

Course of Chemical Engineering
Federal University of Pampa (UNIPAMPA)
Bagé, Rio Grande do Sul, Brazil

Email: rodolfo@unipampa.edu.br
rodolfo@chengineer.com
Blog: <http://chengineer.com>

Rodolfo Rodrigues

Assistant Professor in Chemical Engineering at UNIPAMPA, Brazil. Visiting researcher at ORNL, US DOE, as part of doctoral studies in 2012. *Major interesting fields:* (a) Process modeling & simulation, (b) Separation process engineering, (c) Chemical reaction engineering, (d) Thermochemical conversion processes (pyrolysis, gasification, combustion), (e) Computers in engineering education.

Professional Experience

- 2013–Present* Faculty researcher at Energy and Carbochemistry Research Group (GPEC). *Unit:* UNIPAMPA, Brazil.
- 2012–Present* Assistant Professor in Chemical Engineering at Federal University of Pampa (UNIPAMPA). *Unit:* Bagé campus, Brazil. *Courses:* Separation process principles, Transport Phenomena, and Simulation and optimization of chemical processes.
- 2010–2012* Assistant researcher. *Project:* Hybrid approach for simulation of carbon-based fuels gasification systems. *Unit:* Laboratory of Residues Processing (LPR) at UFRGS, Brazil. *Activity:* Simulation of operational conditions to (co)gasification–(oxy)combustion of coal and biomass. Development of tools to simulation using Cantera libraries and Python.
- 2012* Visiting researcher at Fuels, Engines and Emissions Research Center (FEERC). *Unit:* National Transportation Research Center (NTRC) at ORNL, USA. *Activity:* Development of new method to simulation of biomass gasifiers using combined equilibrium-kinetic approach.
- 2012* Visiting scholar at Thermal Sciences Research Laboratory. *Unit:* Mechanical, Aerospace and Biomechanical Engineering Department (MABE) at University of Tennessee at Knoxville (UTK), USA.
- 2010–2011* Substitute teacher of technical course in Chemistry at area of chemical processes. *Unit:* Federal Institute of Technology of Rio Grande do Sul (IFRS), Brazil.
- 2007–2010* Assistant researcher. *Project:* Numerical and experimental evaluation of gasification and combustion process of biomass wastes to electric generation in thermal cycles. *Unit:* Laboratory of Residues Processing (LPR) at UFRGS, Brazil. *Activities:* Experimental data acquisition. Modeling and simulation of a biomass gasification process using EMSO (an equation-based simulator).
- 2004–2007* Assistant researcher. *Project:* ALSOC – Chemical and petrochemical process simulator. *Unit:* Group of Intensification, Modeling, Simulation, Control and Optimization of Processes (GIMSCOP) at UFRGS, Brazil.
URL: <http://www.enq.ufrgs.br/alsoc>

Scientific Journal Reviewer

- 2010–Present* Int. J. Chem. Reactor Eng., ISSN: 1542-6580 (Ad hoc reviewer)

Technical Skills

Scientific computational languages: Python, Scilab/Matlab scripting, C++.

Process simulators: EMSO, Cantera, COCO, DWSIM, UniSim Design, CHEMKIN, gPROMS, Aspen Plus/Dynamics, Aspen HYSYS.

Formal Education

- 2009–2015 PhD in Chemical Engineering.
Federal University of Rio Grande do Sul (UFRGS). Porto Alegre, Brazil.
Title: *Kinetic-equilibrium combined modeling to simulation of gasification processes.*
URL: <http://hdl.handle.net/10183/140478>
- 2005–2008 Master in Chemical Engineering.
Federal University of Rio Grande do Sul (UFRGS). Porto Alegre, Brazil.
Title: *Modeling and simulation of a fixed-bed gasifier to thermal treatment of solid wastes from footwear industry.*
URL: <http://hdl.handle.net/10183/15948>
- 2000–2004 Graduation in Chemical Engineering.
Federal University of Santa Maria (UFSM). Santa Maria, Brazil.

Complementary Education

- 2007–2008 HSE Engineering (credit hours: 376h).
Oil & Gas Brazilian Industry Mobilization Program (PROMINP), Brazil.

Publications (last years)

- [1] R. Rodrigues, A. R. Muniz, N. R. Marcilio. Evaluation of biomass and coal co-gasification of Brazilian feedstock using a chemical equilibrium model. *Braz. J. Chem. Eng.*, 33(2):401–414, 2016. DOI: 10.1590/0104-6632.20160332s00003479
- [2] R. Rodrigues, N. R. Marcilio, J. O. Trierweiler. New model to simulation of gasifying processes applying equilibrium and kinetics (in Portuguese). In *19th Braz. Congress Chem. Eng.*, Búzios, Brazil, 2012.
- [3] R. Rodrigues, N. R. Marcilio, J. O. Trierweiler, and M. Godinho. Thermodynamic efficiency analysis of gasification of high ash coal and biomass. In *Int. Conf. Coal Sci. & Tech.*, Oviedo, Spain, 2011.
- [4] R. Rodrigues, N. R. Marcilio, J. O. Trierweiler, M. Godinho, and A. M. S. Pereira. Co-gasification of footwear leather waste and high ash coal: A thermodynamic analysis. In *27th Ann. Int. Pittsburgh Coal Conf.*, Istanbul, Turkey, 2010.
- [5] R. Rodrigues, R. P. Soares, and A. R. Secchi. Teaching chemical reaction engineering using EMSO simulator. *Comput. Appl. Eng. Educ.*, 18(4):607–618, 2010. DOI: 10.1002/cae.20255