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Catalytic Methane Combustion in Microreactors

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Stellingen

Behorende bij het proefschrift

Catalytic Methane Combustion in Microreactors

Li He

1. Cost-effective and environmentally friendly hydrocarbon fuels hold promise for power generation in miniaturized systems.
2. Microreactor research offers important insights in the intensification of catalytic processes.
3. The synthesis of highly active washcoated catalysts using novel coating methods is crucial for the development of improved multichannel microreactors for novel applications (Chapter 3).
4. A good understanding and control of internal/external mass transfer rates is necessary for the development of efficient washcoated catalysts (Chapter 4).
5. Residence time, specific surface area and fluid uniformity determine the overall performance of multichannel microreactors (Chapter 5).
6. Coupling of reactions such as catalytic methane combustion and methane steam reforming in microreactors holds great promise for intensified and integrated energy systems (Chapter 6).
7. Detailed mass and heat transfer modeling in microreactors is required when performing exothermic reactions (e.g., catalytic methane combustion).
8. “We can complain because rose bushes have thorns, or we can rejoice because thorn bushes have roses.” – Abraham Lincoln.
9. “To think is to practice brain chemistry.” – Deepak Chopra.
10. “What is research but a blind date with knowledge?” – Will Harvey.