol. 102, p. 551-566, ISSN: 0009-2509, doi: 10.1016/j.ces.2013.08.029

Scargiali F, Busciglio A, Grisafi F, Tamburini A, Micale G, Brucato A (2013). Power consumption in uncovered-unbaffled stirred tanks: influence of viscosity and flow regime. *INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH*, ISSN: 0888-5885, doi: 10.1021/ie402466w

Tamburini A, Brucato A, Cipollina A, Micale G, Ciofalo M (2012). CFD Predictions of Sufficient Suspension Conditions in Solid-Liquid Agitated Tanks. *INTERNATIONAL JOURNAL OF NONLINEAR SCIENCES AND NUMERICAL SIMULATION*, vol. 13, p. 427-443, ISSN: 1565-1339, doi: 10.1515/ijnsns-2012-0027

Tamburini A, Cipollina A, Micale G, Brucato A, Ciofalo M (2012). CFD simulations of dense solid-liquid suspensions in baffled stirred tanks: Prediction of the minimum impeller speed for complete suspension. *CHEMICAL ENGINEERING JOURNAL*, vol. 193-194, p. 234-255, ISSN: 1385-8947, doi: 10.1016/j.cej.2012.04.044

Scargiali F, Busciglio A, Grisafi F, Brucato A (2012). Gas-liquid-solid Operation of a High Aspect Ratio Self-ingesting Reactor. *INTERNATIONAL JOURNAL OF CHEMICAL REACTOR ENGINEERING*, vol. 10, ISSN: 1542-6580, doi: 10.1515/1542-6580.3011

Tamburini A, Cipollina A, Micale G, Brucato A, Ciofalo M (2011). CFD simulations of dense solid–liquid suspensions in baffled stirred tanks: Prediction of suspension curves. *CHEMICAL ENGINEERING JOURNAL*, vol. 178, p. 324-341, ISSN: 1385-8947, doi: 10.1016/j.cej.2011.10.016

Scargiali F, Grisafi F, Busciglio A, Brucato A (2011). Modeling and simulation of dense cloud dispersion in urban areas by means of computational fluid dynamics. *J*

Busciglio A, Grisafi F, Scargiali F, Brucato A (2010). On the measurement of bubble size distribution in gas-liquid contactors via light sheet and image analysis. *CHEMICAL ENGINEERING SCIENCE*, vol. 65, p. 2558-2568, ISSN: 0009-2509, doi: 10.1016/j.ces.2009.12.031 *WC Engineering, Chemical*

BUSCIGLIO A, GRISAFI F, SCARGIALI F, BRUCATO A (2010). On the measurement of bubble size distribution in gas–liquid contactors via light sheet and image analysis. *CHEMICAL ENGINEERING SCIENCE*, vol. 65, p. 2558-2568, ISSN: 0009-2509, doi: 10.1016/j.ces.2009.12.031

Busciglio A, Grisafi F, Scargiali F, Brucato A (2010). On the measurement of local gas hold-up and interfacial area in gas-liquid contactors via light sheet and image analysis. *CHEMICAL ENGINEERING SCIENCE*, vol. 65, p. 3699-3708, ISSN: 0009-2509, doi: 10.1016/j.ces.2010.03.004 *WC Engineering, Chemical*

Brucato A, Cipollina A, Micale GDM, Scargiali F, Tamburini A (2010). Particle Suspension in Top-Covered Unbaffled Tanks. *CHEMICAL ENGINEERING SCIENCE*, vol. 65, p. 3001-3008, ISSN: 0009-2509, doi: 10.1016/j.ces.2010.01.026

SCARGIALI F, BUSCIGLIO A, GRISAFI F, BRUCATO A (2010). Simplified Dynamic Pressure Method for kLa measurement in aerated bioreactors. *BIOCHEMICAL ENGINEERING JOURNAL*, vol. 49, p. 165-172, ISSN: 1369-703X, doi: 10.1016/j.bej.2009.12.008

CIPOLLINA A, BRUCATO A, MICALÉ G (2009). A mathematical tool for describing the behaviour of a dense effluent discharge. *DESALINATION AND WATER*

Tamburini A, Cipollina A, Micale G, Ciofalo M, Brucato A (2009). Dense solid-liquid off-bottom suspension dynamics: Simulation and experiment. *CHEMICAL ENGINEERING RESEARCH & DESIGN*, vol. 87, p. 587-597, ISSN: 0263-8762, doi: 10.1016/j.cherd.2008.12.024 *WC Engineering, Chemical*

Magelli F, Baldi G, Brucato A (2007). 12th European conference on mixing. *CHEMICAL ENGINEERING SCIENCE*, vol. 85, p. 541, ISSN: 0009-2509, doi: 10.1205/cherd.ed.0705

BRUCATO A, GRISAFI F, RIZZUTI L, SCLAFANI A, VELLA G (2007). A quasi-isoactinic reactor for photocatalytic kinetics studies. *INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH*, vol. 46, p. 7684-7690, ISSN: 0888-5885, doi: 10.1021/ie073991

LI PUMA G, BRUCATO A (2007). Dimensionless Analysis Of Slurry Photocatalytic Reactors Using Two-Flux And Six-Flux Radiation Absorption-Scattering Models. *CATALYSIS TODAY*, vol. 122, p. 78-90, ISSN: 0920-5861, doi: 10.1016/j.cattod.2007.01.027

SCARGIALI F, RUSSO R, GRISAFI F, BRUCATO A (2007). Mass transfer and hydrodynamic characteristics of a high aspect ratio self-ingesting reactor for gas-liquid operations. CHEMICAL ENGINEERING SCIENCE, vol. 62, p. 1376-1387, ISSN: 0009-2509, doi: 10.1016/j.ces.2006.11.040

SCARGIALI F, DORAZIO A, GRISAFI F, BRUCATO A (2007). Modelling and simulation of gas-liquid hydrodynamics in mechanically stirred tanks. CHEMICAL ENGINEERING RESEARCH & DESIGN, vol. 85, p. 637-646, ISSN: 0263-8762, doi: 10.1205/cherd06243

SALVADO-ESTIVILL I, BRUCATO A, LI PUMA G (2007). Two Dimensional (2-D) Modeling of a Flat Plate Photocatalytic Reactor for Oxidation of Indoor Air Pollutants. INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, vol. 46, p. 7489-7496, ISSN: 0888-5885, doi: 10.1021/ie07391r

CERMAKOVA J, SCARGIALI F, SIYAKATSHANA N, KUDRNA V, BRUCATO A, MACHON V (2006). Axial dispersion model for solid flow in liquid suspension in system of two mixers in total recycle. CHEMICAL ENGINEERING JOURNAL, vol. 117, p. 101-107, ISSN: 1385-8947, doi: 10.1016/j.cej.2005.09.022

BRUCATO A, CASSANO A.E, GRISAFI F, MONTANTE G, RIZZUTI L, VELLA G (2006). Estimating Radiant Fields in Flat Heterogeneous Photoreactors by the Six-Flux Model. AIChE JOURNAL, vol. 52, p. 3882-3890, ISSN: 0001-1541, doi: 10.1002/aic.10984

SCARGIALI F, DI RIENZO E, CIOFALO M, GRISAFI F, BRUCATO A (2005). Heavy gas dispersion modelling over a topographically complex mesoscale: a CFD based approach. PROCESS SAFETY AND ENVIRONMENTAL PROTECTION, vol. 83, p. 242-256, ISSN: 0957-5820

ALCAMO R, MICALE G, GRISAFI F, BRUCATO A, CIOFALO M (2005). Large-Eddy Simulation of Turbulent Flow in an Unbaffled Stirred Tank Driven by a Rushton Turbine. CHEMICAL ENGINEERING SCIENCE, vol. 60, p. 2303-2316, ISSN: 0009-2509, doi: 10.1016/j.ces.2004.11.017

CIPOLLINA A, GRISAFI F, NICOSIA S, BRUCATO A (2005). Modelling and bench scale investigation of inclined dense jets. JOURNAL OF HYDRAULIC ENGINEERING, vol. 131, p. 1017-1022, ISSN: 0733-9429

SCARGIALI F, GRISAFI F, BRUCATO A (2005). On the Performance of A Long Draft Tube Self-Ingesting Reactor for Gas-Liquid Operations. INŻYNIERIA CHEMICZNA I PROCESOWA, vol. 26, p. 419-515, ISSN: 0208-6425

MICALE G., GRISAFI F., BRUCATO A (2004). CFD simulation of particle suspension height in stirred vessels. CHEMICAL ENGINEERING RESEARCH & DESIGN, vol. 82, p. 1204-1213, ISSN: 0263-8762

CIPOLLINA A, BONFIGLIO A, MICALE G, BRUCATO A (2004). Dense jet modelling applied to the design of dense effluent diffusers. DESALINATION, vol. 167, p. 459-468, ISSN: 0011-9164

LI PUMA G, KHOR JN, BRUCATO A (2004). Modelling of an annular photocatalytic reactor for water purification: oxidation of pesticides. ENVIRONMENTAL SCIENCE & TECHNOLOGY, vol. 38, p. 3737-3745, ISSN: 0013-936X, doi: 10.1021/es0301020

SCARGIALI F., CERMACHOVA I., GRISAFI F., MACHON V., BRUCATO A (2004). Particle flow modelling in slurry fed stirred vessels. CHEMICAL ENGINEERING & TECHNOLOGY, vol. 27, p. 249-256, ISSN: 0930-7516

SCARGIALI F., GRISAFI F., CHERMAKOVA J., MACHON V., BRUCATO A (2004). Residence Time Distribution of solid particles in a continuous, high-aspect ratio multiple-impeller stirred vessel. CHEMICAL ENGINEERING SCIENCE, vol. 59, p. 3601-3618, ISSN: 0009-2509

MICALE G, GRISAFI F, BRUCATO A (2002). Assessment of particle suspension conditions in stirred vessels by means of a pressure gauge technique. CHEMICAL ENGINEERING RESEARCH & DESIGN, vol. 80, p. 893-902, ISSN: 0263-8762

MONTANTE G., MICALE G., MAGELLI F., BRUCATO A (2001). Experiments and CFD predictions of particle distribution in a vessel agitated with four pitched blade turbines. CHEMICAL ENGINEERING RESEARCH & DESIGN, vol. 79, p. 1005-1010, ISSN: 0263-8762

MONTANTE G., LEE K. C., BRUCATO A, YIANNESKIS M. (2001). Experiments and predictions of the transition of the flow pattern with impeller clearance in stirred tanks. COMPUTERS & CHEMICAL ENGINEERING, vol. 25, p. 729-735, ISSN: 0098-1354

MONTANTE G., LEE K. C., BRUCATO A, YIANNESKIS M. (2001). Numerical simulation of the double- to single-loop transition in stirred vessels. CHEMICAL ENGINEERING SCIENCE, vol. 56, p. 3751-3770, ISSN: 0009-2509

MICALE G., MONTANTE G., GRISAFI F., BRUCATO A, GODFREY J. (2000). CFD simulation of particle distribution in stirred vessels. CHEMICAL ENGINEERING RESEARCH & DESIGN, vol. 78, p. 435-444, ISSN: 0263-8762

BRUCATO A, CIOFALO M., GRISAFI F., TOCCO R. (2000). On the Simulation of Stirred Tank Reactors via Computational Fluid Dynamics. CHEMICAL ENGINEERING SCIENCE, vol. 55, p. 291-302, ISSN: 0009-2509

MICALE G., CARRARA G., GRISAFI F., BRUCATO A (2000). On the fraction of suspended solids in three-phase stirred tanks.

CHEMICAL ENGINEERING RESEARCH & DESIGN, vol. 78, p. 319-326, ISSN: 0263-8762

MONTANTE G., LEE K.C., BRUCATO A, YIANNESKIS M. (1999). An experimental study of double- to single-loop transition in stirred vessels. CANADIAN JOURNAL OF CHEMICAL ENGINEERING, vol. 77, p. 649-659, ISSN: 0008-4034

BRUCATO A, GRISAFI F. (1999). Economic evaluation of UV sources for photocatalytic applications. JOURNAL OF ADVANCED OXIDATION TECHNOLOGIES, vol. 4, p. 47-54, ISSN: 1203-8407

MICALE G., BRUCATO A, GRISAFI F., CIOFALO M. (1999). Prediction of flow fields in a dual impeller stirred vessel. AIChE JOURNAL, vol. 45, p. 445-464, ISSN: 0001-1541

BRUCATO A, CIOFALO M., GRISAFI F., MICALE G. (1998). Numerical prediction of flow fields in baffled stirred vessels: a comparison of alternative modelling approaches. CHEMICAL ENGINEERING SCIENCE, vol. 53, p. 3653-3684, ISSN: 0009-2509

BRUCATO A, GRISAFI F., MONTANTE G. (1998). Particle drag coefficients in turbulent fluids. CHEMICAL ENGINEERING SCIENCE, vol. 53, p. 3214-3295, ISSN: 0009-2509

BRUCATO A, RIZZUTI L., SCIASCIA A., SCLAFANI A. (1998). Processi fotocatalitici per l'eliminazione di inquinanti organici dall'acqua. ACQUA ARIA, p. 83-90, ISSN: 1591-1616

GRISAFI F., BRUCATO A, RIZZUTI L. (1998). Solid-liquid mass transfer coefficients in gas-solid-liquid stirred vessels. CANADIAN JOURNAL OF CHEMICAL ENGINEERING, vol. 76, p. 446-455, ISSN: 0008-4034

BRUCATO A, BRUCATO V. (1998). Unsuspended mass of solid particles in stirred tanks. CANADIAN JOURNAL OF CHEMICAL ENGINEERING, vol. 76, p. 420-427, ISSN: 0008-4034

BRUCATO A, RIZZUTI L. (1997). Simplified Modelling of Radiant Fields in Heterogeneous Photoreactors; Part I : Case of zero reflectance. INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, vol. 36, p. 4740-4747, ISSN: 0888-5885

BRUCATO A, RIZZUTI L. (1997). Simplified Modelling of Radiant Fields in Heterogeneous Photoreactors; Part II : Limiting model for the case of reflectance greater than zero. INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH, vol. 36, p. 4748-4755, ISSN: 0888-5885

CIOFALO M., BRUCATO A, GRISAFI F., TORRACA N. (1996). Turbulent flow in closed and free-surface unbaffled tanks stirred by radial impellers. CHEMICAL ENGINEERING SCIENCE, vol. 51, p. 3357-3573, ISSN: 0009-2509

RIZZUTI L., BRUCATO A, IATRIDIS D., YUE P.L: (1992). Light transmittance and reflectance of flat fluidised photoreactors. CHEMICAL AND BIOCHEMICAL ENGINEERING QUARTERLY, vol. 6, p. 19-23, ISSN: 0352-9568

RIZZUTI L., BRUCATO A, IATRIDIS D., YEE P.L: (1992). Modelling of light transmittance and reflectance in flat fluidised photoreactors. CANADIAN JOURNAL OF CHEMICAL ENGINEERING, vol. 70, p. 1063-1070, ISSN: 0008-4034

BRUCATO A, BRUCATO V., RIZZUTI L. (1992). Residence time distribution of solid particles in stirred vessels. CHEMICAL ENGINEERING COMMUNICATIONS, vol. 161-181, p. 1992, ISSN: 0098-6445

BRUCATO A, MAGELLI F., NOCENTINI M., RIZZUTI L. (1991). An application of the network-of-zones model to solids suspension in multiple impeller mixers. CHEMICAL ENGINEERING RESEARCH & DESIGN, vol. 69, p. 43-52, ISSN: 0263-8762

IATRIDIS D., YUE P. L., RIZZUTI L., BRUCATO A (1990). The absorption of light energy in flat fluidised photoreactors. THE CHEMICAL ENGINEERING JOURNAL AND THE BIOCHEMICAL ENGINEERING JOURNAL, vol. 45, p. 1-8, ISSN: 0923-0467

RIZZUTI L., BRUCATO A (1989). Liquid viscosity and flow rate effects on interfacial area in packed columns. THE CHEMICAL ENGINEERING JOURNAL AND THE BIOCHEMICAL ENGINEERING JOURNAL, vol. 41, p. 49-52, ISSN: 0923-0467

BRUCATO A, RIZZUTI L. (1989). The twin-system approach to experimental determination of residence time distribution. THE CHEMICAL ENGINEERING JOURNAL AND THE BIOCHEMICAL ENGINEERING JOURNAL, vol. 42, p. 73-82, ISSN: 0923-0467

ATTIVITA' SCIENTIFICHE

Co-organizzatore dei seguenti convegni:

- 12th European Conference on Mixing (Bologna 27-30 June 2006)

- 11th Conference on Multiphase Flow in Industrial Processes (MFIP) 2008 (Palermo, 7-10 September. 2008)

Membro del Chair Board dei convegni

- 3rd International Conference on Industrial Biotechnology (IBIC) 2012 (Palermo, 24-27 June 2012)

- 4th International Conference on Industrial Biotechnology (IBIC) 2014 (Roma, 8-11 June 2014)

AMBITI DI RICERCA

L'attività di ricerca svolta sin qui ha riguardato principalmente:

a) lo studio e la modellazione dei fenomeni di miscelazione in recipienti agitati. Le indagini sono state prevalentemente rivolte verso i sistemi agitati multifase (solido-liquido, gas-liquido e gas-solido-liquido) per i quali il prof. Brucato ha sviluppato numerose tecniche di indagine innovative. Dispone inoltre di un'esperienza più che ventennale nell'impiego delle tecniche della fluidodinamica computazionale (CFD) per la risoluzione di problematiche modellistiche complesse, con particolare riferimento alla simulazione dei reattori chimici e biochimici agitati. Una delle ricerche condotte in questo settore ha ricevuto il premio "Most Cited Author 2006-2009" della rivista Elsevier "*Chemical Engineering Research and Design*".

b) lo studio e la modellazione dei fotoreattori catalitici eterogenei. In questo settore l'attività è stata prevalentemente rivolta alla messa a punto di modelli per la distribuzione del campo radiante nei reattori fotocatalitici eterogenei.

c) lo studio e la modellazione di alcuni processi di dispersione di inquinanti e nubi tossiche. Per una delle ricerche condotte in questo settore il prof. Brucato è stato insignito della "Senior Moulton Medal 2005", un riconoscimento concesso dalla "Institution of Chemical Engineers" alla migliore ricerca pubblicata nell'anno di riferimento sulle riviste scientifiche della stessa istituzione.

ALTRE ATTIVITÀ

- Key note lecturer at the 8th World Congress of Chemical Engineering (Montreal, August 2009)

- Key note lecturer ad CHISA 2014 (Prague, August 2014)