Nanomaterials in Biofuels Research

Nanomaterials: Types, synthesis and characterization

T. C. Mokhena[1,2], M. J. John[1,2], M. A. Sibeko[1], V. C. Agbakoba[1,2], M. J. Mochane[3], A. Mtibe[2], T. H. Mokhothu[4], T. S. Motsoeneng[2], M. M. Phiri[1], M. J. Phiri[1], P. S. Hlangothi[1], T. G. Mofokeng[5],

[1] Department of Chemistry Nelson Mandela University Port Elizabeth, South Africa

[2] CSIR Materials Science and Manufacturing, Polymers and Composites, Port Elizabeth, South Africa

[3] Department of Life Sciences, Central University of Technology Free State, Bloemfontein, South Africa

[4] Department of Chemistry, Durban University of Technology, Durban, South Africa

[5] DST/CSIR National Centre for Nanostructured Materials, Council for Scientific and Industrial Research, Pretoria, South Africa

https://www.springer.com/gp/book/9789811393327

Abstract

Nanoparticles are generally defined as particles having one or more dimensions of sizes ranging from 1 to 100 nm. Nanoparticles can be classified into organic, inorganic and carbon-based materials. In comparison with conventional micro-size particles, nanoparticles show enhanced properties, such as high reactivity, strength, surface area, sensitivity and stability due to their nanosize. Various preparation methods, viz. physical, chemical and mechanical, have been employed to synthesize different nanoparticles. This chapter presents an overview on nanoparticles and their types, properties, synthesis methods and application in bioconversion of biomass into biofuels.