









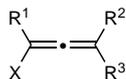
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32.2.6 **Monofunctionalized Allenes**

A. S. K. Hashmi

This chapter is an update to *Science of Synthesis* Section 32.2, covering the synthesis of allenes bearing one heteroatom substituent on the cumulated diene core. It covers the literature from 2008 to 2016. Many routes to these allenes start from alkynes, enynes, or propargylic systems and the syntheses proceed through substitution/rearrangement, but reactions involving the modification of an existing allene core are also included. In recent years, the synthesis of enantiomerically pure allenes has been of particular interest.



X = F, Br, Cl, I, O, S, Se, N, P, Si, Sn

**Keywords:** allenes · haloallenes · allenyl ethers · allenyl sulfides · allenylamides · allenylamines · allenylphosphorus compounds · allenylsilanes · rearrangement · isomerization · alkynes · enynes · propargylic systems

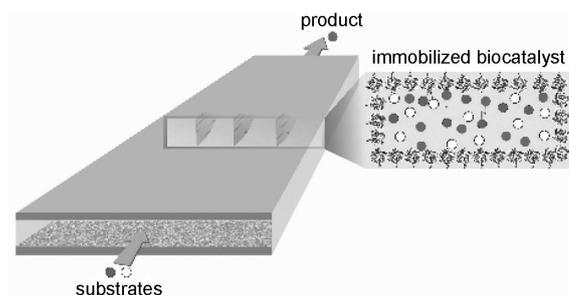
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3.12 **General Aspects of Immobilized Biocatalysts and Their Applications in Flow**

M. Bajić, P. Žnidaršič-Plazl, M. Kingston, and V. Hessel

This chapter is a comprehensive review of methods for the immobilization of biocatalysts, namely enzymes and whole cells, in microflow reactors. Immobilization on microchannel surfaces, in monoliths, hydrogels, membranes, or other internal structures within microreactors are described. The characteristics of packed-bed and magnetic-field-assisted microreactors and two-liquid-phase flow systems with immobilized biocatalysts and some applications are presented.



**Keywords:** enzymes · biocatalysis · immobilization · microfluidics · microreactors · miniaturized packed-bed reactors

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Updated Section ·

2018

Completely Revised Contributions ·

New

New Contributions