
Contents

Chapter 1. Organometallic Multicomponent Reactions

Nuno MONTEIRO

1.1. Introduction	1
1.2. Multicomponent reactions: concept and applications	2
1.2.1. Concept and correlation with the principles of green chemistry	2
1.2.2. Origins and areas of application	5
1.3. Merging multicomponent and organometallic transformations	9
1.3.1. History: the predominant role of palladium	9
1.3.2. Contribution of catalysis in multicomponent reactions . .	12
1.3.3. Multicomponent catalytic reactions: design and applications	24
1.4. Conclusion	48
1.5. References	49

Chapter 2. Use of 1,3-Dicarbonyl Derivatives in Stereoselective Domino and Multicomponent Reactions

Damien BONNE, Thierry CONSTANTIEUX, Yoann COQUEREL and
Jean RODRIGUEZ

2.1. Introduction	59
2.2. Domino reactions	61
2.2.1. Diastereoselective domino reactions	61
2.2.2. Enantioselective domino-domino reactions	69
2.3. Multicomponent reactions	81
2.3.1. Diastereoselective multicomponent reactions	81
2.3.2. Enantioselective multicomponent reactions	92

2.4. Conclusion	104
2.5. References	105
Chapter 3. Multicomponent Radical Processes: Recent Developments	
Yannick LANDAIS	
3.1. Polar effects: electrophilic and nucleophilic radical scales	122
3.2. Multicomponent radical reactions	123
3.2.1. Three-component radical reactions: radical additions to olefins	123
3.2.2. Three-component radical reactions: radical additions on imines	135
3.2.3. Four- and five-component radical reactions: carbonylation reactions	140
3.3. Multi-component radical-ionic reactions	145
3.3.1. Multi-component radical-anionic reactions	145
3.3.2. Multi-component radical-cationic reactions	157
3.4. Sequential multicomponent radical reactions	160
3.4.1. Organometallic-radical sequential reactions	160
3.4.2. Ugi reactions: radical reactions	161
3.4.3. Passerini reaction using radicals	163
3.5. Multicomponent reactions by photoredox catalysis	166
3.6. Conclusion	172
3.7. References	172
List of Authors	183
Index	185