



## Simulation of millisecond catalytic partial oxidation of methane

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Condition: New. Publisher/Verlag: LAP Lambert Academic Publishing | Hydrogen can be the key solution of all our energy needs in the future and to face climate change while reducing greenhouse gases. Syngas, H<sub>2</sub> and CO, is industrially produced by steam reforming of methane. A potential alternative is the catalytic partial oxidation of methane. The process is fast, exothermic and auto-thermal. A dual sequential bed catalyst is used, which makes use of a combustion catalyst followed by a reforming catalyst in order to carry out catalytic partial oxidation in two steps. Numerical simulations using finite elements methods coupled with global kinetics are performed to have a better understanding of the transient process and the solid and gas temperature profiles in a catalyst. The results include temporal and spatial reactant conversion, product selectivity, and temperature profiles in the catalyst. Where possible simulation results are compared to experimental data. The model shows high yields of hydrogen from methane and air which fits the experimental results in most of the cases. It also fits qualitatively the transient results. | Format: Paperback | Language/Sprache: english | 80 pp.

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