

Contents

Preface — V

List of contributing authors — XI

Slimane Merouani, Aissa Dehane

Chapter 1

Bubble dynamics: thermodynamic and energetic viewpoint — 1

Slimane Merouani, Aissa Dehane, Oualid Hamdaoui

Chapter 2

Bubble sonochemistry: pyrolysis and radicals' generation — 25

Slimane Merouani, Aissa Dehane

Chapter 3

Sonochemistry and saturation gases — 51

Kaouthar Kerboua

Chapter 4

Distinguished effect of CO₂ and N₂O gases on sonochemistry — 71

Slimane Merouani, Aissa Dehane

Chapter 5

Bubble sonochemistry in the presence of volatile solutes — 91

Slimane Merouani, Aissa Dehane

Chapter 6

Bubble population in sonochemical process — 111

Slimane Merouani, Aissa Dehane, Oualid Hamdaoui

Chapter 7

**Sonochemical reactor characterization: dosimetries and
sonochemiluminescence insights — 129**

Slimane Merouani, Aissa Dehane

Chapter 8

Sonochemical degradation of surfactants — 161

Aissa Dehane, Slimane Merouani

Chapter 9

Sonolytic degradation of polycyclic aromatic hydrocarbons — 201

Slimane Merouani, Aissa Dehane, Oualid Hamdaoui

Chapter 10

Sonochemical degradation of endocrine disrupting chemicals — 219

Aissa Dehane, Slimane Merouani

Chapter 11

Sonochemical degradation of pharmaceuticals and personal care products — 263

Slimane Merouani, Aissa Dehane, Oualid Hamdaoui

Chapter 12

Sonochemical treatment of dye-contaminated wastewater — 295

Aissa Dehane, Slimane Merouani, Oualid Hamdaoui

Chapter 13

Sonochemical and sono-assisted treatment of water contaminated with heavy metals — 321

Kaouther Kerboua

Chapter 14

The sonochemical reduction of carbon dioxide — 339

Slimane Merouani, Aissa Dehane, Oualid Hamdaoui

Chapter 15

Scaling up of the sonochemical process — 355

Manju Nagar Galodiya, Jitendra Choudhary, Anubhav Singh, Sankar Chakma

Chapter 16

The sono-activated persulfate oxidation for process intensification — 393

Aissa Dehane, Slimane Merouani

Chapter 17

CCl₄ sono-activation for process intensification — 409

Aissa Dehane, Slimane Merouani, Oualid Hamdaoui

Chapter 18

The sono-chlorination process — 433

Kuldeep Roy, Vijayanand S. Moholkar

Chapter 19

Ultrasound-coupled advanced oxidation for synergetic textile wastewater treatment — 447

Aissa Dehane, Slimane Merouani

Chapter 20

Challenges and prospects of the sonochemical process — 467

Index — 481