

## Intensification of Heat Transfer in Magnetically Assisted Reactor

**Authors :** Dawid Sołoducha, Tomasz Borowski, Marian Kordas, Rafał Rakoczy

**Abstract :** The magnetic field in the past few years became an important part of many studies. Magnetic field (MF) may be used to affect the process in many ways; for example, it can be used as a factor to stabilize the system. We can use MF to steer the operation, to activate or inhibit the process, or even to affect the vital activity of microorganisms. Using various types of magnetic field generators is always connected with the delivery of some heat to the system. Heat transfer is a very important phenomenon; it can influence the process positively and negatively, so it's necessary to measure heat stream transferred from the place of generation and prevent negative influence on the operation. The aim of the presented work was to apply various types of magnetic fields and to measure heat transfer phenomena. The results were obtained by continuous measurement at several measuring points with temperature probes. Results were compiled in the form of temperature profiles. The study investigated the undetermined heat transfer in a custom system equipped with a magnetic field generator. Experimental investigations are provided for the explanation of the influence of the various type of magnetic fields on the heat transfer process. The tested processes are described by means of the criteria which defined heat transfer intensification under the action of magnetic field.

**Keywords :** heat transfer, magnetic field, undetermined heat transfer, temperature profile

**Conference Title :** ICCE 2021 : International Conference on Chemical Engineering

**Conference Location :** Tokyo, Japan

**Conference Dates :** November 11-12, 2021