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Nota di contenuto	9783319078984General introduction to microwave chemistry / Satoshi Horikoshi and Nick Serpone -- Fundamentals. Loss mechanisms and microwave-specific effects in heterogeneous catalysis / A. E. Stiegman -- Transport phenomena and thermal property under microwave irradiation / Yusuke Asakuma -- Managing microwave-induced hot spots in heterogeneous catalytic systems / Satoshi Horikoshi and Nick Serpone -- Applications : preparation of heterogeneous catalysts. preparation of heterogeneous catalysts by a microwave selective heating method / Satoshi Horikoshi and Nick Serpone -- Applications: microwave flow systems and microwave methods coupled to other techniques. Microwaves in Cu-catalyzed organic synthesis in batch and flow mode / Faysal Benaskar, Narendra Patil, Volker Rebrov, Jaap Schouten, and Volker Hessel -- Pilot plant for continuous flow microwave-assisted chemical reactions / Mitsuhiro Matsuzawa and Shigenori Togashi -- Efficient catalysis by combining microwaves with other enabling technologies / Giancarlo Cravotto, Laura Rinaldi, and Diego Carnaroglio -- Applications : Organic reactions. Applications of microwave chemistry in various catalyzed organic reactions / Rick

Arneil Desabillo Arancon, Antonio Angel Romero, and Rafael Luque -- Microwave-assisted solid acid catalysis / Hyejin Cho, Christian Schafer, and Bela Torok -- Microwave-assisted enzymatic reactions / Takeo Yoshimura, Shigeru Mineki, Shokichi Ohuchi -- Applications : hydrogenation and fuel formation. Effects of microwave activation in hydrogenation-dehydrogenation reactions / Leonid M. Kustov -- Hydrogen evolution from organic hydrides through microwave selective heating in heterogeneous catalytic systems / Satoshi Horikoshi and Nick Serpone -- Applications : oil refining. Microwave-stimulated oil and gas processing / Leonid M. Kustov -- Applications : biomass and wastes. Algal biomass conversion under microwave irradiation / Shuntaro Tsubaki, Tadaharu Ueda, and Ayumu Onda -- Microwave-assisted lignocellulosic biomass conversion / Tomohiko Mitani and Takashi Watanabe -- Biomass and waste valorization under microwave activation / Leonid M. Kustov -- Applications : environmental catalysis. Oxidative and reductive catalysts for environmental purification using microwaves / Takenori Hirano -- Microwave-/photo-driven photocatalytic treatment of wastewaters / Satoshi Horikoshi and Nick Serpone.

Sommario/riassunto

A comprehensive overview covering the principles and preparation of catalysts, as well as reactor technology and applications in the field of organic synthesis, energy production, and environmental catalysis. Edited and authored by renowned and experienced scientists, this reference focuses on successful reaction procedures for applications in industry. Topics include catalyst preparation, the treatment of waste water and air, biomass and waste valorisation, hydrogen production, oil refining as well as organic synthesis in the presence of heterogeneous and homogeneous catalysts and continuous-flow reactions. With its practical relevance and successful methodologies, this is a valuable guide for chemists at universities working in the field of catalysis, organic synthesis, pharmaceutical or green chemistry, as well as researchers and engineers in the chemical industry.
