

Contents

**Dedicated to Sant Baba Iqbal Singh Ji, Founder Chancellor,
Akai University — V**

Foreword — VII

About Professor C.N.R. Rao — IX

Brindaban C. Ranu, Laksmikanta Adak, Nirmalya Mukherjee, Tubai Ghosh

Chapter 1

**Magnetic metal nanoparticle-catalyzed carbon-heteroatom bond formation
and synthesis of related heterocycles — 1**

Bablee Mandal, Basudeb Basu

Chapter 2

Magnetic nanocatalysts in disulfide synthesis — 49

Nahid Ahmadi, Ali Ramazani

Chapter 3

Hybrid magnetic nanocatalysts for organic synthesis — 71

Mohammadreza Shokouhimehr, Ho Won Jang

Chapter 4

Magnetic nanostructured catalysts for reduction of nitroaromatics — 141

Abhijeet Singh, Trisha Ghatak, Shalini Agarwal, Ramendra Pratap,
Mahendra Nath

Chapter 5

Applications of CuFe_2O_4 magnetic nanoparticles in organic synthesis — 157

Sanjay Paul, Asish Ranjan Das

Chapter 6

**Magnetic nanoparticle catalysis: a potential platform for the fabrication of
C–C bond generation and oxidation reaction to achieve important structural
motifs — 191**

Nirjhar Saha, Asim Kumar, Antarlina Maulik, Asit K. Chakraborti

Chapter 7

Magnetic nanocomposite-catalyzed Suzuki cross-coupling reactions — 241

Yadavalli Venkata Durga Nageswar, Jayathirtha Rao Vaidya

Chapter 8

Ni nanoparticles-mediated synthesis of various heterocycles — 309

Yogesh B. Wagh, Yogesh A. Tayade, Dipak S. Dalal

Chapter 9

Sulfonic acid functionalized magnetic nanocatalysts in organic synthesis — 333

Manavi Yadav, Sriparna Dutta, Anju Srivastava, Rakesh K. Sharma

Chapter 10

Silica-coated magnetic nanocatalysts as efficient green catalysts for organic synthesis — 379

Manmeet Kaur, Anu Priya, Arvind Singh, Aditi Sharma, Gurpreet Kaur,
Bubun Banerjee

Chapter 11

**Multicomponent synthesis of biologically promising pyrans and pyran
annulated heterocycles using magnetically recoverable nanocatalysts — 411**

Author list — 435

Index — 439