

Editorial: Regional Catalysis Meeting (ERCAT, Regional 3, Campinas SP, Brazil)

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Catalysis plays a crucial role in several chemical processes and faces ongoing challenges, especially regarding the replacement of noble metals and the development of catalysts based on renewable resources, such as biomass. At the same time, efforts are being made to develop catalysts that offer good activity, selectivity, and stability, in addition to adhering to the principles of green chemistry.

In Brazil, catalysis plays an important role, with the country being home to branches of several global companies in the sector. Since 1981, the Brazilian Catalysis Society (SBCat) has promoted regional and national events that foster the connection of professionals from academia, industry, and undergraduate and graduate students. Divided into four groups, SBCat is composed of Region 1 (North, Northeast, and Central West), Region 2 (Rio de Janeiro, part of Minas Gerais and Espírito Santo), Region 3 (São Paulo, South of Minas, Triângulo Mineiro and Paraná) and Region 4 (Santa Catarina and Rio Grande do Sul). At the national and international levels, SBCat contributes to generating knowledge and training specialists and establishes scientific partnerships that promote the dissemination of Catalysis in Brazil.

As part of the activities of each region, the Regional Catalysis Meetings (ERCAT) are held every two years, which have attracted a significant and exciting audience. To date, fourteen editions of this meeting have been held in the states that comprise Regional 3. In 2024, after a six-year hiatus due to the SARS COV-19 pandemic, the XIV ERCAT was held at the National Synchrotron Light Laboratory (LNLS), with the support of SBCat and the National Center for Research in Energy and Materials. The event's central theme was "From the Bench to Industry: the challenges of modern catalysis."

The event featured three conferences by universities, research centers, and industry experts. In addition, participants could attend three plenary sessions with different perspectives and visit the Sirius facilities, Brazil's new synchrotron light source. Several participants praised the quality of the event and the importance of its resumption. Ninety-two expanded abstracts were submitted in the following areas: Catalysis in Refining, Petrochemistry and Fine Chemistry, Synthesis and Characterization of Catalysts and Adsorbents, Biocatalysis and Homogeneous Catalysis, Electrocatalysis and Photocatalysis, Conversion of Biomass and Derived Molecules, Environmental Catalysis and Theoretical and Computational

Catalysis. The papers were presented in oral, flash talk, and poster formats, with prizes for one paper in each category. Many also reported that they left the event inspired to continue the development of catalysis in Brazil. The XIV ERCAT had 100 registered participants from 32 higher education or research institutions in Brazil, namely the National Center for Research in Energy and Materials (CNPEM), Brazilian Agricultural Research Corporation (Embrapa) – Instrumentation Unit, in addition to colleagues from universities in regions I, II and III. For the first time, the papers presented at ERCAT Regional 3 could be submitted to a specialized scientific journal. This opportunity, fostered during the event, strengthens ERCAT and highlights its importance in establishing partnerships and collaborations in the area.

Two guest editors will present this special edition.

Dr. Cristiane Alves Pereira defended her doctorate in 2012 in the Graduate Program in Chemical Engineering at the Federal University of São Carlos, where she also completed her postdoctoral studies and worked on a research and extension project in partnership with CENPES/PETROBRAS. Cristiane was among the winners of the 5th edition of the Petrobras Technology Award (Environmental Preservation Technology). Since 2018, she has been a professor of the Chemical Engineering course at the Department of Chemical and Materials Engineering at the Federal University of Lavras. Her main research areas include:

- Synthesis and characterization of nanomaterials for application in catalysis and adsorption.
- Obtaining biofuels and high-value-added chemicals via catalytic processes.
- Treatment of effluents and contaminated water via catalytic processes.

Fernando Alves da Silva is a faculty member of the Chemical Engineering course at the Federal Technological University of Paraná (UTFPR) on the Apucarana campus. He holds a bachelor's, master's, and doctorate in Chemical Engineering from the State University of Maringá and a postdoctoral degree at the National Center for Research in Energy and Materials – National Synchrotron Light Laboratory (CNPEM – Sirius), using in-situ techniques and working on studies of materials by X-ray diffraction.

Professor Fernando stands out in teaching for his pedagogical approach, combining theory and practice harmoniously. His teaching method is recognized for its clarity, depth, and ability to motivate students to go beyond the content.

Furthermore, he has proven himself to be an essential researcher, with projects that aim, among other aspects, to

develop sustainable solutions for the chemical industry, one of the main challenges faced by the sector in times of environmental crisis and climate change. He seeks to strengthen ties between academia and industry, which bridges the market's needs and the solutions that the university can offer.

The guest editors would like to express their gratitude to the authors for their valuable contributions to this issue, to the reviewers for the time and effort dedicated to ensuring the quality of the publications, and to the editorial team of the Journal of Science and Sustainable Engineering for their support in organizing the special issue.

We invite all readers to explore this special issue, which brings together important and current topics in catalysis. We hope that this joint work will further strengthen the engagement and commitment of the scientific community and that catalysis research in Brazil will continue to advance towards the world's forefront.



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