

Flávia Schwarz Franceschini Zinani

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Curriculum Vitae

Current Professional Address

Graduate Program in Mechanical Engineering
Polytechnic School
University of Vale do Rio dos Sinos - UNISINOS
Av. Unisinos 950 – Cristo Rei
São Leopoldo – RS – Brazil
CEP 93022-750
Phone:
Cell phone:

Personal Data

Passport number:
Born on
Brazilian
Professor
Married, 2 children

Professional Experience

2019 -	Coordinator of the Graduate Program in Mechanical Engineering – UNISINOS
2020 - 2021	Professor of the Graduate Program in Production and Systems Engineering - UNISINOS
2010 -	Professor of the Graduate Program in Mechanical Engineering – UNISINOS
2009 -	Professor of the Undergraduate Mechanical Engineering Course - UNISINOS
2007 - 2010	Professor of the Undergraduate Mechanical Engineering Course – University of Caxias do Sul – UCS
2007 - 2008	Professor of the Undergraduate Mechanical Engineering Course – Federal University of Rio Grande do Sul – UFRGS

Education

2002 - 2006	Doctorate in Mechanical Engineering Federal University of Rio Grande do Sul, UFRGS, Brazil
2001 - 2002	Master's Degree in Mechanical Engineering Federal University of Rio Grande do Sul, UFRGS, Brazil
2020 - 2022	Specialization in OnLife Education University of Vale do Rio dos Sinos, UNISINOS, Brazil
1996 - 2001	Bachelor's degree in Food Engineering Federal University of Rio Grande do Sul, UFRGS, Brazil
2006 - 2007	Post-Doctorate in Mechanical Engineering Federal University of Rio Grande do Sul, UFRGS, Brazil

Research Areas

1. Computational Fluid Dynamics
2. Hemodynamics – blood flow

3. Rheology and non-Newtonian Fluids
4. Fluidization
5. Multiphase Flows
6. Constructal Theory and Constructal Design

Ongoing Research Projects with Financial Support

- 2022 - Analysis of arterial stents by computational fluid dynamics and constructal design - *coordinator*
- 2022 - Computer simulation and design analysis in thermal and flow problems - *coordinator*
- 2020 - Estimation of on-board states and evaluation of technical losses in real time in cargo blocks supplied by special remote-controlled equipment - *researcher*
- 2020 - Applications of transport phenomena to systems design through the constructal method- *researcher*
- 2018 - Modeling and simulation of fluidization processes and constructal designs for non-Newtonian fluids - *coordinator*

Editorial Board Member

- 2022 - International Communications in Heat and Mass Transfer

Journal Publications

1. IMPIOMBATO, ANDREA NATALE; LA CIVITA, GIORGIO; ORLANDI, FRANCESCO; **ZINANI, FLAVIA S. F.**; OLIVEIRA ROCHA, LUIZ ALBERTO; BISERNI, CESARE
A simple transient Poiseuille-based approach to mimic the Womersley function and to model pulsatile blood flow. DYNAMICS, v.1, p.9 - 17, 2021.
2. SEVERO, LUCAS FARIAS; **ZINANI, FLAVIA S. F.**; ROCHA, LUIZ ALBERTO OLIVEIRA
Constructal design analysis of viscoplastic cross-flow over a row of cylinders. INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, v.122, p.105147 - , 2021.
3. IMPIOMBATO, A. N.; **ZINANI, FLAVIA S. F.**; ROCHA, L.A.O.; BISERNI, C.
Constructal design of an idealized arterial bypass graft: effect of the bypass attachment point on resistance to flow. JOURNAL OF APPLIED AND COMPUTATIONAL MECHANICS, v.7, p.334 - 344, 2021.
4. PELLEJERO, D. C.; MAYER, R. V.; GOTARDO, M.; **ZINANI, FLAVIA S. F.**; ROCHA, L.A.O.
Design construtal de bifurcações em forma de Y para escoamentos de fluidos de Carreau. REVISTA MUNDI ENGENHARIA, TECNOLOGIA E GESTÃO, v.6, p.1 - 30, 2021.
5. DUTRA, R.F.; **ZINANI, FLAVIA S. F.**; ROCHA, L.A.O.; BISERNI, C.
Effect of non-Newtonian fluid rheology on an arterial bypass graft: a numerical investigation guided by constructal design. COMPUTER METHODS AND PROGRAMS IN BIOMEDICINE, v.201, p.105944 - , 2021.
6. BLOSS, VINÍCIUS; CARDOZO, CAMILA FERNANDES; **ZINANI, FLAVIA S. F.**; ROCHA, LUIZ ALBERTO OLIVEIRA
Evaluation of 3-D computational model of oscillating water column converter with constructal design with three degrees of freedom and limited chimney height. DEFECT AND DIFFUSION FORUM, v.407, p.128 - 137, 2021.
7. BORAHÉL, RAFAEL DA SILVEIRA; OLIVESKI, REJANE DE CÉSARO; **ZINANI, FLAVIA S. F.**; SCHROER, IONATAN ANTON
Fin configurations to reduce lauric acid melting time in a rectangular thermal reservoir. JOURNAL OF ENERGY STORAGE, v.44, p.103339 - , 2021.

8. IMPIOMBATO, A. N.; **ZINANI, FLAVIA S. F.**; ROCHA, L. A. O.; BISERNI, C.
Pulsatile flow through an idealized arterial bypass graft: an application of the constructal design method. JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING, v.43, p.370 -, 2021.
9. ALVES, K. R. S.; MODOLO, REGINA CELIA ESPINOSA; MARTINI, B. G.; BARBOSA, J. L. V.; HELFER, G. A.; NOBLEGA, H. G.; **ZINANI, FLAVIA S. F.**
Systematic mapping of phosphorus recovery from industrial wastewater. REVISTA AIDIS DE INGENIERÍA Y CIENCIAS AMBIENTALES, v.14, p.673 - 694, 2021.
10. OCANHA, ENZO SCHLOTTFELDT; **ZINANI, FLAVIA S. F.**; MODOLO, REGINA CELIA ESPINOSA; SANTOS, FERNANDO ALMEIDA
Assessment of the effects of chemical and physical parameters in the fluidization of biomass and sand binary mixtures through statistical analysis. ENERGY, v.190, p.116401 -, 2020.
11. DUTRA, RAFAEL F.; **ZINANI, FLAVIA S. F.**; ROCHA, LUIZ A. O.; BISERNI, C.
Constructal design of an arterial bypass graft. HEAT TRANSFER, v.49, p.1 - 21, 2020.
12. MIRANDA, LUIZ PAULO BORGES; DOS SANTOS, DANIEL DALL'ONDER; **ZINANI, FLAVIA S. F.**
Effects of Reynolds number, plastic number, and flow intensity on the flow and on the heat transfer of a viscoplastic fluid flowing through a planar expansion followed by a contraction. INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, v.1, p.105038 -, 2020.
13. GENEHR, GUILHERME ALFREDO; DA SILVA, ÁLISON RENAN STOCHERO; **ZINANI, FLAVIA S. F.**; INDRUSIAK, MARIA LUIZA SPERB
Fluidization of binary mixtures of biomass and coal with sand: an experimental study. JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING, v.42, p.289 -, 2020.
14. BUENO, J. F.; SILVA, A. R. S.; HIRT, T. A.; BOGO, G. F. C.; **ZINANI, FLAVIA S. F.**; ROCHA, L. A. O.
Constructal design of fins in cooled cavities by non-Newtonian fluids. ENGENHARIA TÉRMICA, v.18, p.85 -, 2019.
15. RAZERA, ANDRE LUIS; FRAGA, GUILHERME; HORN, HENRIQUE HONÓRIO; HIRT, TIAGO ARMANDO; **ZINANI, FLAVIA S. F.**; ISOLDI, LIÉRCIO ANDRÉ; DOS SANTOS, ELIZALDO DOMINGUES; ROCHA, LUIZ ALBERTO OLIVEIRA
Design construtal de uma cavidade aletada em forma de E para refrigeração de um corpo gerador de calor. SCIENTIA PLENA, v.15, p.049909- 1 -, 2019.
16. HERMANY, L.; **ZINANI, FLAVIA S. F.**; DUTRA, R. F.; LORENZINI, G.; ROCHA, L. A. O.
Effect of fluid viscoplasticity on the constructal design of elliptic tubes subjected to forced convection. JOURNAL OF ENGINEERING THERMOPHYSICS, v.28, p.56 - 66, 2019.
17. PEPE, VINICIUS DA ROSA; ROCHA, LUIZ ALBERTO OLIVEIRA; **ZINANI, FLAVIA S. F.**; MIGUEL, ANTONIO FERREIRA
Numerical study of Newtonian fluid flows in T-shaped structures with impermeable walls. DEFECT AND DIFFUSION FORUM, v.396, p.177 - 186, 2019.
18. SGORLA DA SILVA, VITORIA; GOMES, LEANDRO; SIMÕES, FABIANO; EICHLER, PAULO; DE SOUZA, GUILHERME; **ZINANI, FLAVIA S. F.**; SANTOS, FERNANDO
Caracterização de resíduos gerados na colheita e no beneficiamento da macieira para fins energéticos em leitos fluidizados polidispersos. ESTUDOS TECNOLÓGICOS (ONLINE), v.12, p.45 - 67, 2018.
19. MACHADO, GRAZIELLE; SANTOS, FERNANDO; FARIA, DOUGLAS; DE QUEIROZ, TAIANE NUNES; **ZINANI, FLAVIA S. F.**; DE QUEIROZ, JOSÉ HUMBERTO; GOMES, FERNANDO
Characterization and potential evaluation of residues from the sugarcane industry of Rio Grande do Sul in biorefinery processes. NATURAL RESOURCES, v.09, p.175 - 187, 2018.
20. HERMANY, LOBER; KLEIN, RAFAEL J.; LORENZINI, GIULIO; **ZINANI, FLAVIA S. F.**; DOS SANTOS, ELIZALDO DOMINGUES; ISOLDI, LIÉRCIO ANDRÉ; ROCHA, LUIZ ALBERTO OLIVEIRA
Constructal design applied to elliptic tubes in convective heat transfer cross-flow of viscoplastic fluids.

INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, v.116, p.1054 - 1063, 2018.

21. KLEIN, R.J.; **ZINANI, FLAVIA S. F.**; ROCHA, L.A.O.; BISERNI, C.

Effect of Bejan and Prandtl numbers on the design of tube arrangements in forced convection of shear thinning fluids: A numerical approach motivated by constructal theory. INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER, v.93, p.74 - 82, 2018.

22. **ZINANI, FLAVIA S. F.**; ADAMY, LUCAS

Modelagem de um tanque de escorva para bomba em sistema de descarte de óleo. ESTUDOS TECNOLÓGICOS (ONLINE), v.12, p.29 - 44, 2018.

23. ZIGUNOV, FERNANDO; **ZINANI, FLAVIA S. F.**; DA SILVA, JANICE

Simulações numéricas de tempo de congelamento de alimentos utilizando modelos de propriedades termofísicas de alimentos. ESTUDOS TECNOLÓGICOS (ONLINE), v.12, p.1 - 13, 2018.

24. SEVERO, J. A.; MODOLO, R. C. E.; MORAES, C.A.M.; **ZINANI, FLAVIA S. F.**

Thermal regeneration of waste foundry phenolic sand in a lab scale fluidized bed. MATERIA-RIO DE JANEIRO, v.23, p.1 - 14, 2018.

25. KESTERING, DANIEL A.; **ZINANI, FLAVIA S. F.**; BLEYER, GEORGE C.

Application of an EMMS model for bubbly fluidized bed. DEFECT AND DIFFUSION FORUM, v.372, p.170 - 179, 2017.

26. KLEIN, RAFAEL J.; BISERNI, C.; **ZINANI, FLAVIA S. F.**; ROCHA, L. A. O.

Constructal design of tube arrangements for heat transfer to non-Newtonian fluids. INTERNATIONAL JOURNAL OF MECHANICAL SCIENCES, v.133, p.590 - 597, 2017.

27. KLEIN, RAFAEL J.; LORENZINI, GIULIO; **ZINANI, FLÁVIA S. F.**; ROCHA, LUIZ A.O.

Dimensionless pressure drop number for non-Newtonian fluids applied to constructal design of heat exchangers. INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER, v.115, p.910 - 914, 2017.

28. HERMANY, LOBER; KLEIN, RAFAEL JOSÉ; **ZINANI, FLAVIA S. F.**; ISOLDI, LIÉRCIO ANDRÉ; DOS SANTOS, ELIZALDO DOMINGUES; ROCHA, LUIZ ALBERTO OLIVEIRA

Numerical study of the effect of Reynolds number and aspect ratio in heat transfer from elliptical tubes to viscoplastic fluids employing constructal design. DEFECT AND DIFFUSION FORUM, v.372, p.142 - 151, 2017.

29. GOMES, LEANDRO; SGORLA, VITÓRIA; AULER, ANGENOR; VILLARES, MATHEUS; VUELMA, JONATAN; **ZINANI, FLAVIA S. F.**; SANTOS, FERNANDO

Preliminary study of fluidization curves in polydisperse beds formed by a binary mixture of Raphanus sativus L. husk and sand. OPEN ACCESS LIBRARY JOURNAL, v.04, p.1 - 10, 2017.

30. KESTERING, D. A.; BLEYER, G.C.; **ZINANI, FLAVIA S. F.**; VANOSDOL, J.

Computational fluid dynamics of a fluid bed employing tuned gas-solid drag models. REVISTA INTERDISCIPLINAR DE PESQUISA EM ENGENHARIA, v.2, p.71 - 85, 2016.

31. PEDROSO, FABIANO ANDERSON; **ZINANI, FLAVIA S. F.**; INDRUSIAK, MARIA LUIZA SPERB

Numerical study of circulating fluidized beds built using Glicksman's simplified and full sets of scaling parameters. JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING, v.38, p.2085 - 2096, 2016.

32. **ZINANI, FLAVIA S. F.**; PHILIPPSEN, C. G.; INDRUSIAK, M. L. S.

Numerical study of gas-solid drag models in a bubbling fluidized bed. PARTICULATE SCIENCE AND TECHNOLOGY, v.36, p.1 - 10, 2016.

33. SANTOS, C.E.; SILVA, J.; **ZINANI, FLAVIA S. F.**; WANDER, P.; GOMES, L. P.

Oil from the acid silage of Nile tilapia waste: Physicochemical characteristics for its application as biofuel. RENEWABLE ENERGY, v.80, p.331 - 337, 2015.

34. COPETTI, J.B.; MACAGNAN, M.H.; **ZINANI, FLAVIA S. F.**

Experimental study on R-600a boiling in 2.6 mm tube. *INTERNATIONAL JOURNAL OF REFRIGERATION*, v.36, p.325 - 334, 2013.

35. **ZINANI, FLAVIA S. F.**; FREY, S.

Finite element approximations for quasi-Newtonian flows employing a multi-field GLS method. *COMPUTATIONAL MECHANICS*, v.48, p.139 - 152, 2011.

36. COPETTI, Jacqueline B.; MACAGNAN, Mario H.; **ZINANI, FLAVIA S. F.**; KUNSLER, Nicole L.F.

Flow boiling heat transfer and pressure drop of r-134a in a mini tube: An experimental investigation. *EXPERIMENTAL THERMAL AND FLUID SCIENCE*, v.35, p.636 - 644, 2010.

37. FREY, Sérgio; FONSECA, Cleiton; **ZINANI, FLAVIA S. F.**; NACCACHE, Mônica F.

Galerkin least-squares approximations for upper-convected Maxwell fluid flows. *MECHANICS RESEARCH COMMUNICATIONS*, v.37, p.666 - 671, 2010.

38. FREY, Sérgio; SILVEIRA, Filipe S.; **ZINANI, FLAVIA S. F.**

Stabilized mixed approximations for inertial viscoplastic fluid flows. *MECHANICS RESEARCH COMMUNICATIONS*, v.37, p.145 - 152, 2010.

39. **ZINANI, FLAVIA S. F.**; FREY, S.

Galerkin Least-Squares multifield approximations for flows of inelastic non-Newtonian fluids. *JOURNAL OF FLUIDS ENGINEERING*, v.130, p.081507 - , 2008.

40. **ZINANI, FLAVIA S. F.**; FREY, S.

Galerkin least-squares solutions for purely viscous flows of shear-thinning fluids and regularized yield stress fluids. *JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING*, v.29, p.432 - 443, 2007.

41. **ZINANI, FLAVIA S. F.**; FREY, S.

Galerkin least-squares approximations for flows of Casson fluids through an expansion. *ENGENHARIA TÉRMICA*, v.5, p.82 - , 2006.

42. **FRANCESCHINI, FLAVIA S.**; FREY, S.

Finite element approximation for single-phase multicomponent flows. *MECHANICS RESEARCH COMMUNICATIONS*, v.32, p.53 - 64, 2005.

Book Chapter and Organization

Book Chapter

1. CUNEGATTO, E. H. T.; FONSECA, C. E.; KIECKOW, F.; **ZINANI, FLAVIA S. F.**

Desenvolvimento de aplicativo para ensino de Dinâmica dos Fluidos Computacional In: *EDUCAÇÃO CONTEMPORÂNEA V. 20 Tecnologia*. 1 ed.: Ed. Poisson, 2021, p. 72-.

Book Organization

1. VAGTINSKI, A.; LEE, C. Y. Y.; **ZINANI, FLAVIA S. F.**; INDRUSIAK, M. L. S.; OLIVESKI, R. C.

Escola de Primavera de Transição e Turbulência. São Leopoldo: Estação Gráfica, 2014, v.1. p.312.

Technical Production

Registered Computer Programs

1. CUNEGATTO, E., GOTARDO, M., **ZINANI, FLAVIA S. F.**

Simulearn 2D, 2021

2. CUNEGATTO, E., GOTARDO, M., **ZINANI, FLAVIA S. F.**

GCI Calculator, 2021

Unregistered Computer Programs

1. **ZINANI, FLAVIA S. F.**; FREY, S.

GNLFEM - Finite Element Code for Generalized Neewtonian Fluid Problems, 2004

2. **ZINANI, FLAVIA S. F.**; FREY, S.

MIXFEM - Finite Element Code for Mixture Fluid Problems, 2002

Supervisions

Completed

Doctorate Thesis co-supervision: 1

Doctorate Exchange Student: 1

Master's degree: 20

Master's degree co-supervision: 2

Post-Doctorate: 2

Ongoing

Doctorate Thesis: 3

Master's degree: 5

Master's degree co-supervision: 1

Organization of Scientific Events

1. ROCHA, L. A. O.; ZINANI, FLÁVIA S.F.; DOS SANTOS, E.D.; ISOLDI, L. A.; GOMES, M. N.; ERRERA, M. R.; VARGAS, J. V. C.; ESTRADA, E. S. D.; LORENTE, S.; GUNES, U.
Constructal Law & Second Law Conference 2019, 2019.

2. ZINANI, FLAVIA S. F.; ROCHA, L. A. O.; INDRUSIAK, M. L. S.; DOS SANTOS, D.D.
VIII Brazilian Conference on Rheology, 2018.

3. INDRUSIAK, M. L. S.; ZINANI, FLAVIA S. F.; LEE, C. Y. Y.; VAGTINSKI, A.; OLIVESKI, R. C.
Spring School on Transition and Turbulence, 2014.