Journal of Mathematical and Fundamental Sciences

Journal of Mathematical and Fundamental Sciences welcomes full research articles in the area of Mathematics and Natural Sciences from the following subject areas: Chemistry, Astronomy, Biology, Agricultural Sciences, Health Sciences, Biochemistry, Earth Science, Mathematics, Statistics, Medical Science, and Physics. Authors are invited to submit articles that have not been published previously and are not under consideration elsewhere.

Starting from Vol. 1, No. 1, 1961, 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 and Chemical Abstract Service (CAS).

Publication History

Currently known as:
Journal of Mathematical and Fundamental Sciences
Formerly known as:
- ITB Journal of Science (2008 – 2012)
- Proceedings ITB Sains dan Teknologi (2003 - 2007)
- Proceedings ITB (1961 - 2002)

Editorial board of Journal of Mathematical and Fundamental Sciences

Chief Editor
Bambang Riyanto T.
School of Electrical Engineering and Informatics ITB, Indonesia

Editorial Board
Edy Soewono
(Executive Editor)
Faculty of Mathematics and Natural Sciences ITB, Indonesia

Neville Fowkes
School of Mathematics & Statistics, Univ. Western Australia

Thomas Götz
Mathematisches Institut
Universität Koblenz-Landau
Germany

Brendan J. Kennedy
School of Chemistry, University of Sydney, Australia

Agustinus Agung Nugroho Sulistyo Hutomo
Faculty of Mathematics and Natural Sciences ITB, Indonesia

Ferry Iskandar
Faculty of Mathematics and Natural Sciences ITB, Indonesia

Ismunandar
Faculty of Mathematics and Natural Sciences ITB, Indonesia

Hans-Dieter Liess
Faculty Electrical Engineering and Information Technology,
University of the Federal Armed Forces Munich, Germany

Ram N. Mohapatra
Department of Mathematics
University of Central Florida, USA

James Mori
Disaster Prevention Research Institute
Kyoto University, Japan

Yana Maolana Syah
Faculty of Mathematics and Natural Sciences ITB, Indonesia

Edy Tri Baskoro
Faculty of Mathematics and Natural Sciences ITB, Indonesia

Tati S. Sjamsudin Subahar
School of Life Sciences and Technology ITB, Indonesia

Daryono Hadi Tj.
School of Pharmacy ITB, Indonesia

Tony Whitten
Fauna & Flora International (FFI)
Washington, DC, USA

Sri Widiyantoro
Faculty of Mining and Petroleum Engineering ITB, Indonesia

Publication assistant: Dini Sofiani Permatasari & Yuliah Qotimah. Address: *ITB Journal Publisher*, LPPM ITB, Ged. Rektorat ITB Lt. 5, Jalan Tamansari 64, Bandung 40116, Indonesia, Tel. (022) 2501759 ext. 121, Fax.: (022) 2504010; e-mail: journal@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. 040/P/2014 (Februari 2014-Februari 2019)

Published by *ITB Journal Publisher*, The Institute for Research and Community Services, Institut Teknologi Bandung (ITB) in collaboration with Indonesian Chemical Society (Himpunan Kimia Indonesia-HKI).

Cover Design by Chandra Tresnadi.

Table of Contents

1. Constrained Two-Dimensional Inversion of Gravity Data
Hendra Grandis and Darharta Dahrin 1

2. Dynamics of Cocoa Bean Pulp Degradation during Cocoa Bean Fermentation: Effects of Yeast Starter Culture Addition
Laras Cempaka, Lienda Aliwarga, Susanto Purwo & Made Tri Ari Penia Kresnowati 14

3. Path Independence in Adiabatic Quantum Computing for Hadamard Gate
Jusak Sali Kosasih, Suhadi & Freddy Permana Zen 26

4. Promoting *Dolichoderus thoracicus* as an Agent to Disperse *Trichoderma* sp., a Fungus that Controls the Black Pod Disease, Central Sulawesi – Indonesia
Tjandra Anggraeni, Umrah, Rizkita R. Esyanti & I Nyoman P. Aryantha 41

5. Synthesis of Polymer Electrolyte Membrane based on Acid-Base Complex Pair and Its Characteristics
Irfan Gustian, Sevim Ünugur Çelik, Ahmad Zainuddin, Wawang Suratno, Ayhan Bozkurt & Rustam Efendi Siregar 50

6. New Hermitian Self-Dual MDS or Near-MDS Codes over Finite Fields
Djoko Suprijanto, Yudi Renata & Mustika Ladia Putri 62

7. Influence of TiO_2/TS-1 Calcination on Hydroxylation of Phenol
Ratna Ediati, Maria Ulfa, Hamzah Fansuri, Zainab Ramli, Hadi Nur & Didik Prasetyoko 76

8. Numerical Analytic Solution of SIR Model of Dengue Fever Disease in South Sulawesi using Homotopy Perturbation Method and Variational Iteration Method
Yulita Molliq Rangkuti, Syafruddin Side & Mohd Salmi Md Noorani 91