

Press release

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<http://www.efce.org>

Mixing Award presented to Margarida Brito for advances in the know-how on 2D reactors

Dr. Margarida Brito, Portugal, is the winner of the Federation's Young Researcher Award in Mixing 2023.

She was selected by the jury of the EFCE Working Party on Mixing for her excellent PhD thesis on "Mixing Mechanisms in 2D reactors", for which she achieved the best evaluation results in terms of quality of the PhD thesis and significance to the field of mixing, outstanding publications in international journals, international activities and network, industrial significance of the scientific activity, and dissemination of results by mixing conference participation.



The thesis, completed at the University of Porto, Portugal, under the supervision of Dr. Ricardo Santos, Dr. Cláudio Fonte and Professor José Carlos Lopes, addressed mixing technologies of a plate-plate mixer used for rheometry, Confined Impinging Jets (CIJ) mixers, T-jets, and split-and-recombine (SR) mixers. The results of this work have a wide range of industrial applications. These static mixers are especially suited for applications where flow rates are too low (e.g. microfluidic applications) or viscosity is too large (such as food, coatings, cosmetic, polymer adhesive and detergent industries). Rotational devices are suggested as a methodology for screening the 2D mixing information generated in mesoreactors, particularly in industrial processes that involve fast polymerisation reactions (e.g. the production of polyurethanes in reaction injection moulding machines). Fundamental studies on mixing of dissimilar fluids in CIJs and T-Jets mixers reported in this PhD thesis enabled the generation of useful data to design experiments/processes in these devices. This work also shows that CIJ mixers can be used for other intensive mixing applications, such as continuous emulsification processes, by injecting the dispersed and continuous phases as two opposed jets. Finally, a new model is proposed to describe the non-homogeneous distribution of mixing scales in SR mixers. Results give an explicit and straightforward design expression to calculate the maximum striation thickness decay, which is the limiting step in mixing operation in this type of mixers.

Margarida Brito has published a total of 16 journal papers, 8 as first author, and presented 28 oral and poster communications in national and international conferences, including mixing conferences.

Margarida Brito obtained her PhD in Chemical and Biological Engineering from the University of Porto. Currently, she holds a Project Researcher position at the Laboratory of Separation and Reaction Engineering – Laboratory of Catalysis and Materials (LSRE-LCM) at the University of Porto, working on the project “BioShoes4All”.

She was invited to present a lecture at the 17th European Conference on Mixing, which was held in Porto, Portugal, on 2-5 July 2023.

The Award is generously sponsored by **EKATO**.

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Related links

EFCE media centre (<http://www.efce.info/News>)

17th European Conference on Mixing (<http://mixing17.eu/>)

EFCE Working Party on Mixing (https://efce.info/WP_Mixing.html)

Notes to media:

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About Ekato

In the past 85 years EKATO has developed to world market leader in stirring and mixing technology for all process-oriented industries.

The EKATO GROUP companies offer optimized mixing technology, from molecular, robust and rapidly available industrial agitators over industrial solutions for reactor agitators on sophisticated mixing processes up to complete process plants including automation.

EKATO has been family-owned since its foundation in 1933 and is represented worldwide with subsidiaries in Europe, Asia, Australia, South America, South Africa and the USA as well as a network of trading partners. At the state-of-the-art research and development center in Schopfheim, EKATO offers engineering services from process development to process optimization to make customer processes and mixing procedures more reliable and efficient.

About chemical engineers

Chemical, biochemical and process engineering is the application of science, maths and economics to the process of turning raw materials into everyday products. Professional chemical engineers design, construct and manage process operations all over the world. Oil and gas, pharmaceuticals, food and drink, synthetic fibres and clean drinking water are just some of the products where chemical engineering plays a central role.

About EFCE

Founded in 1953, The European Federation of Chemical Engineering (EFCE) is a non-profit-making association, whose object is to promote co-operation in Europe between non-profit-making professional scientific and technical societies in 30 countries for the general advancement of chemical engineering and as a means of furthering the development of chemical engineering. See www.efce.org