#### 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 Sciences (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, Web of Science (Emeraina Sources Citation Index), Scimago JR, Directory of Open Access Journals (DOAJ), Google Scholar, Index Copernicus, The Elektronische Zeitschriftenbibliothek (EZB) by University Library of Regensburg, EBSCO Open Science Directory, ASEAN Citation Index, Indonesian Publication Index (IPI), Science and Technology Index (SINTA) 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)

Editorial board of Journ	nal of Mathematical and F	undamental Sciences	
Chief Editor Agustinus Agung	Ferry Iskandar Faculty of Mathematics	Ram N. Mohapatra Department of	Edy Soewono Faculty of Mathematics
Nugroho Sulistyo	and Natural Sciences ITB,	Mathematics	and Natural Sciences
Hutomo Faculty of Mathematics	Indonesia	University of Central Florida, USA	ITB, Indonesia
and Natural Sciences	Ismunandar		Yana Maolana Syah
ITB, Indonesia	Faculty of Mathematics and Natural Sciences ITB,	James Mori Disaster Prevention	Faculty of Mathematics and Natural Sciences
Editorial Board	Indonesia	Research Institute	ITB, Indonesia
Edy Tri Baskoro		Kyoto University, Japan	
Faculty of Mathematics	Brendan J. Kennedy		Daryono Hadi Tjahjono
and Natural Sciences	School of Chemistry,	Rino R. Mukti	School of Pharmacy
ITB, Indonesia	University of Sydney, Australia	Faculty of Mathematics and	ITB, Indonesia
Neville Fowkes		Natural Sciences ITB,	Sri Widiyantoro
School of Mathematics & Statistics, University	Hans-Dieter Liess Faculty Electrical	Indonesia	Faculty of Mining and Petroleum Engineering
Western Australia.	Engineering and Information Technology,	Tati S. Sjamsudin School of Life Sciences	ITB, Indonesia
Thomas Götz	University of the Federal	and Technology ITB,	
Mathematisches Institut Universität Koblenz- Landau, Germany	Armed Forces Munich, Germany	Indonesia	

LPPM ITB, Center for Research and Community Services (CRCS) Building 6th & 7th Floor, Jl. Ganesha No. 10 Bandung 40132, Indonesia, Tel. +62-(022)-86010080, Fax.: +62-(022)-86010051; 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. 30/E/KPT/2018

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

Cover Design by Chandra Tresnadi

### 9. Manuscript preparation

Use the English language and the SI system (Système International d'Unités, often referred as "International Units") for measurements and units. Manuscript in MS Word or PDF format (generated from MS Word) is to be submitted online through http://journals.itb.ac.id/index.php/imfs/. The length of manuscript is expected not to exceed 20 printed pages (single space) including abstract, figures, tables and references. An abstract between 100 and 200 words describes the significance of manuscript should be included. The authors should supply 5-10 keyword or phrases that characterizes their manuscript. Use 11 pt Times New Roman fonts for body of the text with 1.0 line spacing between lines. The references should be numbered consecutively in the order of their appearance and should be complete, including authors' initials, the title of the paper, the date, page numbers, and the name of the sponsoring society. Please compiles references as shown in the examples below. Figures are printed in black & white, while color figures are only available online. Adjust the size of figures and tables as they will be appeared. All figure captions should be legible, minimum 8 point type. For all equations, use either Microsoft Equation Editor or MathType add-on (equation using Office 2007 are not acceptable). Equations are numbered consecutively in parenthesis, e.g. (1), and set at the right margin.

## Reference examples:

- [1] Sutasurya, L.A. & Riyanto, B., Title of Paper, Name of Journal, 8(1), pp. 20-25, Dec. 2005. (Journal)
- [2] Sutasurya, L.A., Handojo, A. & Riyanto, B., Title of book, ed. 2, Publisher, 2007. (Book)
- [3] Williams, J., Name of Paper, Name of Book, Name of the editor(s), eds., Publisher, pp. 67-69, 2006. (Book with paper title and editor)
- [4] Suharto (ed), Title of Paper, Name of Proc., pp. 5-10, 2008. (Conference Proceedings)
- [5] Name of the author(s), Title of paper (if available), Organization, URL Link, (1 April 2011). (URL Link)
- [6] Nicole, R., Title of Paper, Name of Journal, submitted for publication. (Pending publication)
- [7] John, K., Title of Paper, unpublished. (Unpublished manuscript)
- [8] Rashid, L., Title of Dissertation, PhD dissertation, Name of Dept., Name of Univ., City, 2010. (Thesis or Dissertation)
- [9] Jenny, P., Name of Institution, City, personal communication, 2010. (Personal communication)
- [10] Name of the author(s), Title of Technical Report, Technical Report TR-0334 (34-56), Name of Institution, City, Dec. 2009. (Technical report with report number)

Table of Contents i

# **Table of Contents**

1.	Induction of Matrix Metalloproteinases in Chondrocytes by Interleukin IL-1ß as an Osteoarthritis Model Ervi Afifah, Tjandrawati Mozef, Ferry Sandra, Seila Arumwardana, Dwi Davidson Rihibiha, Hayatun Nufus, Rizal Rizal, Annisa Amalia, Indra Bachtiar, Harry Murti & Wahyu Widowati	103
2.	Efficient Evaluation of Batch Culture Phytoremediation Process using Local Hydromacrophytes to Reduce Synthetic Pesticide Residue in Contaminated Irrigation Water Catur Retnaningdyah & Endang Arisoesilaningsih	112
3.	Effects of Root Extract of <i>Ruellia tuberosa L.</i> on Kidneys of Diabetic Rats	
	Anna Safitri, Arie Srihardyastutie, Anna Roosdiana, Aulanni'am & Eva Nur Laili Octaviana	127
4.	Antimicrobial, Antioxidant and Cytotoxic Potential of Aerial Parts of <i>Monotheca buxifolia</i> Sajjad Ahmad, Maimoona Gul, Asma Shah, Faiz Ullah Khan, Muhammad Rafiq, Ghusia Lutfullah, Alam Zeb Khan, Farhat Amin, Noreen Azhar & Muhammad Saleem Khan	138
5.	P-properties in Near-rings Akın Osman Atagün, Hüseyin Kamacı, İsmail Taştekin & Aslıhan Sezgin	152
6.	Optimization of Extraction Method and Characterization of Phycocyanin Pigment from <i>Spirulina platensis</i> Elin Julianti, Susanti, Marlia Singgih & Laida Neti Mulyani	168
7.	Gravity Inversion of Talwani Model using Very Fast Simulated Annealing Wahyu Srigutomo, Mohammad Heriyanto & Muhamad Hilmi Aufa	177
8.	The Second Hankel Determinant Problem for a Class of Bi- Univalent Functions Mohammad Hasan Khani, Ahmad Zireh & Ebrahim Analouei Adegani	191