


Abhishek Dutta

0000-0002-0714-1119 

İYTE Lojmanlar, Gülbahçe Mahallesi
35430 Urla/İzmir, Türkiye
☎ +32 488 485202
✉ abhishek.dutta.2211@hotmail.com
🌐 [LinkedIn](#)



Education

- 2006 - 2011 **Doctor of Engineering (PhD)** in Chemical Technology, *Department of Materials, Textiles and Chemical Engineering*, Ghent University, Belgium.
Thesis title: **Modeling of Reaction, Attrition and Breakage in gas-solid multiphase flow systems using the Quadrature method approach**
- 2002 - 2004 **Master of Technology (MTech)** in Biochemical Engineering, *Department of Food Technology & Biochemical Engineering*, Jadavpur University, India.
- 1998 - 2002 **Bachelor of Technology (BTech)** in Chemical Engineering, *Department of Chemical Engineering*, Madras University, India.

Academic Experience

- 2020 - ongoing **Associate Professor**, *İzmir Institute of Technology*, Department of Chemical Engineering, Türkiye.
- 2020 - 2020 **Assistant Researcher**, *UCLouvain - Université catholique de Louvain*, Institute of Mechanics, Materials, and Civil Engineering, Belgium.
- 2013 - 2020 **Assistant Professor (Full time Visiting)**, *KU Leuven*, Campus Groep T Leuven, Belgium.
- 2012 - 2013 **Lector (Full time Visiting)**, *Internationale Hogeschool Groep T Leuven*, Belgium.
- 2010 - 2012 **Postdoctoral researcher**, *Ghent University*, BIOMATH, Belgium.

Skills

- Experiment **Lab- & Pilot-scale design, installation and handling**, (scale-up focus).
Material characterisation, (SEM, LC, HPLC and GC analysis).
- Softwares **OpenFOAM, Python, Octave, LaTeX**, (open source).
ANSYS FLUENT, MATLAB, ASPEN, (commercial).

Research Interests

Energy-efficient processes focusing on the improvement of existing and development of new process technologies.

Resource-efficient high temperature processes involving complex hydrodynamic and reactive phenomena.

Cost-efficient experimentally driven mathematical models valorizing waste resource recovery.

Academic Projects

- 2020 - 2022 **VLIR-UOS WaRe-SimPLE**, Conversion of waste treatment to resource recovery facilities in Limpopo through open-source simulation-based engineering tools (co-awarded)
- 2018 **TECO grant Technological Eco-Innovations for the Quality Control and the Decontamination of Polluted Waters and Soils**, Development of an integrated Wastewater treatment system for improved resource recovery in East Kolkata Wetlands (EKW) (singularly awarded)

Industrial Consulting

- 2023 **Sustable, Turkey**, *Carbon Management and Climate Disclosure through deep decarbonization models.*
- 2022 **imec, Belgium**, *Microfluidics of shallow channel through numerical modeling.*
- 2020-2021 **Pall Life Sciences (currently Cytiva), Belgium**, *Porous bed fluidics in bioreactor through numerical modeling.*
- 2018-2019 **APERAM, Belgium**, *Numerical modeling using a new approach for gas injection in Argon Oxygen Decarburization (AOD).*
- 2015 **Inspyro, Belgium**, *Improvement in QSL reactor performance through numerical modeling.*

Publications

- 2023 Turan, M., **Dutta, A.**, Further developments of the Extended Quadrature Method of Moments to solve Population Balance Equations. *Heliyon*, 2023, e18636 (accepted, in press). [Link](#)
- Croes, T., **Dutta, A.**, De Bie, R., Van Aelst, K., Sels, B., Van der Bruggen, B. Extraction of monophenols and fractionation of depolymerized lignin oil with nanofiltration membranes. *Chemical Engineering Journal*, 2023, 452(3), 139418. [Link](#)
- Cheng, Z., Wang, Y., **Dutta, A.**, Blanpain, B., Guo, M., Malfliet, A. Numerical study of fluid flow and mixing in the argon oxygen decarburization (AOD) process. *ISIJ International*, 2023, 63(3), 492-503. [Link](#)
- 2022 Zhang, H., Conejo, A.N., **Dutta, A.**, Ramírez-Argáez, M.A., Yan. H. Mathematical modelling of the liquid/liquid mass transfer behaviour in gas stirred ladles. *Ironmaking & Steelmaking*, 2022, pre-print. [Link](#)
- Zewdie, T.M., Habtu, N.G., **Dutta, A.**, Van der Bruggen, B. Flat sheet metakaolin ceramic membrane for water desalination via direct contact membrane distillation. *Water Reuse*, 2022, 12(1), 131-156. [Link](#)
- Ramirez-Argaez, M.A., Abreú-López, D., Gracia-Fadrique, J., **Dutta, A.** Numerical Study of Electrostatic Desalting: A detailed parametric study. *Processes*, 2022, 10(10), 2118. [Link](#)
- 2021 Zewdie, T.M., Prihatiningtyas, I., **Dutta, A.**, Habtu, N.G., Van der Bruggen, B. Characterization and beneficiation of Ethiopian kaolin for use in fabrication of ceramic membrane. *Materials Research Express*, 2021, 8(11), Art.No. 115201. [Link](#)
- Ramírez-Argáez, M.A., Abreú-López, D., Gracia-Fadrique, J., **Dutta, A.** Numerical study of electrostatic desalting process based on droplet collision time. *Processes*, 2021, 9 (7), 1226. [Link](#)
- Zewdie, T.M., Habtu, N.G., **Dutta, A.**, van der Bruggen, B., Solar-assisted membrane technology for water purification: a review. *Water Reuse*, 2021, 11 (1), 1-32. [Link](#)
- Montwedi, M., Munyaradzi, M., Pinoy, L., **Dutta, A.**, Ikumi, D., Motoasca, E., Van der Bruggen, B. Resource recovery from and management of wastewater in rural South Africa: Possibilities and practices. *Journal of Water Process Engineering*, 2021, 40, Art.No. 101978. [Link](#)

- Saxen, H., Ramirez-Argaez, M.A., Conejo, A.N., **Dutta, A.** Special Issue on "Process Modeling in Pyrometallurgical Engineering". *Processes*, 2021, 9 (2), Art.No. ARTN 252. [Link](#)
- Bopape, M., Van Geel, T., **Dutta, A.**, Van der Bruggen, B., Stephen Onyango, M. Numerical modelling assisted design of a compact Ultrafiltration (UF) flat sheet membrane module. *Membranes*, 2021, 11 (1), Art.No. 54. [Link](#)
- 2020 Montero Góngora, D., Van Caneghem, J., Haeseldonckx, D., Góngora Leyva, E., Ramírez Mendoza, M., **Dutta, A.** Post-combustion artificial neural network modeling of nickel-producing multiple hearth furnace. *International Journal of Chemical Reactor Engineering*, 2020, 18 (7). [Link](#)
- Conejo, A., Birat, J-P., **Dutta, A.** A review of the current environmental challenges of the steel industry and its value chain. *Journal of Environmental Management*, 2020, 259, Art.No. 109782. [Link](#)
- Sen, S., **Dutta, A.**, Rambabu, P., Kamila, B., Baltrėnas, P., Baltrėnaitė, E., Dutta, S. Removal of hexavalent chromium from synthetic wastewater using alginate immobilized cyanobacteria: experiment and mathematical modeling. *Environmental Engineering Science*, 2020, 37 (4), 283-294. [Link](#)
- Stefaniak, J. Karwacka, S., Janiszewska, M., **Dutta, A.**, Rene, E.R., Regel-Rosocka, M. Co(II) and Ni(II) transport from model and real sulfate solutions by extraction with bis(2,4,4-trimethylpentyl) phosphinic acid (Cyanex 272). *Chemosphere*, 2020, 254, 126869. [Link](#)
- Dutta, A.**, Subramanian, A.S., Chakraborty, R., Erdogdu, F Numerical modeling of water uptake in white rice (*Oryza sativa* L.) using variable diffusivity approach. *Biosystems Engineering*, 2020, 191, 116-128. [Link](#)
- Kar, S., Majumdar, S., Constaes, D., Pal, T., **Dutta, A.** A comparative study of multi objective optimization algorithms for a cellular automata model. *Revista Mexicana de Ingenieria Quimica*, 2020, 19(1), 299-311. [Link](#)
- 2019 Kannan, V., Naren, P.R., Buwa, V.V., **Dutta, A.** Effect of drag correlation and bubble-induced turbulence closure on the gas hold-up in a bubble column reactor. *Journal of Chemical Technology and Biotechnology*, 2019, 94 (9), 2944-2954. [Link](#)
- Mamo, T.Z., **Dutta, A.**, Jabasingh, S.A. Start-up of a pilot scale anaerobic reactor for the biogas production from the pineapple processing industries of Belgium. *Renewable Energy*, 134, 241-246. [Link](#)
- Ramírez-Argáez, M., **Dutta, A.**, Amaro-Villeda, A., González-Rivera, C., Conejo, A. A novel multiphase methodology simulating three phase flows in a steel ladle. *Processes*, 2019, 7(3), 175. [Link](#)
- Mukherjee, R., Chakraborty, R., **Dutta, A.** Comparison of optimization approaches (RSM and ANN-GA) for a novel mixed culture approach in soybean meal fermentation. *Journal of Food Process Engineering*, 2019, 42(5), e13124. [Link](#)
- Mukherjee, R., Chakraborty, R., **Dutta, A.** Soaking of soybean meal: evaluation of physicochemical properties and kinetic studies. *Journal of Food Measurement and Characterization*, 2019, 13(1), 390-403. [Link](#)
- 2018 Abreu-López, D., **Dutta, A.**, Camacho-Martínez, J.L., Trápaga-Martínez, G., Ramírez-Argáez, M.A. Mass transfer study of a batch aluminum degassing ladle with multiple designs of rotating impellers. *JOM Journal of the Minerals, Metals and Materials Society*, 2018, 70 (12), 2958-2967. [Link](#)
- Dutta, A.**, Davies, C., Ikumi, D.S. Performance of upflow anaerobic sludge blanket (UASB) reactor and other anaerobic reactor configurations for wastewater treatment: a comparative review and critical updates. *Journal of Water Supply: Research and Technology - AQUA*, 2018, 67 (8), 858-884. [Link](#)

- Dutta, A.**, Valdivia-Rivera, S., Lizardi-Jiménez, M. Simultaneous diesel and oxygen transfer rate on the production of an oil-degrading consortium in an airlift bioreactor: high-dispersed phase concentration. *International Journal of Chemical Reactor Engineering*, 2018, 16 (10), art.nr. 20170206. [Link](#)
- Veerecke, G., Debruyn, H., De Keyser, Q., Vos, R., **Dutta, A.**, Holsteyns, F. Effect of 1-D nano-confinement on the kinetics of a click-chemistry surface reaction used in biosensors. *Solid State Phenomena*, 2018, 282, 182-189. [Link](#)
- Upendar, G., Sunita, S., Chakrabarty, J., Ghanta, K., Dutta, S., **Dutta, A.** Sequestration of carbon dioxide and production of biomolecules using cyanobacteria. *Journal of Environmental Management*, 2018, 218, 234-244. [Link](#)
- Stefaniak, J., **Dutta, A.**, Verbinnen, B., Shakya, M., Rene, E.R. Selenium removal from mining and process wastewater: a systematic review of available technologies. *Journal of Water Supply: Research and Technology - AQUA*, 2018, 67 (8), 903-918. [Link](#)
- Hoang, N.Q., Ramírez-Argáez, M., Conejo, A.N., Blanpain, B., **Dutta, A.** Numerical modelling of liquid-liquid mass transfer and the influence of mixing in gas stirred ladles. *JOM Journal of the Minerals, Metals and Materials Society*, 2018, 70 (10), 2109-2118. [Link](#)
- Pınar, Z., **Dutta, A.**, Kassemi, M., Öziş, T. An improved analytical solution of population balance equation involving aggregation and breakage via Fibonacci and Lucas approximation method. *International Journal of Chemical Reactor Engineering*, 2018, 17(5), art.nr. 20180096. [Link](#)
- Dutta, A.**, Pınar, Z., Constales, D., Öziş, T. Population balances involving aggregation and breakage through Homotopy approaches. *International Journal of Chemical Reactor Engineering*, 2018, 16 (6), art.nr. 20170153. [Link](#)
- 2017 Shrutee, L., Van Geel, T., Rene, E., Raj Mohan, B., **Dutta, A.**, Experimental and numerical study of the hydrodynamics of a thin film reactor (TFR) for the decarboxylation of anacardic acid. *International Journal of Chemical Reactor Engineering*, 2017, 16 (3), art.nr. 20170135. [Link](#)
- Denis, B., Pérez, O., Lizardi-Jiménez, M., **Dutta, A.**, Numerical evaluation of direct interfacial uptake by a microbial consortium in an airlift bioreactor. *International Biodeterioration & Biodegradation*, 2017, 119, 542-551. [Link](#)
- Dhar A., **Dutta, A.**, Sharma, P., Sarkar, P., Vekariya, R., Nano-structured superacidic sulfated zirconium oxide catalyst: synthesis, characterization and application in one-pot isomerization of n-alkanes predicting their reaction-kinetics. *Energy and Environment Focus*, 2017, 6, 1-8. [Link](#)
- Sen, S., Dutta, S., Guhathakurata, S., Chakrabarty, J., Nandi, S., **Dutta, A.**, Removal of Cr(VI) using a cyanobacterial consortium and assessment of biofuel production. *International Biodeterioration & Biodegradation*, 2017, 119, 211-224. [Link](#)
- Upendar, G., Dutta, S., Bhattacharya, P., **Dutta, A.**, Bioremediation of Methylene Blue dye using *Bacillus subtilis* MTCC 441. *Water Science and Technology*, 2017, 75 (7), 1572-1583. [Link](#)
- Dhar, A., **Dutta, A.**, Sharma, P., Panda, B., Roy, S., Synthesis and characterization of solid-phase super acid catalysts and their application for isomerization of N-Alkanes, *Chemical Engineering Communications*, 2017, 204, 1341-1356. [Link](#)
- 2016 Mukherjee, R., Chakraborty, R., **Dutta, A.**, Role of fermentation in improving nutritional quality of soybean meal - A Review. *Asian-Australasian Journal of Animal Sciences*, 2016, 29 (11), 1523-1529. [Link](#)
- Vandamme, D., Beuckels, A., Vadelius, E., Depraetere, O., Noppe, W., **Dutta, A.**, Foubert, I., Laurens, L., Muylaert, K., Inhibition of alkaline flocculation by algal organic matter for *Chlorella vulgaris*. *Water Research*, 2016, 88, 301-307. [Link](#)
- Dutta, A.**, Diao, Y., Jain, R., Rene, E., Dutta, S., Adsorption of cadmium from aqueous solution onto coffee grounds and wheat straw: equilibrium and kinetics study. *Journal of Environmental Engineering*, 2016, 142 (9), art.nr. C4015014, 1-6. [Link](#)

- Palmerín-Carreño, D., Castillo-Araiza, C.O., Rutiaga-Quiñones, O., Verde Calvo, J., Trejo-Aguilar, G., **Dutta, A.**, Huerta-Ochoa S., Whole cell bioconversion of (+)-valencene to (+)-nootkatone by *Yarrowia lipolytica* using a three-phase partitioning bioreactor. *Journal of Chemical Technology and Biotechnology*, 2016, 91 (4), 1164-1172. [Link](#)
- Che-Galicia, G., **Dutta, A.**, Dhar, A., Ramana Murthy, B., Al-Zahrani, M., Raychaudhuri, U., François, A., Castillo C.O., Prediction of thermodynamic consistency of vapour-liquid equilibrium of a two-phase system in the presence of the salting-in and salting-out effects. *Indian Chemical Engineer*, 2016, 58 (2), 106-117. [Link](#)
- Muresan, C., **Dutta, A.**, Dulf, E., Pinar, Z., Maxim, A., Ionescu, C., Tuning algorithms for fractional order internal model controllers for time delay processes. *International Journal of Control*, 2016, 89 (3), 579-593. [Link](#)
- Dhar, A., **Dutta, A.**, Castillo-Araiza, C.O., Suarez-Toriello, V., Ghosh, D., Raychaudhuri, U., One-Pot Isomerization of n-Alkanes by super acidic solids: Sulfated Aluminum-Zirconium binary oxides. *International Journal of Chemical Reactor Engineering*, 2016, 14 (3), 795-807. [Link](#)
- García-Martínez, J., **Dutta, A.**, Chávez, G., De los Reyes, J., Castillo-Araiza, C.O., Hydrodesulfurization of dibenzothiophene in a micro trickle bed catalytic reactor under operating conditions from reactive distillation. *International Journal of Chemical Reactor Engineering*, 2016, 14 (3), 769-783. [Link](#)
- Dibaba, O., Lahiri, S., 'Jonck, S., **Dutta, A.**, Experimental and artificial neural network modeling of a Upflow Anaerobic Contactor (UAC) for biogas production from Vinasse. *International Journal of Chemical Reactor Engineering*, 2016, 14 (6), 1241-1254. [Link](#)
- Otero-López, M., González-Brambila, M., **Dutta, A.**, Castillo-Araiza, C.O., Elucidating kinetic, adsorption and partitioning phenomena from a single well tracer method: Laboratory and bench scale studies. *International Journal of Chemical Reactor Engineering*, 2016, 14 (6), 1149-1168. [Link](#)
- 2015 Melgarejo-Torres, R., Castillo-Araiza, C.O., **Dutta, A.**, Bény, G., Torres-Martinez, D., Lye, G., Gutiérrez-Rojas, M., Huerta-Ochoa, S., Mathematical model of a three-phase partitioning bioreactor for conversion of ketones using whole cells. *Chemical Engineering Journal*, 2015, 260, 765-775. [Link](#)
- Castillo-Araiza, C.O., Che-Galicia, G., **Dutta, A.**, González, G., Vera, C., Ruíz-Martínez, R., Effect of diffusion on the conceptual design of a fixed-bed adsorber. *Fuel*, 2015, 149, 100-108. [Link](#)
- Dutta, A.**, Kar, S., Apte, A., Nopens, I., Constales, D., A generalized Cellular Automata approach to modeling first order enzyme kinetics. *Sādhanā*, 2015, 40 (2), 411-423. [Link](#)
- Dutta, A.**, Mukherjee, R., Gupta, A., Ledda, A., Chakraborty, R., Ultrastructural and physico-chemical characteristics of rice under various conditions of puffing. *Journal of Food Science and Technology*, 2015, 52 (11), 7037-7047. [Link](#)
- Castillo-Araiza, C.O., Chávez, G., **Dutta, A.**, Nuñez, S., García-Martínez, J., De los Reyes, A., Role of Pt-Pd/ γ -Al₂O₃ on the HDS of 4,6-DMBT: kinetic modeling & contribution analysis. *Fuel Processing Technology*, 2015, 132, 164-172. [Link](#)
- Chatterjee, G., De Neve, J., **Dutta, A.**, Das, S., Formulation and statistical evaluation of a ready-to-drink whey based orange beverage and its storage stability. *Revista Mexicana de Ingeniería Química*, 2015, 14 (2), 253-264. [Link](#)
- Pinar, Z., **Dutta, A.**, Bény, G., Öziş, T., Analytical solution of population balance equation involving growth, nucleation and aggregation in terms of auxiliary equation method. *Applied Mathematics & Information Sciences*, 2015, 9 (5), 2467-2475. [Link](#)
- Pinar, Z., **Dutta, A.**, Bény, G., Öziş, T., Analytical solution of population balance equation involving aggregation and breakage in terms of auxiliary equation method. *Pramāṇa*, 2015, 84 (1), 9-21. [Link](#)

- 2014 Kullu, J., **Dutta, A.**, Constales, D., Dutta, D., Chaudhuri, S., Experimental and modeling studies on microwave-assisted extraction of mangiferin from *Curcuma amada*. *3 Biotech*, 2014, 4 (2), 107-120. [Link](#)
- Kar, S., Nag, K., **Dutta, A.**, Constales, D., Pal, T., An improved Cellular Automata model of enzyme kinetics based on Genetic Algorithm. *Chemical Engineering Science*, 2014, 110, 105-118. [Link](#)
- De Neve, J., Goswami, G., **Dutta, A.**, Chaudhuri, S., Dutta, D., A statistically motivated choice of process parameters for the improvement of canthaxanthin production by *Dietzia maris* NIT-D (Accession Number: HM151403). *Revista Mexicana de Ingeniería Química*, 2014, 13 (2), 595-603. [Link](#)
- 2013 **Dutta, A.**, Constales, D., Van Keer, R., Heynderickx, G., Implementation of homotopy perturbation method to solve a population balance model in fluidized bed. *International Journal of Chemical Reactor Engineering*, 2013, 11 (1), 1-12. [Link](#)
- Fernandes, R., Carlquist, M., Lundin, L., Heins, A., **Dutta, A.**, Sørensen, S., Jensen, A., Nopens, I., Lantz, A., Gernaey, K., Cell mass and cell cycle dynamics of an asynchronous budding yeast population: Experimental observations, flow cytometry data analysis and multi-scale modeling. *Biotechnology and Bioengineering*, 2013, 110 (3), 812-826. [Link](#)
- 2012 **Dutta, A.**, Constales, D., Heynderickx, G., Applying the direct quadrature method of moments to improve multiphase FCC riser reactor simulation. *Chemical Engineering Science*, 2012, 83, 93-109. [Link](#)
- Padmapriya, K., **Dutta, A.**, Chaudhuri, S., Dutta, D., Microwave assisted extraction of mangiferin from *Curcuma amada*. *3 Biotech*, 2012, 2 (1), 27-30. [Link](#)
- Torfs, E., **Dutta, A.**, Nopens, I., Investigating kernel structures for Ca-induced activated sludge aggregation using an inverse problem methodology. *Chemical Engineering Science*, 2012, 70, 176-187. [Link](#)
- 2011 Fernandes, R., Nierychlo, M., Lundin, L., Pedersen, A., Tellez, P., **Dutta, A.**, Carlquist, M., Bolic, A., Schapper, D., Brunetti, A., Helmark, S., Heins, A., Jensen, A., Nopens, I., Rottwitt, K., Szita, N., van Elsas, J., Nielsen, P., Martinussen, J., Sorensen, S., Lantz, A., Gernaey, K., Experimental methods and modeling techniques for description of cell population heterogeneity. *Biotechnology Advances*, 2011, 29 (6), 575-599. [Link](#)
- 2010 **Dutta, A.**, Ekapture, R., Heynderickx, G., de Broqueville, A., Marin, G., Rotating fluidized bed with a static geometry: Guidelines for design and operating conditions. *Chemical Engineering Science*, 2010, 65 (5), 1678-1693. [Link](#)
- 2008 **Dutta, A.**, Chanda, A., Chakraborty, R., A Linear Driving Force (LDF) approximation of moisture diffusion kinetics in white rice. *International Journal of Food Engineering*, 2008, 4 (8), art.nr. 2. [Link](#)
- 2006 Dutta, D., **Dutta, A.**, Raychaudhuri, U., Chakraborty, R., Rheological characteristics and thermal degradation kinetics of beta-carotene in pumpkin puree. *Journal of Food Engineering*, 2006, 76 (4), 538-546. [Link](#)

recently submitted Turan, M., Munkhammar, J., **Dutta, A.**, Improving the accuracy of probability distribution estimation via moments method using Lagrange interpolation approach, in *Computers & Chemical Engineering*.

Book Chapters

- 2020 **Dutta, A.**, Erdođdu, F., Sarghini, F., Computational fluid dynamics (CFD) simulations in food processing. In *Mathematical and Statistical Applications in Food Engineering*, chapter 16 (Serial Volume Editors: S. Sevda, A. Singh). CRC Press, 2020, Florida, USA.

- 2019 **Dutta, A.**, Öziş, T., Population balances in partitioning bioreactors: Cell heterogeneity. In *Advances and Applications of Partitioning Bioreactors*, vol. 54, 1st Edition (Serial Volume Editors: S. Huerta-Ochoa, C. Castillo-Araiza, G. Quijano), 2019, 54, 2-371, Elsevier, Amsterdam).

Conference Proceedings (peer reviewed)

- 2015 Beyers, L., **Dutta, A.**, Lahiri, S.K., Blanpain, B., Verhaeghe, F., Hybrid artificial Neural Network and Genetic Algorithm modelling of slag properties. In: *Proceedings European Metallurgical Conference 2015*: vol. 2, (1071-1085). Presented at the European Metallurgical Conference (EMC), Düsseldorf, Germany, 14-17 Jun 2015. ISBN: 9783940276636. [Link](#)
- 2012 **Dutta, A.**, De Keyser, R., Dutta, A., Nopens, I., Robust nonlinear extended prediction self-adaptive control (NEPSAC) of continuous bioreactors. In: *2012 20th Mediterranean Conference on Control and Automation, MED 2012 - Conference Proceedings*, (658-664). Presented at the Mediterranean Conference on Control & Automation (MED), Barcelona, Spain, 03-06 Jul 2012. ISBN: 9781467325318, [Link](#)
- 2011 Kar, S., Dhar, P., **Dutta, A.**, Nopens, I., Development of a software tool for in silico biodiesel production from rapeseed oil. In: *International Conference on Green Technology and Environmental Conservation*, (68-74). Presented at the GTEC 2011, Chennai, India, 15-17 Dec 2011. Piscataway, NJ, USA. [Link](#)
- 2010 Kar, S., Ganai, S., **Dutta, A.**, Dutta, D., Chaudhuri, S., A sensitivity analysis study of enzyme inhibition kinetics through Cellular Automata. In: *AIP Conference Proceedings*: vol. 1298, (301-306). Presented at the International Conference on Modeling, Optimization, and Computing (ICMOC), Durgapur, India, 28-30 Oct 2010, [Link](#)
- Chakraborty, S., **Dutta, A.**, Dutta, D., Chaudhuri, S., Moisture absorption and swelling kinetics in bean seeds: A Generalized Maxwell-Stefan approach. In: *AIP Conference Proceedings*: vol. 1298, (374-379). Presented at the International Conference on Modeling, Optimization, and Computing (ICMOC), Durgapur, India, 28-30 Oct 2010, [Link](#)
- 2009 **Dutta, A.**, Raekkelboom, J., Heynderickx, G., Marin, G., Understanding segregation and mixing effects in a riser using the quadrature method of moments. In: *WIT Transactions on Engineering Sciences*: vol. 63, (181-192). Presented at the International Conference on Computational and Experimental Methods in Multiphase and Complex Flow, New Forest, UK, 15-17 Jun 2009, [Link](#)

Conference Abstracts/Posters (not peer reviewed)

- 2023 Turan, M., Munkhammar, J., **Dutta, A.**, Improvement of probability distribution estimation using method of moments with Lagrange interpolation approach. Presented at the 33rd European Symposium on Computer-Aided Process Engineering (ESCAPE-33), Athens, Greece, 18-21 Jun 2023.
- 2022 Cheng, Z., Malfliet, A., Wang, Y., **Dutta, A.**, Blanpain, B., Guo, M., Flow behavior and mixing in the AOD process. Presented at the International Conference on Physical and Mathematical Modelling in Iron and Steelmaking (PMMIS-2022) in Honour of Prof. Dipak Mazumdar, Kanpur, India, 18-19 December 2022.
- Cheng, Z., Wang, Y., **Dutta, A.**, Blanpain, B., Guo, M., Malfliet, A., Numerical Study on the mixing characteristics in the Argon Oxygen Decarburization process. Presented at the 8th International Congress on the Science and Technology of Steelmaking, Montreal, Canada, 2-4 August 2022.
- Hassaine, A., **Dutta, A.**, Pinar, Z., Modélisation numérique de la distribution granulométrique des asphaltènes par l'équation de bilan de population. Presented at the 1ère Conférence Internationale sur la Technologie de la Catalyse dans l'Industrie Pétrolière et Gazière, Oran, Algeria, 29-30 March 2022.

- 2021 Khan, K.I., Kaur, G., **Dutta, A.**, Usman, M., Abdul Karim, R., Analysis of Terminal Velocity from Drag Coefficient used in Bubble swarms. Presented at the 4th Pak-Turk International Conference on Emerging Technologies in the field of Sciences and Engineering, Khyber Pakhtunkhwa, Pakistan, 3-4 Nov 2021.
- Dutta, A.**, Ramírez-Argáez, M., Modeling of an industrial electrostatic desalting unit using computational fluid dynamics. Presented at the Scientific Conference “Science, Technology and Development of Innovative Technologies”, Turkmenistan, Ashgabat, June 12-13, 2021
- 2019 Abreu-López, D., Ramírez-Argáez, M., **Dutta, A.**, Study of mass transfer and influence of mixing using a computationally efficient 3D numerical model of a gas stirred ladle. Presented at the 8th International Conference on Modeling and Simulation of Metallurgical Processes in Steelmaking (STEELSIM2019), Toronto, Canada, 13 Aug 2019-15 Aug 2019.
- 2018 Singh, P.K., Tiwari, R.K., Mazumdar, D., **Dutta, A.**, Modeling of two phase, gas-liquid flows in ladle shroud. In: Electronic proceeding not online. Presented at the International Congress on Science and Technology of Steelmaking (ICS), Venice, Italy, 13-15 Jun 2018.
- Dutta, A.**, Kannan, V., Ramírez-Argáez, M.A., Blanpain, B., Towards a suitable turbulence model to study gas stirred ladles. Presented at the International Conference on Advances in Metallurgical Processes and Materials (AdMet), Kiev, Ukraine, 10 Jun 2018-13 Jun 2018.
- 2017 Vereecke, G., Debruyne, H., Vos, R., **Dutta, A.**, Holsteyns, F., Effect of nano-confinement on the kinetics of an interfacial click chemistry reaction. Presented at the European Colloid and Interface Society (ECIS), Madrid, Spain, 03 Sep 2017-08 Sep 2017.
- Kannan, V., Naren, P.R., **Dutta, A.**, Issues in Simulating Central Plume in Bottom Gas Injection using OpenFOAM. Presented at the National Conference on Fluid Mechanics and Fluid Power, Kollam, India, 14 Dec 2017-16 Dec 2017. Open Access
- 2017 **Dutta, A.**, Population Balances in process systems. Presented at the Annual Session of the Indian Institute of Chemical Engineers (CHEMCON), Haldia, India, 27 Dec 2017-30 Dec 2017.
- 2016 **Dutta, A.**, Durnez, M., Beyers, L., Blanpain, B., Conejo, A., One- and two-phase mass transfer kinetic model for reactions at the melt/slag interface. Presented at the International-Mexican Congress on Chemical Reaction Engineering (IMCCRE), Querétaro, México, 05 Jun 2016-09 Jun 2016.
- 2015 Ayala Romero, J.A., **Dutta, A.**, Ruiz Martínez, R.S., López Isunza, F., Castillo Araiza, C.O., Efecto de la turbulencia sobre la hidrodinámica en lechos empacados con baja relación diámetro de tubo-partícula. Presented at the Academia Mexicana de Investigación y Docencia en Ingeniería Química (AMIDIQ), Cancún, Mexico, 05 May 2015-08 May 2015. Open Access
- Stabel, L., Verbinnen, B., **Dutta, A.**, Combined wheat straw-sawdust biosorption of Selenium using a continuous column setup. Presented at the International Conference on Research Frontiers in Chalcogen Cycle Science & Technology, Delft, The Netherlands, 28 May 2015-29 May 2015. Open Access
- Che-Galicia, G., Ruiz-Martínez, R.S., **Dutta, A.**, López-Isunza, F., Castillo-Araiza, C.O., Oxidative dehydrogenation of ethane: Reactor design for ethylene production. Presented at the Congreso Internacional de Energía (CIE), Mexico City, Mexico.
- Dutta, A.**, Lahiri, S., Carlos, C-A., Design of distillation column by hybrid differential evolution and ant colony optimization technique. Presented at the Congreso Internacional de Energía (CIE), Mexico City, Mexico, 07 Sep 2015-11 Sep 2015.
- 2014 **Dutta, A.**, Mukherjee, R., Sarkar, T., Pinar, Z., Chakraborty, R., A Linear Driving Force (LDF) approximation of moisture uptake kinetics in Soybean. In: International Journal of Agriculture and Food Science Technology: vol. 5 (3), (203-210). Presented at the Agriculture, Food Engineering and Environmental Sciences - Sustainable Approaches (AFEESSA), New Delhi, India, 29-30 Mar 2014.

- 2014 Castillo-Araiza, C.O., Chávez, G., **Dutta, A.**, Nuñez-Correa, C., García-Martínez, G., De los Reyes-Heredia, J.A., On the kinetics of Pt-Pd/-Al₂O₃ during the HDS of 4,6-DMBT. Presented at the International-Mexican Congress on Chemical Reaction Engineering (IMCCRE), Acapulco, Mexico, 07-13 Jun 2014. Open Access
- Mukherjee, R., Sarkar, T., **Dutta, A.**, Chakraborty, R., Evaluation of the effect of moisture hydration in soybean meal. Presented at the Non Thermal Processing Techniques: Emerging Innovation for Sustainable, Safe & Healthy Foods (NTPT), Haldia, India, 21-22 Mar 2014. Open Access
- Pinar, Z., **Dutta, A.**, Majumdar, A., Constaes, D., Öziş, T., Understanding population balances involving aggregation and breakage through homotopy approaches. (Abstract No. 87). Presented at the Advanced COmputational Methods in ENgineering (ACOMEN), Ghent, Belgium, 23-28 Jun 2014. Open Access
- Pinar, Z., Gulen, S., **Dutta, A.**, Öziş, T., An efficient numerical solution of Hsu model involving size variation in soybean hydration. Presented at the AIMS Conference on Dynamical Systems, Differential Equations and Applications, Madrid, Spain, 07-11 Jul 2014. Open Access
- 2013 **Dutta, A.**, Constaes, D., Bény, G., Sharma, K.R., Studies on the stability behavior of a depolymerization reaction based on modified Denbigh scheme for the reclamation of waste tires. Presented at the AIChE Annual Meeting, San Francisco, USA, 03-08 Nov 2013.
- Pinar, Z., **Dutta, A.**, Majumdar, A., Bény, G., Öziş, T., Exact solutions of population balances equations via an Auxiliary Equation Method for growth, nucleation, breakage and aggregation processes. Presented at the AIChE Annual Meeting, San Francisco, USA, 03-08 Nov 2013.
- Leyssens, P., **Dutta, A.**, De Jonge, S., Buijs, J., Integral Engineering Education: an approach to implementation. In: Proceedings of the 41st SEFI Conference, (Paper No. 85). Presented at the SEFI Conference, Leuven, 16-20 Sep 2013.
- Dutta, A.**, Pinar, Z., Bény, G., Öziş, T., An auxiliary equation approach to exact solutions of population balance equations for growth, nucleation and aggregation processes. Presented at the International Conference on Applied Analysis And Mathematical Modelling (ICAAMM), Istanbul, Turkey, 02-05 Jun 2013.
- 2011 Fernandes, R.L., Carlquist, M., Lundin, L., Heins, A-L., **Dutta, A.**, Nopens, I., Jensen, A.D., Lantz, A.E., Gernaey, K.V., Heterogeneous microbial populations: using flow cytometric data for building dynamic distributed models. Presented at the AIChE Annual Meeting, Minneapolis, USA, 16-25 Oct 2011.
- Dutta, A.**, Kar, S., Constaes, D., Nopens, I., Modeling of first-order enzyme kinetic reactions: a Cellular Automata Approach. Presented at the Mathematics in Chemical Kinetics and Engineering (MaCKiE), Berlin, Germany, 18-20 May 2011.
- Dutta, A.**, Fernandes, R.L., Heins, A-L., Lantz, A-E., Jensen, A.D., Gernaey, K.V., Nopens, I., Modeling the Residence Time Distribution in a batch fermentor: comparison of CFD prediction with experiment. Presented at the AIChE Annual Meeting, Minneapolis, USA, 16-25 Oct 2011.
- Dutta, A.**, De Keyser, R., Dutta, A., Nopens, I., Nonlinear extended prediction self-adaptive control (NEPSAC) of a coupled, time-varying biochemical system. In: Book of Abstracts. Presented at the Benelux meeting on Systems and Control, Lommel, Belgium, 15-17 Mar 2011.
- Fernandes, R.L., Carlquist, M., Lundin, L., Heins, A.L., **Dutta, A.**, Nopens, I., Jensen, A.D., Johansen, S.J., Lantz, A.E., Gernaey, K.V., Presented at the AIChE Annual Meeting, Minneapolis, USA, 16-25 Oct 2011.
- 2009 **Dutta, A.**, Constaes, D., Heynderickx, G.J., Marin, G.B., Application of the Homotopy Perturbation Method (HPM) to solve particle population balance model of a Circulating Fluidized Bed. Presented at the Mathematics in Chemical Kinetics and Engineering (MaCKiE), Ghent, Belgium, 08-11 Feb 2009.

- 2008 **Dutta, A.**, Rao, P.D., Mitra, S., Guérin, J-P., Effective patent management strategy for technology-based SMEs. Presented at the Annual Conference on Information Science and Technology Management (CISTM), New Delhi, India, 31 Jul-02 Aug 2008.
- 2004 Mishra, G., Chaudhury, I., **Dutta, A.**, Das, R.H., Identification and characterization of Serine/Threonine kinase gene of Spodoptera litura Nucleopolyhedro Virus Genome. Presented at the BIOTECH, New Delhi, India, 13-15 Oct 2004.

Doctoral Thesis supervision

- 2023 - ongoing **Orhan Kinali**, Modelling and Experimental Investigation of Mixing Process for Non-newtonian Fluids (13/01/2023 - ongoing): Promotor
- 2017 - 2023 **Tim Croes**, Organic Solvent Nanofiltration for the Fractionation of Biobased Phenolic Compounds (20/09/2017 - 17/05/2023): Co-promotor
- 2018 - 2022 **Tsegahun Mekonnen Zewdie**, Development and Characterization of Low-Cost Flat Sheet Ceramic Membranes for Water Desalination by Membrane Distillation (01/03/2018 - 27/06/2022): Co-promotor
- 2016 - 2020 **Runni Mukherjee**, Development of a Fermented Soybean Meal Based Product (01/03/2018 - 27/06/2022): Co-promotor

Master Thesis supervision

- 2018 – 2019 **Martijn Mommen**, Modelling of a three-phase gas-stirred ladle
- 2018 - 2019 **Evita De Coster**, A Population Balance Model (PBM) to predict the risk of nephrolithiasis
- 2017 – 2018 **Lukas Senaeve**, A hydrodynamics study of an Argon Oxygen Decarburisation (AOD) converter using a numerical approach
- 2016 – 2017 **Pieterjan Uytterhoeven**, Hydrodynamic study of a scale-down physical model of Argon Oxygen Decarburization (AOD)
- 2016 – 2017 **David De Baere**, Coupling of a Population Balance Model (PBM) and Computational Fluid Dynamics (CFD) applied to bubbly gas flows in a steel ladle
- 2016 – 2017 **Nhu Quynh Hoang**, Computational Fluid Dynamics (CFD) Modelling of three-phase gas-stirred ladle
- 2016 – 2017 **Michiel Vanderwaeren**, Experimental investigation of the hydrodynamics of gas-solid fluidized bed using pressure fluctuation analysis
- 2015 – 2016 **Tim Van Geel**, Computational fluid dynamics (CFD) study of a packed bed reactor used for the partial oxidation of o-xylene to phthalic anhydride
- 2015 – 2016 **Brecht Denis**, Evaluation of biodegradation at the water-oil interface of macroscopic oil droplets in an airlift bioreactor
- 2014 – 2015 **Hanne De Crits**, Kinetics of the (+)-nootkatone bioconversion using whole cells of *Yarrowia lipolytica*
- 2014 – 2015 **Ezeudegbunam Okechukwu**, Flocculation as a cost efficient harvesting method and the effect of Algal Organic Matter on flocculation in a Photobioreactor
- 2013 – 2014 **Ousman Rahmeto Dibaba**, Development of a pilot scale Upflow Anaerobic Contactor (UAC) for biogas production from Vinasse

Teaching Experience

- 2022 - 2023 **Computer Tools in Engineering (CHE 101)**, *Izmir Institute of Technology*.
Technical Writing for Engineers (CHE 301), *Izmir Institute of Technology*.
- 2021 - 2023 **Mathematical modeling in Engineering (CHE 330)**, *Izmir Institute of Technology*.
- 2021 - 2022 **Advanced Reaction Engineering (CHE 545)**, *Izmir Institute of Technology*.

- 2020 - 2022 **Reactor Design (CHE 454)**, *Izmir Institute of Technology*.
- 2012 - 2020 **Reactor and Process Technology (B-KUL-T49RPT)**, *KU Leuven*.
Unit Operations II (B-KUL-T49UOE), *KU Leuven*.
Chemical Engineering Computing (B-KUL-T39CEE), *KU Leuven*.
- 2012 - 2015 **Process control (B-KUL-T37PCE)**, *KU Leuven*.

Industrial Experience

- 2004 - 2006 **Application Engineer**, *Lechler India Pvt. Ltd*, (wholly owned subsidiary of Lechler GmbH, Metzingen, Germany).

Invited Speaker

- 2022 **The Product Engineering of Perfume and Flavor: A Chemical Engineering perspective**, *International Seminar on Medicinal Plant Production and Advancement in Herbal Medicine, Nutraceuticals, Cosmetics and Other Herbal Product Formulation Technologies (MedProTech)*, Guwahati, India.
- 2017 **Population Balances in process systems**, *70th Annual Session of the Indian Institute of Chemical Engineers (CHEMCON)*, Haldia, India.
- 2015 **Engineering application of population balance models**, *Simposio Iberoamericano Multidisciplinario de Ciencias e Ingenierías (SIMCI)*, Pachuca, Mexico.

Invited Lecturer

- 2019 **Computational Fluid Dynamics in Steel processing**, *School of Metallurgical and Ecological Engineering*, USTB, Beijing China.
- 2018 **Integrated Process Design**, *School of Chemical and Food Engineering*, BiT, Bahir Dar Ethiopia.
- 2017 **Advanced Biochemical Engineering**, *School of Chemical and Food Engineering*, BiT, Bahir Dar Ethiopia.

Professional affiliations

- Editorial Section Board Member board member**, *Processes (ISSN 22279717)*.
Life Associate member, *IChE*, India.

Doctoral committee member

- 2021 **Luiza Usevičiūtė**, *Department of Environmental Protection and Water Engineering, Vilnius Gediminas Technical University (Vilnius Tech)*, Lithuania.
- 2020 **Valeriia Chemerys**, *Department of Environmental Protection and Water Engineering, Vilnius Gediminas Technical University (Vilnius Tech)*, Lithuania.
- 2019 **Aleksandras Chlebnikovas**, *Department of Environmental Protection and Water Engineering, Vilnius Gediminas Technical University (Vilnius Tech)*, Lithuania.
- 2014 **Hamed Ravash**, *Departement Materiaalkunde (MTM)*, *KU Leuven*, Belgium.
- 2014 **Rodrigo Melgarejo-Torres**, *Departamento de Biotecnología, Universidad Autónoma Metropolitana (UAM)*, Mexico.

Honors and Awards

- 2006 **Doctoral Fellowship award**, Grant of Bijzonder Onderzoeksfonds (BOF) under the GOA project MACKIE
- 1994 **Outstanding Student award**, Secondary school for consistent academic performance (ranked **First**) over ten consecutive years (1982-1992)

Languages

English: C2
Dutch: B1
German: A1
Hindi: Native
Bengali: Native

Personal Details

Passport Belgian (EP184507)
Residence Türkiye (99783577588)

Abhishek Dutta.

(ABHISHEK DUTTA)

Place: Izmir, Türkiye
Date: 29th July, 2023