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Critical Key Components

2.6 Summary and Outlook 2.7 References; 3 High-Throughput Workflow Development: Strategies and Examples in Heterogeneous Catalysis; 3.1 Introduction; 3.2 High-Throughput Methods; 3.2.1 DOE - Designing Experiments Based on Statistics; 3.2.2 Constrained Optimization - Independent Variables; 3.2.3 Constrained Optimization - Dependent Variables; 3.2.4 Methods to Include Synthesis Hardware Constraints; 3.2.5 Process Simulation for Hardware Bottleneck Identification; 3.3 Workflow Components; 3.3.1 Primary Synthesis; 3.3.2 Primary Synthesis: Wafer-based Sol-gel and Evaporative Synthesis 3.3.3 Primary Synthesis: Wafer-based Impregnation Synthesis 3.3.4 Primary Screening: Scanning Mass Spectrometer; 3.3.5 Primary Screening: Massively Parallel Microfluidic Reactor; 3.3.6 Secondary Synthesis: Bulk Impregnation; 3.3.7 Secondary Synthesis: Bulk Evaporation/Precipitation; 3.3.8 Secondary Synthesis: Hydrothermal; 3.3.9 Secondary Screening: 48-Channel Fixed-bed Reactor; 3.3.10 High-Throughput Catalyst Characterization; 3.3.11 Tertiary Screening; 3.4 Example: Ethane to Ethylene; 3.5 Example: Ethane to Acetic Acid; 3.6 Example: Propane to Acrylonitrile; 3.7 Summary; 3.8 References 4 Integrated Microreactor Set-ups for High-Throughput Screening and Methods for the Evaluation of "Low-density" Screening Data 4.1 Introduction; 4.1.1 Pellet-type and Ceramic Reactors; 4.1.2 Multiple Microchannel Array Reactors; 4.1.3 Chip-type Reactors; 4.1.4 Well-type Reactors; 4.2 Steady-state Reactor Set-ups; 4.2.1 Methanol Steam Reforming; 4.2.2 Propane Steam Reforming; 4.2.3 Catalytic Methane Combustion and Methods for Sample Preparation; 4.2.3.1 Wet Chemical Procedure (Washcoating/Flow Impregnation); 4.2.3.2 Experimental and Discussion; 4.3 Transient-state Reactor Set-ups 4.3.1 Introduction

Sommario/riassunto

Alfred Hagemeyer received his diploma degrees in chemistry, 1985, and physics, 1987, from the university of Dortmund, Germany, did his Ph.D. at the Max-Planck-Institute fuer Polymerforschung in Mainz, Germany, 1987-1989, was postdoc at the university of Bologna, Italy, 1990, was employed at BASF, corporate research, ammonia laboratory, Ludwigshafen, Germany, 1991-1996, and at Hoechst/Aventis, corporate research, department of heterogeneous catalysis, Frankfurt, Germany, 1996-1998, and joined Symyx Technologies, heterogeneous catalysis group, Santa Clara, CA, in 1998 where he is a Distinguished

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