

**International Conference
on
Scientific Research and Revolution**

ICSRR 2025

August 17, 2025
(Virtual Mode)

Organised By



SCIENTIFIC RESEARCH REPORTS
(A Book Publisher, approved by Govt. of India)

Chennai - 600 087, Tamil Nadu, India.

www.srrbooks.in

**Proceedings of
International Conference on
Scientific Research and Revolution**

ICSRR 2025

August 17, 2025

EDITORS

Dr. J. ARUNPRASAD

University of the Witwatersrand
Johannesburg 2000, South Africa.

Dr. SIVANRAJU RAJKUMAR

Institute of Technology, Hawassa University
Hawassa, Ethiopia.

Dr. SHARAD K PASALE

Thakur College of Science and Commerce
Kandivali, Mumbai, India.

Dr. M. CHANDRASEKAR

K.Ramakrishnan College of Technology
Trichy, India.

Paper ID	Paper Title	Page No.
E041	EVALUATION OF THE COMBUSTION AND EMISSIONS PERFORMANCE OF NEEM (AZADIRACHTA INDICA) BIODIESEL IN A COMPRESSION IGNITION ENGINE	42
S042	UNVEILING THE ADJUVANT THERAPEUTIC POTENTIAL OF DABRAFENIB DERIVATIVES IN LUNG ADENOCARCINOMA VIA <i>IN SILICO</i> MULTI-TARGETING OF B-RAF, NEK11, AND S1K1	43
S043	STRUCTURE-BASED DRUG DESIGN OF SHIKIMIC ACID AS A PUTATIVE DRUG TARGET FOR BRCA VIA <i>IN SILICO</i> METHOD	44
E044	NANOTECHNOLOGY IN ADVANCED MATERIALS AND BIOFUEL SYSTEMS: A SUSTAINABLE APPROACH	45
E045	INTEGRATING NANOMATERIALS FOR HIGH-PERFORMANCE MATERIALS AND GREEN BIOFUEL TECHNOLOGIES	46
S046	POWER EDGE DOMINATION NUMBER ON MYCIELSKIAN OF CERTAIN SPECIAL GRAPHS	47
S047	TIME SERIES ANALYSIS OF SALES PRICES IN THE FOOD AND BEVERAGE SECTOR IN INDIA	48
S048	EFFECT OF ANTIBACTERIAL PROPERTIES ON THE SIZE OF TEMPERATURE DEPENDENT GREEN SYNTHESIZED SILVER NANOPARTICLES	49
E049	A FLOWER POLLINATION ALGORITHM APPROACH FOR OPTIMAL REACTIVE POWER DISPATCH	50
E050	KRILL HERD ALGORITHM-BASED APPROACH FOR COMBINED ECONOMIC AND EMISSION DISPATCH OPTIMIZATION	51
M051	FOOD SAFETY AND HYGIENE MANAGEMENT: POST-COVID STANDARDS AND CONSUMER EXPECTATIONS	52
M052	EXPLORING EMOTIONAL INTELLIGENCE AND SERVICE EXCELLENCE IN HOTEL AND TOURISM OPERATIONS	53
M053	OPTIMIZING KITCHEN WORKFLOW AND ERGONOMICS IN HOTEL FOOD PRODUCTION	54

ICSRR – E041

**EVALUATION OF THE COMBUSTION AND EMISSIONS
PERFORMANCE OF NEEM (AZADIRACHTA INDICA) BIODIESEL
IN A COMPRESSION IGNITION ENGINE**

A Arul Peter

Department of Mechanical Engineering, Vels Institute of Science, Technology & Advanced Studies (VISTAS), Pallavaram, Chennai, India.

**Corresponding Author: peterdmech@gmail.com*

Abstract:

A lot of research has been done on biodiesel as a replacement for traditional fossil fuels due to the growing demand for environmentally friendly and sustainable energy sources. Due to its high oil content, low cost, and lack of competition with food resources, neem (*Azadirachta indica*) oil—a non-edible and abundant feedstock in tropical regions—has become a promising raw material for the production of biodiesel. This study examines the transesterification process used to produce neem biodiesel and assesses its combustion, emission, and performance properties in a compression ignition (CI) engine. According to experimental results, blends of neem biodiesel show brake thermal efficiency that is comparable to that of diesel, albeit with a slightly higher brake specific fuel consumption because of their lower calorific value. Particulate matter, unburned hydrocarbons (HC), and carbon monoxide (CO) have all significantly decreased, according to emission analysis.

Keywords: *Neem biodiesel, Transesterification, Compression ignition engine, Performance analysis, Emission characteristics*

ISBN 978-819871344-5



9 788198 713445