

High-throughput experimentation in oxidation catalysis

F. Schüth^{a,*}, O. Busch^a, C. Hoffmann^a, T. Johann^a, C. Kiener^a, D. Demuth^b, J. Klein^b, S. Schunk^b, W. Strehlau^b
and T. Zech^b

^aMax-Planck-Institut für Kohlenforschung, Kaiser Wilhelm Platz 1, 45470 Mülheim, Germany

E-mail: schueth@mpi-muelheim.mpg.de

^bhtc AG, Kurpfalzring 104, Heidelberg, Germany

High-throughput experimentation in catalysis comprises the following components: (i) automated high-throughput synthesis, (ii) testing in Stage I and Stage II, for which to some extent novel assays are necessary, (iii) data handling and experimental design tools, and (iv) robotics. This contribution covers these topics, using examples from the research of the authors, but also from the literature, in order to illustrate the problems and opportunities associated with high-throughput experimentation in catalysis, focusing particularly on heterogeneous catalysis.

KEY WORDS: high-throughput experimentation; catalysis; parallel reactor; parallel synthesis; combinatorial catalysis