Field: Chemical Reaction Engineering / reactor engineering

Title: Multi-Objective Optimization of Microchannel Reactor for Fischer-Tropsch Synthesis Using Computational Fluid Dynamics and Genetic Algorithm

EES manuscript number: CEJ-D-16-05432

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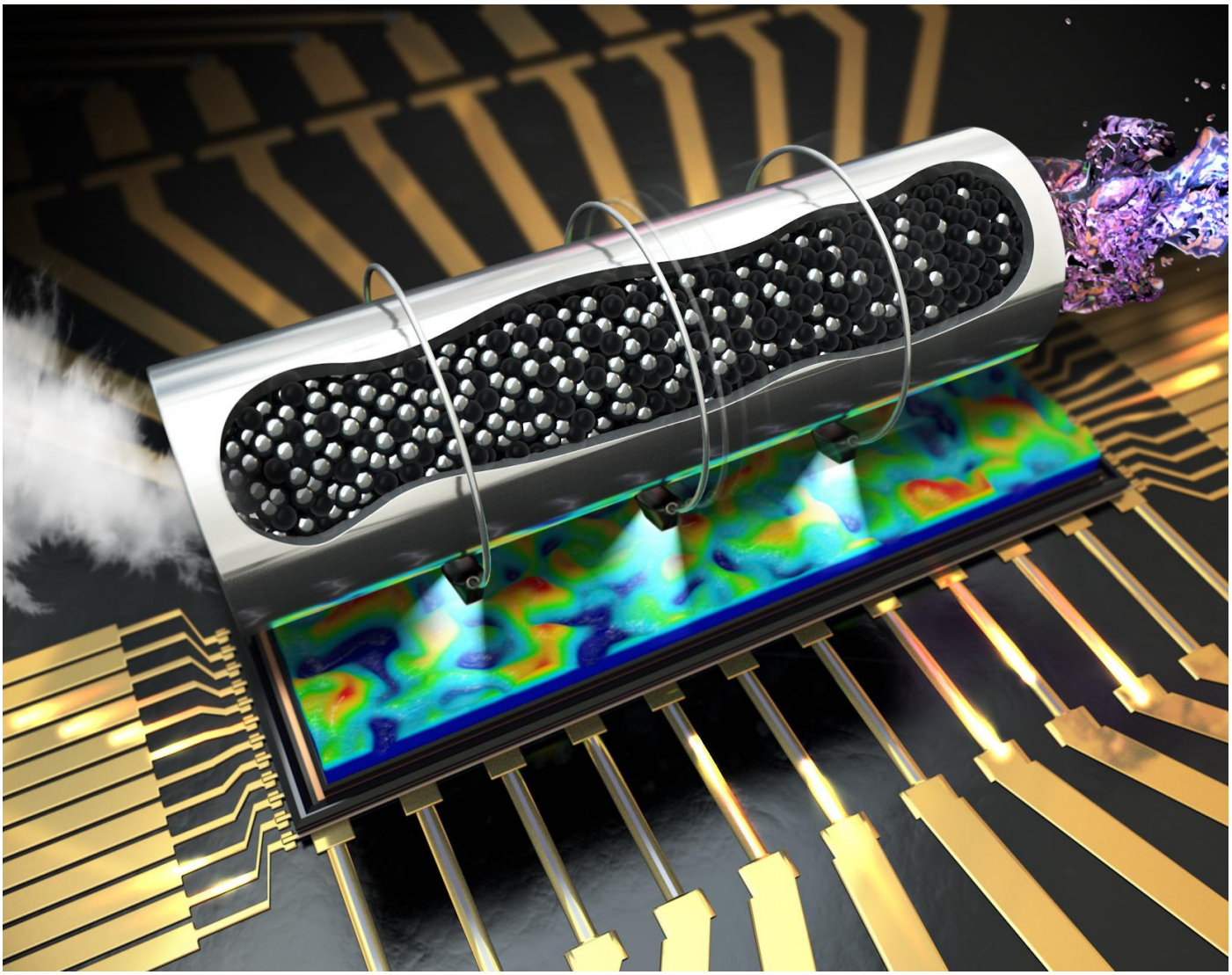
Brief explanation of the illustration:

We propose a multi-objective optimization methodology using a stochastic optimization algorithm, a genetic algorithm (GA) with ε-constraint method, and a 2D axisymmetric computational fluid dynamics (CFD)-based Fischer-Tropsch microchannel reactor model, validated by experimental data of CO conversion and CH_4 selectivity, for simultaneously maximizing C_{5+} productivity and minimizing the temperature rise of a Fischer-Tropsch microchannel reactor.

The illustration (art work) emphasizes 3 topics which are

1) Microchannel Fischer-Tropsch reactor with discrete catalyst packing
2) Computational Fluid Dynamics modeling for predicting physical phenomena of reactor
3) Optimization platform that automatically finds the global optimal solution using high computing power

Art work



Cover Preview

Volume 00 • Issue 00 • 000000 • 2016 Issn 0000-0000

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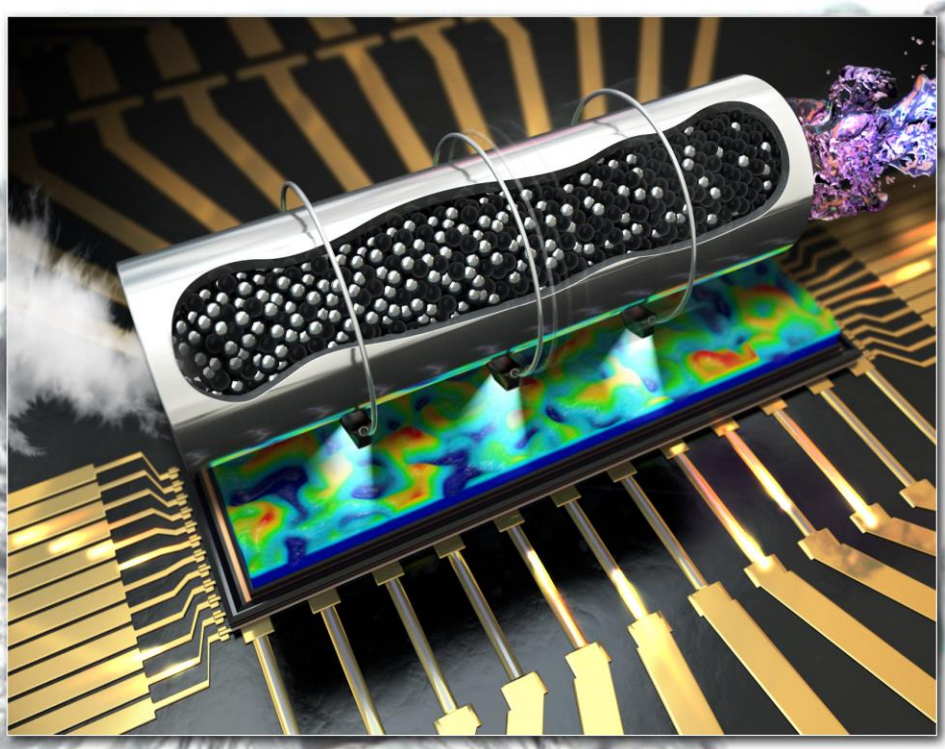

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