

EDUARDO DE SOUZA ESPERANCA

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POSTDOCTORAL RESEARCHER/PROFESSOR

EDUCATION

UNIVERSIDADE DE SÃO PAULO – USP	Feb 2025 – Now
Postdoctoral Researcher – Department of Chemistry with a focus on Food Chemistry	
UNIVERSIDADE ESTADUAL DE CAMPINAS - UNICAMP	Apr 2024 – jan 2025
Postdoctoral Researcher – Center for Semiconductor Components and Nanotechnologies, CCSNano	
UNIVERSIDADE ESTADUAL DE CAMPINAS - UNICAMP	Apr 2023 – Apr 2024
Postdoctoral Researcher – Chemical Engineering	
UNIVERSIDADE ESTADUAL DE CAMPINAS - UNICAMP	Jan 2018 – Mar 2023
PhD – Food Engineering	
UNIVERSIDADE ESTADUAL DE CAMPINAS - UNICAMP	Jan 2016 – Dec 2018
Master's Degree – Food Engineering	
UNIVERSIDAD DE VALLADOLID – PALENCIA – SPAIN	Aug 2012 – Aug 2013
Sandwich Graduation – Ingeniería de las Industrias Agroalimentarias	
FEDERAL UNIVERSITY OF TECHNOLOGY – PARANA – BRAZIL	Jan 2010 – Dez 2015
Bachelor's Degree – Food Engineering	

CERTIFICATE

UNIVERSITY OF MICHIGAN	Sep – 2023
Programming for everybody (Python)	

PROFILE

Experience in the areas of thermodynamic equilibrium of fatty systems, solid-liquid phase equilibrium, solid-liquid extraction, differential scanning calorimetry (DSC), GC-MS, GC-FID, polarized optical microscopy, simulated in vitro digestibility, nanoparticles, deep eutectic solvents (DES) and natural deep solvents (NADES). I am looking for work environments that value diversity and with which I share the same values. I am constantly eager to expand my knowledge base and get involved in disciplines that have the potential to improve the quality of life for individuals and communities.

In 2024, I completed a postdoctoral fellowship in Chemical Engineering, with research focusing on solid-liquid equilibrium, liquid-liquid equilibrium, vapor-liquid equilibrium, and solubility studies. In 2025, I completed another postdoctoral fellowship in Materials Science, investigating lignin applications and microwave-assisted processes.

PUBLICATION

1. Esperança, E. S., Bonatto, M. S., Silva, K. C. G., Shimamoto, G. G., Tubino, M., Costa, M. C., Rodrigues, C. E. C., Meirelles, A. J. A., Sato, A. C. K., Maximo, G. J. (2022). **Phytosterols and γ -Oryzanol as Cholesterol Solid Phase Modifiers during Digestion**. *Foods*, 11(22), 3629. DOI: [10.3390/foods11223629](https://doi.org/10.3390/foods11223629)
2. Esperanca, E. S., Bonatto, M. S., Costa, M. C., Meirelles, A. J., & Maximo, G. J. (2022). **Cholesterol thermodynamic behaviour in mixtures with medium chain fatty acids and vegetable oils composed of them**. *Fluid Phase Equilibria*, 557, 113432. DOI: [10.1016/j.fluid.2022.113432](https://doi.org/10.1016/j.fluid.2022.113432)
3. Maximo, G. J., Magalhães, A. M., Gonçalves, M. M., Esperança, E. S., Costa, M. C., Meirelles, A. J., & Coutinho, J. A. (2018). **Improving the cold flow behavior of methyl biodiesel by blending it with ethyl esters**. *Fuel*, 226, 87-92. DOI: [10.1016/j.fuel.2018.03.154](https://doi.org/10.1016/j.fuel.2018.03.154)
4. de Souza Esperança, E., Bonatto, M. S., Shimamoto, G. G., Tubino, M., Costa, M. C., de Almeida Meirelles, A. J., & Maximo, G. J. (2018). **Phase behavior of cholesterol in mixtures with hypo-and hypercholesterolemic lipids**. *Food & function*, 9(6), 3447-3455. DOI: [10.1039/c8fo00370j](https://doi.org/10.1039/c8fo00370j)
5. Vilas-Boas, S. M., Esperança, E. S., Pelaquim, F. P., Bento, N. I., Maximo, G. J., Batista, E. A., & da Costa, M. C. (2025). **Solid-liquid equilibrium of binary mixtures of triacylglycerols and fatty acids/alcohols**. *Fluid Phase Equilibria*, 114481. DOI: [10.1016/j.fluid.2025.114481](https://doi.org/10.1016/j.fluid.2025.114481)

PUBLICATION UNDER CONSIDERATION

Formulation of Amazonian fats blends as substitutes for industrial trans fats

Solid-liquid equilibrium of binary mixtures of triacylglycerols and fatty acids/alcohols

EMPLOYMENT HISTORY

Journal Reviewer

| 2023 – Now

Journal of Food Process Engineering (impact factor = 3)

The Journal of Food Process Engineering is the sole international journal that is specifically dedicated to the engineering aspects of food processing. This journal publishes research on the applications of principles and concepts of food engineering and food processes and packaging, as well as articles that address the sustainability of process technology and ways to reduce waste and energy consumption.

Supervisor

| Jun 2023 – Now

State University of Campinas – UNICAMP – Brasil

Unicamp is one of the top public universities in Campinas, Brazil. It is ranked #210 in QS World University Rankings.

1. Mariana de Carvalho Amorim. Study of the solubility of phenolic acids in water and in different aqueous mixtures of organic solvents. Start date: 2023. Scientific Initiation (Graduating in Chemical Engineering) - State University of Campinas, National Council for Scientific and Technological Development.

2. Larissa Leão Cruz. . Start date: 2023. Scientific Initiation (Graduating in Chemical Engineering) - State University of Campinas, National Council for Scientific and Technological Development.
3. Dulce Maria Santos. Study of the solubility of phenolic compounds in different classes of solvent. Start date: 2023. Scientific Initiation (Graduating in Chemical Engineering) - State University of Campinas.
4. Gabriela Garcia Blanco. Influence of gamma-valerolactone addition on the flash point of methyl and ethyl biodiesel. Start date: 2023. Scientific Initiation (Graduating in Chemical Engineering) - State University of Campinas.

Associate Professor

| Aug 2023 – Dec 2023

State University of Campinas – UNICAMP - Brasil

› Professor in charge of Thermodynamics II:

- Calculation of Thermodynamic Quantities for Multicomponent Systems
- Thermodynamic Modeling
- Phase Equilibrium Liquid-Vapor, Liquid-Liquid, Liquid-Liquid-Vapor, and Solid-Liquid.

Professor

Remote | Oct 2022 – Mar 2023

Universidad Nacional de Trujillo – Peru

National University of Trujillo, founded on May 10, 1824 by Simón Bolívar and José Faustino Sánchez Carrión, constituting the first university founded in the country in the Republican era.

› Classes in Spanish for the Master's classes in: “Integrated management of plagues and diseases in agroecological systems” and “Production and animal health”.

› The subject taught was “Science and sustainable development” where the following topics were addressed: i) science, technology and innovation; ii) sustainability and circular economy; iii) industry 4.0 and circular economy; iv) Production chain in agricultural and animal feed systems: sustainability, weaknesses and current situation in Peru.

Alicerce Educação

Hybrid | Jun 2022 – Mar 2023

Online Support Specialist – Leadership Program

Alicerce is a social impact company that brings to Brazil the most innovative and efficient concepts in education in the world, rapidly developing the educational base of people of any age and in every social context. Had the following responsibilities:

- › Help attract students to open new classes with partner companies.
- › Help in the training of collective teachers
- › Creating and maintaining classes
- › Weekly contact with students and teachers from different classes in order to keep them engaged with the project

Teacher

Worked in training 3 groups of young adults:

- › Tuma Eleva - PwD - Was responsible for teaching trails in Portuguese, mathematics, life skills and administration with 1.5h classes and 3x a week remotely for students with the most diverse disabilities.
- › Tuma Delly's Food - PwD - Was responsible for teaching trails in Portuguese, mathematics, life skills and administration with 1.5h classes and 3x a week remotely for students with the most diverse disabilities.
- › Tuma Escola Nota 10 MRV - It was responsible for teaching Portuguese, mathematics, life skills with 1.5h classes and 3x a week in person for civil construction students.

Quality Assurance Quality Control

Granol | Oct 2015 – Jan 2016

Intership

Granol is a 100% Brazilian company dedicated to the production and sale of grains, bran, vegetable oils, glycerin and biodiesel for the domestic and foreign markets.

As an intern I performed the following functions:

- › Corporate function - quality control coordination assistance
- › Elaboration, verification, and validation of HACCP plans for soybean meal, lecithin and refined soybean oil
- › Maintenance of the GMP+ B2 and HACCP Dutch quality management system
- › Preparation, review and control of quality documents (SOPs, records, work instructions)
- › Employee training related to the quality sectors
- › Laboratory quality control of soybean meal, lecithin, glycerin, raw, degummed and refined soybean oil.

LANGUAGES

- › English (Advanced); › Spanish (Fluent); › Portuguese (Native); › Franch (Basic)

VOLUNTEER WORK

Dec 2012 – Mar 2013

AIESEC is a global platform for young people to develop their leadership potential through practical experience of many kinds, including internships, volunteering opportunities, and more. Founded in 1948, AIESEC is a non-governmental and not-for-profit organization entirely run by youth for youth.

During my volunteer work, I was stationed at an orphanage in Prague, Czech Republic. The students at the orphanage were between the ages of 4-16 and had been separated from their families due to issues such as drug abuse and violence. My role there was to promote cultural exchange between Brazil and the Czech Republic through the use of the English language. I dedicated 6-8 hours a day (5 days a week) to work with the students, aiming to spark their interest in the language, planning interactive activities, and teaching them about Brazil and South America.