

Title, Name and surname

Assoc. Prof. Grzegorz Brus

Faculty and Department

Faculty of Energy and Fuels, Dep. Of Fundamental Research in Energy Engineering

Keywords.

numerical simulation of heat transfer and fluid flow, numerical methods, computational material engineering, computational fluid mechanics, mathematical modeling, fuel cells, energy, application of artificial intelligence in energy engineering

Scientific profile.

My research interests are focused on numerical simulations of chemically reacting thermal gas flow in energy systems and chemical reactors. In my work, I use the following numerical tools: MATLAB & SIMULINK and ANSYS Fluent. I have experience using computer simulation in scientific, education, and industrial works. For several years, together with my research team, I have expanded my scientific workshop with artificial intelligence methods and their application in energy engineering.

Exemplary thesis titles

- Solid oxide fuel cell's anode optimization using evolutionary algorithms and cellular automata.
- Numerical analysis of the macro-patterned methane/steam reforming reactor
- An Artificial Neural Network Model for Calculating the Current-Voltage Characteristics of a Solid Oxide Fuel Cell Stack

The form of conducting master's theses

Students participate in weekly meetings where the research progress and plans for the next week's are presented. The meeting is organized together with Ph.D. students and young staff members.