

Journal of Engineering and Technological Sciences

Journal of Engineering and Technological Sciences welcomes full research articles in the area of Engineering Sciences from the following subject areas: Aerospace Engineering, Biotechnology, Chemical Engineering, Civil Engineering, Electrical Engineering, Engineering Physics, Environmental Engineering, Industrial Engineering, Information Engineering, Mechanical Engineering, Materials Science and Engineering, Manufacturing Processes, Microelectronics, Mining Engineering, Petroleum Engineering, and other application of physical, biological, chemical and mathematical sciences in engineering. Authors are invited to submit articles that have not been published previously and are not under consideration elsewhere.

Starting from Vol. 35, No. 1, 2003, full articles published are available online at <http://journals.itb.ac.id/index.php/jets>, and indexed by Scopus, Index Copernicus, Google Scholar, DOAJ, GetCITED, NewJour, Open J-Gate, The Elektronische Zeitschriftenbibliothek EZB by University Library of Regensburg, EBSCO Open Science Directory, Ei Compendex, Chemical Abstract Service (CAS) and Zurich Open Repository and Archive Journal Database.

Publication History

Currently known as:

Journal of Engineering and Technological Sciences

Formerly known as:

- ITB Journal of Engineering Science (2007 - 2012)
- Proceedings ITB on Engineering Science (2003 - 2006)
- Proceedings ITB (1961 - 2002)

Editorial board of Journal of Engineering and Technological Sciences

Chief Editor

Tjandra Setiadi
Faculty of Industrial
Technology ITB,
Indonesia

Masyhur Irsyam
Faculty of Civil and
Environmental
Engineering ITB, Indonesia

Indah Rachmatiah S.
Salami
Faculty of Civil and
Environmental Engineering
ITB, Indonesia

El Sayed Youssef
Geology Department,
Faculty of Science, Cairo
University, Giza, Egypt

Editorial Board

Hasanuddin Z. Abidin
Faculty of Earth
Sciences and
Technology ITB,
Indonesia

Deddy Kurniadi
Faculty of Industrial
Technology ITB, Indonesia

Andrew F. Seybert
Dept. Mechanical Eng.,
Univ. Kentucky, USA

Sigit Sukmono
Faculty of Mining and
Petroleum Engineering
ITB, Indonesia

Graeme Fairweather
Mathematical Reviews
American Mathematical
Society, USA

Louis Jezequel
Structural and System
Dynamics and Control,
Ecole Centrale de Lyon,
LTDS, Ecully, France

Tatacipta Dirgantara
Faculty of Mechanical and
Aerospace Engineering,
ITB, Indonesia

Mark van Loosdrecht
Faculty of Applied
Sciences, Delft University
of Technology, The
Netherlands

Shuren Wang
School of Civil
Engineering, Henan
Polytechnic University,
China

Teruyuki Kato
Earthquake Research
Institute, Univ. of Tokyo,
Japan

Pekik Argo Dahono
Indonesian Engineering
Association (PII), Indonesia

Aiqin Wang
Center for Eco-material
and Green Chemistry,
Lanzhou Institute of
Chemical Physics,
Chinese Academy of
Sciences, P.R. China

Suwarno
School of Electrical
Engineering and
Informatics, ITB, Indonesia

Publication assistant: Dini Sofiani Permatasari & Yuliah Qotimah. Address: *ITB Journal Publisher*, LPPM ITB, Jalan Tamansari 64, Bandung 40116, Indonesia, Tel. (022) 2501759 ext. 121, Fax.: (022) 2504010; e-mail: jets@lppm.itb.ac.id.

Distribution: Distributed to other universities and research institutions for exchange publications, and to regular subscribers.

Subscription per issue: Rp 100.000,- (domestic) and \$50 (overseas). Order form for subscription should be sent to the editorial office.

Reg. No. 691-SIC-UPPGT-SIT-1963, Accreditation No. 60/E/KPT/2016 (Nov 2016 - Nov 2021)

Published by *ITB Journal Publisher*, The Institute for Research and Community Services, Institut Teknologi Bandung, in collaboration with Indonesian Engineering Association (Persatuan Insinyur Indonesia - PII).

Cover Design by Chandra Tresnadi.

Table of Contents

1. Nanomagnetic Particle Production: Effect of Carbon and Iron Sources M.T.A.P. Kresnowati, Andy Wiranata Wijaya & Andry	645
2. Synthesis of Biokerosene through Electrochemical Hydrogenation of Terpene Hydrocarbons from Turpentine Oil Tedi Hudaya, Ongky Widjaja, Antonius Rionardi & Tatang Hernas Soerawidjaja	655
3. CO ₂ Solubility in Electrolyte Solution of Potassium Carbonate with the Addition of Promotor Amines (MDEA-DEA/ PZ-DEA) at Various Temperatures Saidah Altway, Kuswandi, Iqwal Zulfetra & Firda Nuharani	665
4. Evaluation-Function-based Model-free Adaptive Fuzzy Control Agus Naba	679
5. Measurements and Stochastic FEA with Application in Thermomechanical Characterization of Electronic Packages Omar Bendaou, Othmane Bendaou, François Bourzeix, Mohamed Agouzoul & Abdelkhalak El Hami	700
6. Seismic Behavior Factors of Steel Frames Braced with Viscoelastic Damping System Besan Alagawani & Yousef H. Al-Qaryouti	715
7. Thunderstorm Algorithm for Determining Unit Commitment in Power System Operation Arif Nur Afandi & Yunis Sulistyorini	743
8. Synthesis of Polyhedral Magnetite Particles by Hydrothermal Process under High Pressure Condition Siti Machmudah, Wahyudiono, Hideki Kanda & Motonobu Goto	753
9. Intelligent Prognostic Framework for Degradation Assessment and Remaining Useful Life Estimation of Photovoltaic Module Nabil Laayouj, Hicham Jamouli & Mohamed El Hail	772