

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: Astronomy, Chemistry, Earth Science (Geodesy, Geology, Geophysics, Oceanography, Meteorology), Life Sciences (Agriculture, Biochemistry, Biology, Health, Medical, Pharmacy), Mathematics, Physics, and Statistics. 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://journals.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 Agustinus Agung Nugroho Sulistyio Hutomo Faculty of Mathematics and Natural Sciences ITB, Indonesia	Ferry Iskandar Faculty of Mathematics and Natural Sciences ITB, Indonesia	Ram N. Mohapatra Department of Mathematics University of Central Florida, USA	Edy Soewono Faculty of Mathematics and Natural Sciences ITB, Indonesia
Editorial Board Edy Tri Baskoro Faculty of Mathematics and Natural Sciences ITB, Indonesia	Ismunandar Faculty of Mathematics and Natural Sciences ITB, Indonesia	James Mori Disaster Prevention Research Institute Kyoto University, Japan	Yana Maolana Syah Faculty of Mathematics and Natural Sciences ITB, Indonesia
Neville Fowkes School of Mathematics & Statistics, University Western Australia.	Brendan J. Kennedy School of Chemistry, University of Sydney, Australia	Rino R. Mukti Faculty of Mathematics and Natural Sciences ITB, Indonesia	Daryono Hadi Tjahjono School of Pharmacy ITB, Indonesia
Thomas Götz Mathematisches Institut Universität Koblenz- Landau, Germany	Hans-Dieter Liess Faculty Electrical Engineering and Information Technology, University of the Federal Armed Forces Munich, Germany	Tati S. Sjamsudin Subahar School of Life Sciences and Technology 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 & Budhi Mulyawan Rachmat. 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: jmfs@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. A New Numerical Method of Seven Steps for Direct Solution of Fourth Order Ordinary Differential Equations Zurni Omar & John Olusola Kuboye	94
2. Multifractal Characterization of Pore Size Distributions of Peat Soil Joko Sampurno, Azrul Azwar, Fourier Dzar Eljabbar Latief & Wahyu Srigutomo	106
3. Reconstruction of Sea Surface Temperature Data based on the Sr/Ca of <i>Porites</i> Coral in Ambon Bay Corry Corvianawatie, Sri Yudawati Cahyarini & Mutiara Rachmat Putri	115
4. Site Response Characteristics of Simeulue Island, Indonesia as Inferred from H/V Spectral Ratio of Ambient Noise Records Titi Anggono, Syuhada, Nugroho Dwi Hananto & Lina Handayani	130
5. A Study of Multiple Scattering in BGO and LYSO Single Crystal Scintillators Kittipong Seingsanoh, Pruittipol Limkitjaroenporn & Jakrapong Kaewkhao	143
6. Production and Characterization of Chitinases from Thermophilic Bacteria Isolated from Prataan Hot Spring, East Java Ruth Chrisnasari, Steven Yasaputera, Pauline Christianto, Veronika Ivone Santoso & Tjandra Pantjajani	149
7. Optimal Vaccination and Treatment Schedules in a Deterministic <i>Avian influenza</i> Model Tasmi & Nuning Nuraini	164
8. Antihyperglycemic Activity of <i>Piper crocatum</i> Leaves and <i>Cinnamomum burmannii</i> Bark Mixture Extract in Streptozotocin-induced Diabetic Rats Mega Safithri Hasibuan, Sedarnawati Yasni, Maria Bintang & Anna Setiadi Ranti	176