

Advancement in experimental and computational methods for optimizing and scaling up continuous reactors.

Presenter:

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KFKI Campus, Building 19. tanácsterem

Seminar link:

<https://ek.hun-ren.hu/s/BNC/Seminars/JairoMurilloRincon>

Abstract:

The presentation is introducing the PhD project with the aim to develop an innovative method for accomplishing gas-liquid mass transfer and gas separation in the same equipment working in continuous processes, thus implementing the principles of process intensification in the chemical industry. The study consists of an experimental part for the fluid dynamics characterization of the equipment considering single- and two-phase flow at different operation conditions and configurations of Kenics Static Elements (KSE) in a pipeline. The numerical investigation is focused on the development of a robust computational tool for the design and the optimization of the equipment. The results obtained experimentally allow to explore the effect of the KSE in terms of energy consumption, size and the spatial distribution of the gas phase. The numerical model allows to fairly predict gas-liquid mixing and separation, and it is used to explore a combination of mixing units followed by separation units, which ensures efficient gas dispersion and subsequent separation in the same equipment.