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List of Book Chapters published during the year 2021

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Greener and Scalable E-fuels for Decarbonization of Transport pp 173–191

Effectiveness of Hydrogen and Nanoparticles Addition in Eucalyptus Biofuel for Improving the Performance and Reduction of Emission in CI Engine

P. V. Elumalai, N. S. Senthur, M. Parthasarathy, S. K. Dash, Olusegun D. Samuel, M. Sreenivasa Reddy, M. Murugan, PritamKumar Das, A. S. S. M. Sitaramamurty, S. Anjanidevi & Selçuk Sarıkoç

Chapter | First Online: 11 December 2021

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Part of the Energy, Environment, and Sustainability book series (ENENSU)

Abstract

Eucalyptus biodiesel (EB) powered CI engine was characterized by low brake thermal efficiency (BTE) and more smoke emission. The inherent oxygen content of nanoparticles could be added with EB leading to improve the oxidation of hydrocarbon that results in low smoke emission. The present study was initially carried out on a compression ignition engine powered by EB considered as

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Author information

Authors and Affiliations

Department of Mechanical Engineering, Aditya Engineering College, Surampalem, India

P. V. Elumalai, S. K. Dash, M. Sreenivasa Reddy, PritamKumar Das, A. S. S. M. Sitaramamurty & S. Anjanidevi

Department of Mechanical Engineering, Bharath Institute of Higher Education and Research, Chennai, India

N. S. Senthur

Department of Automobile Engineering, Vel Tech Rangarajan Dr, Sagunthala R&D Institute of Science and Technology, Chennai, India

M. Parthasarathy

Department of Mechanical Engineering, Federal University of Petroleum, Resources, P.M.B 1221, Effurun, Delta State, Nigeria

Olusegun D. Samuel

Department of Mechanical Engineering, University of South Africa, Science, Campus, Private Bag X6, Florida, 1709, South Africa

Olusegun D. Samuel

Department of Motor Vehicles and Transportation Technologies, Tasova Yuksel Akin

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Vocational School, Amasya University, Amasya, Turkey

Selçuk Sarıkoç

Department of Mechanical Engineering, Aditya College of Engineering and Technology, Surampalem, India

M. Murugan

Corresponding author

Correspondence to P. V. Elumalai .

Editor information

Editors and Affiliations

Department of Mechanical Engineering, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India

Prof. Avinash Kumar Agarwal

Department of Mechanical Engineering, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India

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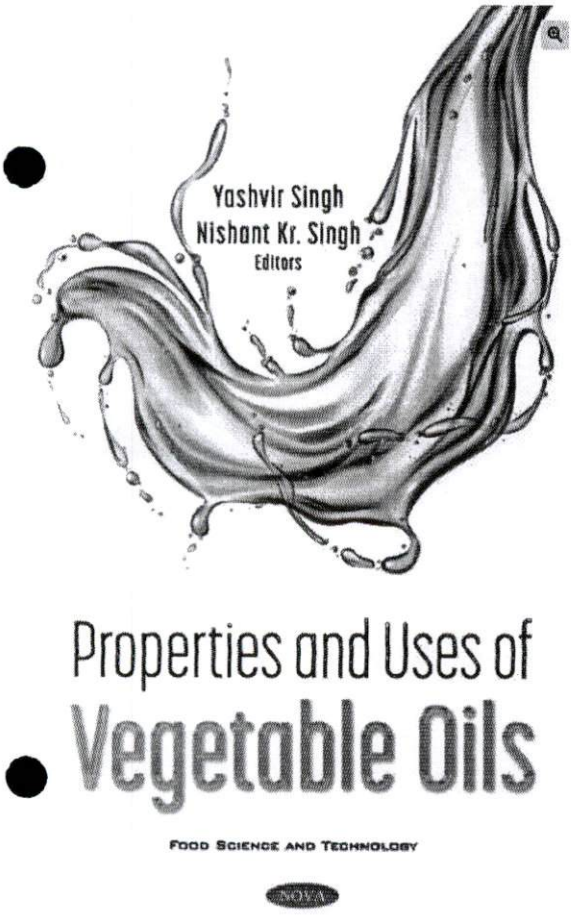

Properties and Uses of Vegetable Oils

$230.00

Nishant Kumar Singh, MD (Editor), Yashvir Singh, MD (Editor)
Series: Food Science and Technology

BISAC: TEC012000

Vegetable oils are a group of fats derived from seeds, nuts, cereal grains, and fruits. It is important to understand that not all vegetable oils are liquid oils at ambient temperatures. Vegetable oils have enormous potential as alternatives for mineral oil in a myriad of industrial applications. Although our knowledge of the genes and biochemical pathways leading to the formation of plant oils allows for the potential to engineer a diverse array of lipid products in seed oils, this goal remains a challenge. This book identifies the prospects of vegetable oils for different applications that facilitate readers from academia, industry, and research laboratories to enhance their knowledge of utilizing vegetable oils in different industrial sectors.

Binding
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Chapter

JATROPHA CURCAS

P. S. Ranjit[1,*], *Venkateswarlu Chintala*[2], *A. Veeresh Babu*[3] *and Yashvir Singh*[4]

[1]Department of Mechanical Engineering, Aditya Engineering College (A), Surampalem, Andhra Pradesh, India

[2]School of Engineering and Applied Sciences, National Rail and Transportation Institute, Vadodara, Gujarat, India

[3]Mechanical Engineering Department, NIT Warangal, Telangana, India

[4]Deprtment of Mechanical Engineering, Graphic Era, Dehradun, Uttarakhand, India

ABSTRACT

Jatropha Curcas is generally called as Jatropha. Oil extracted from Jatropha can be considered as a non-edible oil and can be yielded in a barren land with low water availability. Even the Indian Government also promoted this Jatropha derived oil as one of the promising alternatives for fossil fuels. Being Jatropha is a sustainable yield, environmentally friendly, good in yield different aspects in making use of alternative fuel as processing its seeds, composition, quality and advanced techniques has been discussed in the chapter.

Keywords: Jatropha Curcas, biofuels, Green House Gases, Renewable energy,

* Corresponding Author's Email: psranjit1234@gmail.com.

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Chapter

EXPERIMENTAL INVESTIGATIONS ON INFLUENCE OF PREHEATING THE JATROPHA BASED STRAIGHT VEGETABLE OIL THROUGH EXHAUST GAS FRAMEWORK ON AN IDI CI ENGINE

P. S. Ranjit[1,*], Venkateswarlu Chintala[2], Veeresh Babu A[3] and Yashvir Singh[4]

[1]Professor, Dept. of Mechanical Engineering,
Aditya Engineering College (A), Surampalem

[2]Associate Professor, School of Engineering and Applied Sciences,
National Rail and Transportation Institute (Deemed to be University)
Vadodara, Gujarat, India

[3]Associate Professor, Mechanical Engineering Department,
NIT Warangal, Telangana

[4]Associate Professor, Dept. of Mechanical Engineering,
Graphic Era Deemed to be University, Dehradun, Uttarakhand, India

ABSTRACT

Depletion of fossil fuels, an exponential increase in the price of barrel crude oil, engine-out emissions reached to an alarming level, to promote local employment at the rural level, and to fulfil the words (Self -reliance) of the honourable prime minister of India. For sustainable development, an experimental investigation was done on Jatropha Curcas based preheated Straight vegetable Oil. In-direct Injection CI engine was selected, being most commonly used by the farmers in agricultural land. Performance parameters like Brake Thermal Efficiency (BTE), Brake Specific Energy Consumption (BSEC), Combustion Characteristics like P- Theta, Differential Heat Release Rate (DHRR), Integral Heat Release Rate (IHRR) and Emissions like NOx, CO, CO_2, HC and Smoke were evaluated and presented in this chapter for suitability to make use in internal combustion engines.

Keywords: Jatropha Curcas, performance, emissions, preheating framework and IDI engine

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Corresponding Author's Email: psranjit1234@gmail.com.

Chapter

BIOFUEL AND FUEL CHARACTERIZATION FOR IC ENGINES

P. S. Ranjit[1], *Venkateswarlu Chintala*[2], *A. Veeresh Babu*[3] *and Yashvir Singh*[4]

[1]Department of Mechanical Engineering, Aditya Engineering College (A), Surampalem, Andhra Pradesh, India

[2]School of Engineering and Applied Sciences, National Rail and Transportation Institute, Vadodara, Gujarat, India

[3]Mechanical Engineering Department, NIT Warangal, Telangana, India

[4]Deprtment of Mechanical Engineering, Graphic Era, Dehradun, Uttarakhand, India

ABSTRACT

Various low emission situations have exhibited that the objectives of the Kyoto Protocol cannot be accomplished without giving an enormous job to biofuels by 2050 in the worldwide energy economy (Vertès, Inui et al. 2006). Among the reasons why biofuels are suitable for such progress, one may recognize: (i) their straightforwardness; (ii) their creation through notable agrarian innovations; (iii) their potential for alleviation of atmosphere warming without complete rebuilding of the current working energy framework; (iv) the utilization of existing engines for their transportation (in any event, considering the customary turbofan utilized in avionics) (Kleiner 2007, Rothengatter 2010); (v) their capability to encourage the overall activation around a typical arrangement of guidelines; (vi) their potential as a legitimately accessible energy source with great open acknowledgement; (vii) their more uniform dispersion than the appropriations of petroleum derivative and atomic assets; and (viii) their capability to make benefits in country zones, including business creation.

Keywords: biofuel, fuel characterization, Generations of Biofuels

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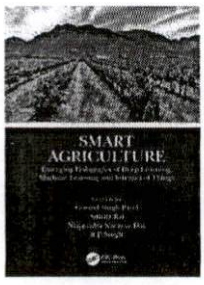

Smart Agriculture

Emerging Pedagogies of Deep Learning, Machine Learning and Internet of Things

Edited By Govind Singh Patel, Amrita Rai, Nripendra Narayan Das, R. P. Singh

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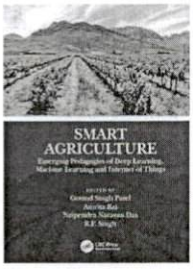

Role of IoT in sustainable farming

By Rajasekhar Manda, P.Rajesh Kumar

Book Smart Agriculture (https://www.taylorfrancis.com/books/mono/10.1201/b22627/smart-agriculture?refId=1d5bc506-6ec2-45a8-838d-356d4a53aa2a&context=ubx)

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Novel Internal Combustion Engine Technologies for Performance Improvement and Emission Reduction pp 235–263

Effect of Hybrid Nanoparticle on DI Diesel Engine Performance, Combustion, and Emission Studies

Elumalai Perumal Venkatesan ✉, Dhinesh Balasubramanian, Olusegun David Samuel, Muhammad Usman Kaisan & Parthasarathy Murugesan

Chapter | First Online: 15 June 2021

318 Accesses | **2** Citations

Part of the Energy, Environment, and Sustainability book series (ENENSU)

Abstract

The frequent rise in the use of diesel engines in all fields emits harmful gases such as NO_x and CO, which causes significant environmental emissions, global warming, breathing problems, etc. (Sivalingam et al. 2019). In the investigation of the performance, combustion, and emission characteristics, using diesel water emulsion is mixed with hybrid nanoparticles as additives in Direct Injection (DI) diesel engine. Reducing the emission characteristics and increasing engine performance is to introduce emulsion fuels (Parthasarathy et al.

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Declaration of Competing Interest

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Author information

Authors and Affiliations

Aditya Engineering College, Surampalem, 533437, India

Elumalai Perumal Venkatesan

Department of Mechanical Engineering, Mepco Schlenk Engineering College, Sivakasi, India

Dhinesh Balasubramanian

Mechanical Engineering, Faculty of Engineering, Khon Kaen University, Khon Kaen, Thailand

Dhinesh Balasubramanian

Center for Alternative Energy Research and Development, Khon Kaen University, Khon Kaen, Thailand

Dhinesh Balasubramanian

Department of Mechanical Engineering, Federal University of Petroleum Resources, P.M.B 1221, Effurun, Delta State, Nigeria

Olusegun David Samuel

PRINCIPAL
Aditya Engineering College
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Department of Mechanical Engineering, University of South Africa, Science Campus, Private Bag X6, Florida, 1719, South Africa

Olusegun David Samuel

Department of Mechanical Engineering, Ahmadu Bello University, Room 11, Shell Chair Office Complex, Zaria, Nigeria

Muhammad Usman Kaisan

Department of Automobile Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, India

Parthasarathy Murugesan

Corresponding author

Correspondence to Elumalai Perumal Venkatesan .

Editor information

Editors and Affiliations

Department of Mechanical Engineering, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India

Prof. Akhilendra Pratap Singh

Department of Mechanical Engineering, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India

Prof. Avinash Kumar Agarwal

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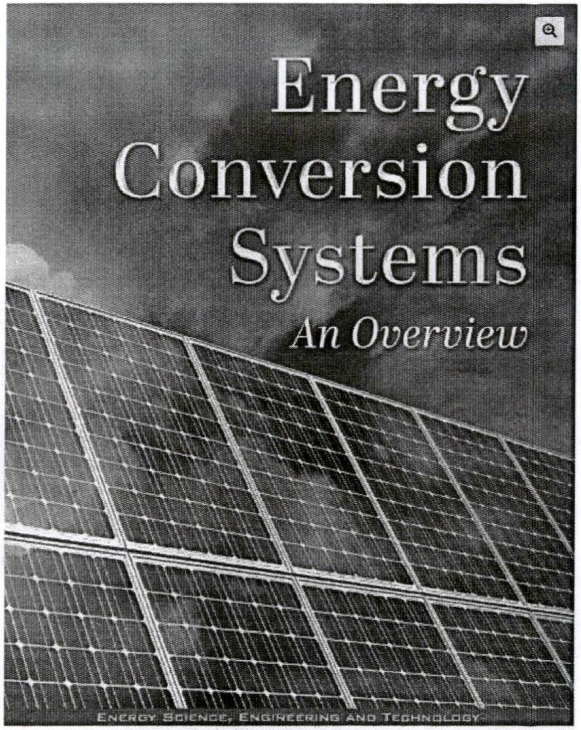

Energy Conversion Systems: An Overview

$230.00

Sanjeevikumar Padmanaban, PhD (Editor), Saurabh Mani Tripathi, PhD (Editor)
Series: Energy Science, Engineering and Technology
BISAC: SCI024000

This edited book is intended to serve as a resource for engineers, scientists and specialists engaged in becoming familiarized with green energy conversion for a clean atmosphere with an adaption of 'more-renewable' for power generation. The book is comprised of nine original chapters dealing with state-of-the-design exercises on power conversion/storage technologies. It highlights the critical features of energy technology for green engineering for the future. This edited volume is an extensive collection of state-of-the-art studies on the subject.

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Chapter 3

DEVELOPMENT AND PERFORMANCE ANALYSIS OF SOLAR TRACKING PV SYSTEMS

Shashwati Ray[1,*], *Abhishek Kumar Tripathi*[2] *and Gourav Shankar*[1]
[1]Bhilai Institute of Technology, Durg, Chhattisgarh, India
[2]Aditya Engineering College (A), Surampalem, A.P., India

ABSTRACT

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Extensive researches are conducted all around the world on renewable energy generation due to decreasing fossil fuel sources and increasing pollution. Among variable renewable energy solutions, solar energy is a vital source for generating electrical power. The most attractive and viable application of solar energy is the conversion of solar energy into electrical energy employing solar photovoltaic (PV) panel. The output power of solar PV panel depends on the quantum of solar radiation incident on the panel surface. Due to earth's rotation and revolution, the solar radiation incident on the PV panel surface throughout the day is not uniform which lowers its

* Corresponding Author's Email: shashwatiray@rediffmail.com