#### 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://journal.itb.ac.id, 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

Editorial board of Journal of Engineering and Technological Sciences					
Chief Editor	Masyhur Irsyam	Indah Rachmatiah S.	El Sayed Youssef		
Bambang Riyanto T.	Faculty of Civil and	Salami	Geology Department,		
School of Electrical	Environmental	Faculty of Civil and	Faculty of Science, Cairo		
Engineering and Informatics ITB,	Engineering ITB, Indonesia	Environmental Engineering ITB, Indonesia	University, Giza, Egypt		
Indonesia	Deddy Kurniadi		Sigit Sukmono		
	Faculty of Industrial	Andrew F. Seybert	Faculty of Mining and		
Editorial Board Tjandra Setiadi	Technology ITB, Indonesia	Dept. Mechanical Eng., Univ. Kentucky, USA	Petroleum Engineering ITB, Indonesia		
(Executive Editor)	Louis Jezequel				
Faculty of Industrial	Structural and System	Tatacipta Dirgantara	Mark van Loosdrecht		
Technology ITB,	Dynamics and Control,	Faculty of Mechanical and	Faculty of Applied		
Indonesia	Ecole Centrale de Lyon,	Aerospace Engineering,	Sciences, Delft University		
	LTDS, Ecully, France	ITB, Indonesia	of Technology, The		
Hasanuddin Z. Abidin			Netherlands		
Faculty of Earth	Teruyuki Kato	Pekik Argo Dahono			
Sciences and	Earthquake Research	Indonesian Engineering	Aiqin Wang		
Technology ITB,	Institute, Univ. of Tokyo,	Association (PII), Indonesia	Center for Eco-material		
Indonesia	Japan		and Green Chemistry,		
		Suwarno	Lanzhou Institute of		
Graeme Fairweather	Masaaki Ookuma	School of Electrical	Chemical Physics,		
Mathematical Reviews	Structural Dynamics	Engineering and	Chinese Academy of		
American Mathematical Society, USA	Titech, Tokyo, Japan	Informatics, ITB, Indonesia	Sciences , P.R. China		

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. 81/DIKTI/Kep/2011 (Nov 2011-Nov 2016)

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 i

# **Table of Contents**

1.	Seismic Performance and Application of Sandwiched Buckling-Restrained Braces and Dual-Core Self-Centering Braces Chung-Che Chou, Ping-Ting Chung & Ying-Chuan Chen	361
2.	Identifying Contractors' Planned Quality Costs in Indonesian Construction Projects Puti F. Marzuki & M. Wisridani	368
3.	Skin Region Segmentation based on the Average Preprocessed Image of Multicolor Face Image Sequence Wei Li, Xianbo He & Fangyuan Jiao	381
4.	Adjustment of Daily Activities: the Influence of Smartphone Adoption on the Travel Pattern of Mobile Professionals in the Greater Jakarta Area Gloriani Novita Christin, Ofyar Z. Tamin, Idwan Santoso & Miming Miharja	394
5.	Removal of Phosphate from Synthetic Aqueous Solution by Adsorption with Dolomite from Padalarang Fadjari Lucia Nugroho, Lili Mulyatna & Anggi Doli Wiranata Situmeang	410
6.	Depositional Environment of the Sangkarewang Oil Shale, Ombilin Basin, Indonesia Komang Anggayana, Agus Haris Widayat & Sri Widodo	420
7.	Core Spreading Vortex Method for Simulating 3D Flow around Bluff Bodies Lavi R. Zuhal, Duong V. Dung, Alex J. Sepnov & Hari Muhammad	436
8.	A New Approach to Blending and Loading Problem of Molten Aluminum Li Jianhua & Wei Xing	455

9. Optimal Overhaul-Replacement Policies For a Repairable Machine Sold with Warranty

Kusmaningrum Soemadi, Bermawi P. Iskandar & 465 Harsono Taroepratjeka

iii

Index

List of Reviewers viii