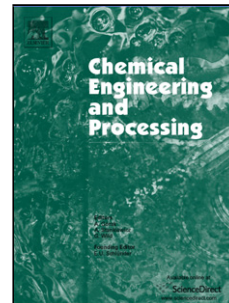


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Thermal performance of meso-scale oscillatory baffled reactors

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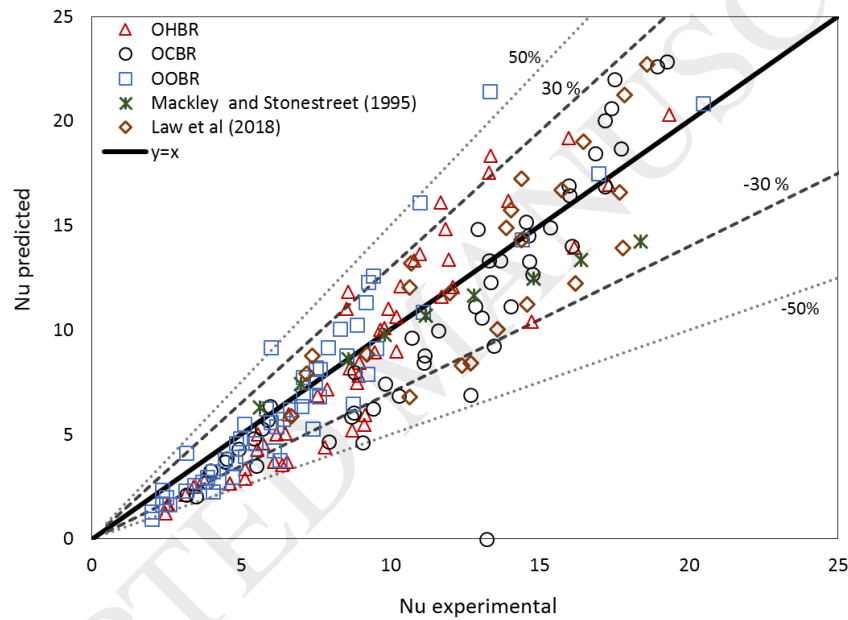
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Graphical Abstract

Validation of developed correlations for predicting Nusselt number (Nu) in different designs of mesoscale oscillatory baffled reactors: oscillatory helical baffled reactor (OHBR), oscillatory central baffled reactor (OCBR), and oscillatory orifice baffled reactor (OOBR).



Highlights:

- Heat transfer in various designs of meso-OBRs was characterised.
- Effect of operating conditions on Nu and ΔP results was investigated.
- Thermal performance for the meso-OBRs was evaluated.
- Correlations for predicting pressure drop and Nusselt number were established.

Abstract

This study reports the evaluation of heat transfer characteristics and pressure drops in three designs of meso-scale oscillatory baffled reactors over the net flow range $Re_n = 60-2500$ and the oscillatory flow range $Re_o = 0-1600$. The three designs were the oscillatory central baffled reactor (OCBR), the oscillatory helical

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