

High-Throughput Organic Syntheses in Academia: Challenges and Solutions

Stefan Bräse

Institut für Organische Chemie, Karlsruhe Institute of Technology,

Fritz-Haber-Weg 6, D-76131 Karlsruhe, Germany

Tel: + 49 721 608 2902/2903, Fax: +49 721 608 8581

E-mail: braese@kit.edu

The rapid creation of small molecular entities is a pivotal area in life sciences and material sciences. Due to the fact that many reactions are not suitable for solution-phase parallelization approaches because of tedious workup and various important molecules such as drugs, catalysts or organic material might accessible through conventional synthesis, novel strategies are needed. In this lecture, challenges and pitfalls from an academic point of view are highlighted. Special emphasis is made to solid-phase chemistry and the combination with micro reactor technology.

In a case study, we will show that in particular photochemistry can be advantageously combined with micro reactors. The required starting materials such as aryl azides were made by a customized solid-phase synthesis using triazene linkers and deliver small carbazole libraries in excellent yields. Comparison with classical approaches such as bulk syntheses will be made.

A. Gillner, E. Bremus, J. Köbberling, S. Bräse, Deutsches Patent 199 17 433, PCT-Application PCT/EP00/03360

S. Bräse, C. Gil, K. Knepper, V. Zimmermann, *Angew. Chem.* **2005**, *117*, 5320–5374, DOI: 10.1002/angew.200400657; *Angew. Chem. Int. Ed.* **2005**, *44*, 5188–5240. DOI: 10.1002/anie.200400657. *Organic Azides: An Exploding Diversity of a Unique Class of Compounds*