Chiang Mai Journal of Science

Chiang Mai J. Sci. Vol. 46 No. 2 March 2019



Chiang Mai Journal of Science Volume 46 Number 2 March 2019

Advisory Board

Gobwute Rujijanagul Somchai Thongtem Sutep Suantai Kate Grudpan Sompong Dhompongsa Surin Khanabsakdi Saisamorn Lumyong Supon Ananta

Editor

Wasu Pathom-aree (CMU)

Associate Editors

Apichart Limpichaipanit (Physics and Materials Science, CMU)

Chulin Likasiri (Mathematics, CMU)
Jaroon Jakmunee (Chemistry, CMU)
Phisit Seesuriyachan (Biology, CMU)

Robert Molloy (International Relations, CMU)

Editorial Board Members

Chatchawan Jantasuriyarat (KU) Chatmongkon Suwannapoom (PU) Chayakorn Pumas(CMU) Nawee Kungwan (CMU) Pimonrat Tiansawat (CMU) Rattikorn Yimnirun(VISTEC)

Usa Boonyuen (MU) Yongyut Laosiritaworn (CMU)

International Editorial Board

Brian Tighe Aston University, UK
Hazem M. Kalaji Warsaw University of Life Sciences, Poland

Jian-Hua Zheng Tsinghua University, China

Lalit K. Sharma

Manuel Miró

Mark Hoffman

Norio Teshima

Raymond Greenlaw

Tshiighta University, China
University of Botswana, Botswana
University of the Balearic Islands, Spain
University of New South Wales, Australia
Aichi Institute of Technology, Japan
Armstrong Atlantic State University, USA

Editorial Assistant

Narisara Vitvongkungval

Secretarial Board

Nopanus Guntra Aekapon Kumsan Uthumporn Maneewan

Address: Chiang Mai Journal of Science, Faculty of Science,

Chiang Mai University, Chiang Mai 50200, Thailand



Chiang Mai Journal of Science

Faculty of Science, Chiang Mai University

Vol. 46 No.2 March 2019

ISSN 0125 - 2526

Information for Contributors	i-iv
Contributed Papers	
Pharmaceutical and Cosmeceutical Biological Activities of Hemp (Cannabis sativa L var. sativa) Leaf and Seed Extracts Aranya Manosroi, Charinya Chankhampan, Bang-on Kietthanakorn, Mathukorn Sainakham, Worapaka Manosroi, Theeraphong Tangjai and Jiradej Manosroi	180-195
Enhanced Growth and Ethanol Oxidation by Overexpressed caiA Gene Encoding acyl-CoA Dehydrogenase in <i>Komagataeibacter medellinesis</i> NBRC 3288 Phisurang Konjanda, Toshiharu Yakushi, Kazunobu Matsushita and Gunjana Theeragool	196-206
Isolation of a High Potential Thermotolerant Strain of <i>Zymomonas mobilis</i> for Ethanol Production at High Temperature Using Ethyl Methane Sulfonate Mutagenesis <i>Jatupat Samappito, Preekamol Klanrit, Sudarat Thanonkeo, Mamoru Yamada and Pornthap Thanonkeo</i>	207-218
Isolation of a Novel Collagenase-producing Strain from Animal Bone Wastes and Optimization of Its Enzyme Production Lili Liu, Yuanyuan Meng, Xiaoning Dai and Ke Chen	219-235
Nematicidal Activities of Bacterial Volatiles from <i>Pseudoduganella violaceinigra</i> G5-3 and <i>Novosphingobium pokkalii</i> G8-2 Against the Pine Wood Nematode <i>Bursaphelenchus xylophilus</i> Fang Wang, Qunqun Guo, Linsong Wang, Yi Ma, Tingting Zhang and Ronggui Li	236-246
Effect of Effective Microorganisms (EM) with Liquid Organic Fertilizer on the Growth of Pak Choy (<i>Brassica rapa</i> var. <i>chinensis</i>) Seedings Nuntavun Riddech, Le Nguyen Xuan Phuong and Tran Thi Ai Van	247-260
Potential of Selected Mangrove <i>Streptomyces</i> as Plant Growth Promoter and Rice Bakanae Disease Control Agent Wasu Pathom-aree, Satidaporn Kreawsa, Manita Kamjam, Shinji Tokuyama, Sada Yoosathaporn and Saisamorn Lumyong	261-276
Chemical Constituents from the Twigs of <i>Decaneuropsis vagans</i> (Asteraceae) and Its Chemotaxonomic Study Anuruk Chailungka, Puttinan Meepowpan and Aroonchai Saiai	277-283



<u>Chiang Mai</u> <u>Journal of Science</u>

Faculty of Science, Chiang Mai University

Vol. 46 No.2 March 2019

ISSN 0125 - 2526

Anti-inflammatory, Antioxidant Activities and Safety of <i>Coffea arabica</i> Leaf Extract for Alternative Cosmetic Ingredient Kanokwan Kiattisin, Nichcha Nitthikan, Worrapan Poomanee, Pimporn Leelapornpisid, Helmut Viernstein and Monika Mueller	284-294
Flow Injection Potentiometric Method Based on Ce(IV)/Ce(III) Redox Reaction for Determination of Total Antioxidant Capacity Puttaporn Klayprasert, Kritsana Jitmanee, Napaporn Youngvises and Jaroon Jakmunee	295-307
Determination of Cadmium in Vegetables by Sequential Injection Analysis Method Using 8-Hydroxyquinoline as Complexing Agent Kanokwan Chaiyasing, Boonsom Liawruangrath, Surapol Natakankitkul, Sakchai Satienperakul, Wasan Sirisungworawong, Narabhats Rannurags and	308-321
Saisunee Liawruangrath Determination of Copper(II) and Cadmium(II) in Rice Samples by Anodic Stripping Square Wave Voltammetry Using Reduced Graphene Oxide/Polypyrrole Composite Modified Screen-printed Carbon Electrode Ploypailin Petsawi, Patrawadee Yaiwong, Rawiwan Laocharoensuk and Kontad Ounnunkad	322-336
Preparation and Characterization of Core-shell Magnetite Nanoparticles-polycaprolactone, Core-shell Natural Rubber-polycarprolactone for Toughness Enhancement of Poly(lactic acid) Warangkhana Phromma and Rathanawan Magaraphan	337-352
Preparation and Characterization of Ylang-Ylang (<i>Cananga odorata</i>) Essential Oil and Ascorbic Acid Loaded Olive Oil-in-Water Emulsion Vicit Rizal Eh Suk, Khalisanni Khalid and Misni Misran	353-360
Preparation Characterization and Application of Novel TiO ₂ Membrane in Photocatalytic Reactor Miao Yingchun, Xu Xiaolin, Liu Kaiquan, Jin Zhitao, Cheng Yuqin and Zhao Xiyan	361-369
Influence of Sintering Temperature on Phase Formation, Microstructure and Mechanical Properties of the Recycled Ceremic Body Derived from CAD/CAM Dental Zirconia Waste	
Chana Sriboonpeng, Jeeranan Nonkumwong, Laongnuan Srisombat, Attavit Pisitanusorn and Supon Ananta	370-386



Chiang Mai Journal of Science

Faculty of Science, Chiang Mai University

Vol. 46 No.2 March 2019

ISSN 0125 - 2526

Synthesis and Characterization of Admicelled Natural Rubber with
Poly(methyl methacrylate)-co-Poly((3-trimethoxysilyl) propyl methacrylate)
and Evaluation of the Properties of its Vulcanizates

Suparat Nooma and Rathanawan Magaraphan

387-407

Influence of Plasma in the Vicinity of Io on Brightness and Angular Extension
of Io's Magnetic Footprint

Suwicha Wannawichian and Arthit Laphirattanakul

408-416

Chiang Mai Journal of Science

INFORMATION FOR CONTRIBUTORS

EDITORIAL POLICY

The **Chiang Mai Journal of Science** is an international English language peer-reviewed journal which is published in open access electronic format 6 times a year in January, March, May, July, September and November by the Faculty of Science, Chiang Mai University. Manuscripts in most areas of science are welcomed except in areas such as agriculture, engineering and medical science which are outside the scope of the Journal. Currently, we focus on manuscripts in biology, chemistry, physics, materials science and environmental science. Papers in mathematics, statistics and computer science are included but should be of an applied nature rather than purely theoretical or technical. Manuscripts describing experiments on humans or animals are required to provide proof that all experiments have been carried out according to the ethical regulations of the respective institutional and/or governmental authorities and this should be clearly stated in the manuscript itself. The Editor reserves the right to reject manuscripts that fail to do so.

Papers which have already been published in other journals or which are under consideration by other journals should not be submitted. Similarly, papers published here should not be submitted to other journals. Special issues can also be published by prior arrangement are limited to no more than 2 issues per year. Manuscripts that are suspected to involve plagiarism or other types of ethical misconduct, including but not limited to duplicate publication, multiple submission or salami slicing will also be rejected. Manuscripts that have passed successfully through peer review and been accepted will be subject to an article processing fee of 300 US\$ or 10,000 Baht before they can be published.

TYPES OF MANUSCRIPT

Manuscripts may be submitted in the form of Review Articles, Research Papers or Short Communications and must be clearly and concisely written in English. As an approximate guide to length:

- Review Articles would not normally exceed 30 pages of double-spaced A4 text, inclusive of tables, figures and references, with a maximum of 50 references. Reviews are normally by invitation only but prospective authors are welcome to contact the Editor or appropriate Associate Editor to discuss possible contributions.
- Research Papers would not normally exceed 20 pages of double-spaced A4 text, similarly all-inclusive. The number of references should not exceed 30.
- Short Communications would not normally exceed 8 pages of double-spaced A4 text, including not more than 2 tables and 2 figures and a maximum of 10 references.

Manuscripts that exceed these limits will be returned to the author for correspondence for editing.

PREPARATION OF MANUSCRIPTS

Manuscripts submitted for publication will normally consist of the following sections: *Title, Authors Names and Addresses, Abstract (including Keywords), Introduction, Materials and Methods, Results and Discussion, Conclusions, Acknowledgements (if any), and References.* For format and general style, authors should refer to current issues (see also the Journal website) as a guide. Manuscripts that do not conform to these guidelines will be rejected at the submission stage. Photographs, figures

and line drawings should be of optimum quality.

Only references actually cited in the main text should be included in the *References* section and should be cited in numerical order. Manuscripts should be typed as MSWord documents using double-spacing on A4-sized pages with justified text. Any tables and figures should follow at the end of the main text and be saved in the same document file. SI units of measurement should be used throughout.

It is strongly recommended that, where appropriate, the paper should be proof-read by a native English speaker, or at least someone proficient in the English language, before being submitted so as to avoid the possibility of rejection on language rather than scientific grounds. The Editor reserves the right to request proof of language editing.

FORMAT FOR REFERENCES

Journals:

[1] Kananthai A., J. Comp. Appl. Math., 1997; 84: 101-106. DOI 10.1007/s11274-013-1451-9.

Texts:

[2] Clark M.S. and Wall W.J., *Chromosomes: The Complex Code*, 1st Edn., Chapman and Hall, London, 1996.

Chapter in an Edited Text:

[3] Pender M.P., Adoptosis in the Target Organ of an Autoimmune Disease; in Levin M. and Watters D., eds., *Programmed Cell Death*, Gordon and Breach, Philadelphia, 1993: 235-240.

Thesis / Dissertation:

[4] Srichuanchuenskul W., *Modern Chromatography of Metal Chelates*, PhD Thesis, Chiang Mai University, Thailand, 1994.

Patents:

[5] Haga T., Japan Pat. No. 50-54628 (1976).

Proceedings:

[6] Chaiwong S. and Plikomol A., Proceedings of the 1st International Conference for a Sustainable Greater Mekong Sub-Region (GMSTEC 2010), Bangkok, Thailand, 26-27 August 2010; 596-601.

DOI Reference:

[7] Mingma R., Thamchaipenet A. and Duangmal K., World J. Microbiol. Biotechnol., 2017; DOI 10.1007/s11274-013-1451-9.

Online document:

[8] Cartwright J., Big stars have weather too; Available at: http://physicsworld.com/cws/article/news/2007/jun/26/big-stars-have-weather-too

Journal/periodical abbreviations should follow those used by the Web of Science (https://images.webofknowledge.com/images/help/WOS/A_abrvjt.html).

SUBMISSION PROCEDURE

Manuscripts should be submitted online as a single MSWord document file via the Journal website at:

http://epg.science.cmu.ac.th/ejournal/

Following submission, receipt of the manuscript will be acknowledged by a return e-mail containing a Manuscript Number which should be quoted in all subsequent correspondence.

When submitting a paper, authors are also <u>required</u> to provide the names and affiliations (including e-mail addresses) of at least 5 possible reviewers whom the authors consider to be well qualified to review the paper. However, this is not meant to imply that the paper will be sent to these reviewers. This is simply a measure designed to avoid long delays in the event that reviewers are difficult to find. Normally, the paper will be refereed by 2-3 reviewers.

In addition, authors are recommended to describe the highlights and/or novelty aspects of the submitted manuscript in a short cover letter.

REVIEW PROCEDURE

Following receipt of the manuscript, it will be first screened for its suitability for the Journal by the assigned Associate Editor. This initial screening also includes the use of 'Turnitin' software for plagiarism detection. Having passed through this initial screening process, it will then be sent to a minimum of two external reviewers (double-blind system). In the event of differences of opinion amongst the reviewers regarding the merits of the manuscript, the final decision will rest with the Editor. The Journal will make every effort to inform the authors of its decision within 5 months after submission and, if accepted, to publish the manuscript within a further 6 months (including the time taken to make any revisions).

Manuscripts accepted but requiring revisions must be returned to the Journal within the timeframe specified by the handling Associate Editor highlighting the changes that have been made. Detailed responses to the reviewers' comments should also be given in a covering letter. A revised manuscript returned after the deadline has expired without giving prior notice to the handling Associate Editor will be treated as a new submission.

In the case of manuscripts considered to be unsuitable for publication, the reasons for rejection will be clearly explained. In some cases, an article submitted as a Research Paper may be recommended for acceptance as a Short Communication instead, especially where the work is of topical interest but is of limited scope and length.

Following acceptance, an electronic copy of the paper typeset as it will appear in the Journal (for final proof-reading) and a Copyright Transfer Agreement will be e-mailed to the corresponding author. The paper (indicating any final corrections) and the signed Copyright Transfer Agreement must be returned as soon as possible. Manuscripts will be published only after receiving the signed Copyright Transfer Agreement. Finally, following publication, an electronic copy (PDF file) of the paper can be downloaded from the Journal website free of charge.

PAYMENT

To cover processing costs and provide open access for articles which have been accepted, the Journal now charges a publication fee of 300 US\$ or 10,000 Baht. This publication fee should be transferred to the bank account shown below and details of the transfer either e-mailed to: <STSCCMU@gmail.com> and <cmjs@cmu.ac.th> or faxed to: +66 (0)53 892275.

Account Name: CENTER STSC-CMU

Account No.: 667-226327-6

Bank: SIAM COMMERCIAL BANK PLC.
Branch: CHIANG MAI UNIVERSITY BRANCH

Address: 239 Huay Kaew Rd., Amphur Muang, Chiang Mai 50200, Thailand

SWIFT CODE: SICOTHBK

COVERAGE BY INDEXING SERVICES

The Journal is covered by the following indexing services:

- Science Citation Index Expanded (also known as SciSearch®)
- Journal Citation Reports / Science Edition
- Scopus
- Biological Abstracts
- BIOSIS Previews
- Chemical Abstracts
- SciFinder Scholar
- Zentralblatt f
 ür Mathematik
- MathSciNet
- Thai Citation Index (TCI)
- ASEAN Citation Index (ACI)

JOURNAL WEBSITE / OPEN ACCESS

The **Chiang Mai Journal of Science** is an open access journal. Full papers in this and past issues are available online at the Journal website at:

http://epg.science.cmu.ac.th/ejournal/

JOURNAL IMPACT FACTOR

The Journal's 2017 Impact Factor is 0.409.

DISCLAIMER

Personal views expressed by contributors in their articles are not necessarily those of the **Chiang Mai Journal of Science** or of the Faculty of Science, Chiang Mai University.

Study Programs of the Faculty of Science Chiang Mai University

Bachelor's Degree Programs

Master's Degree Programs

Applied Geophysics**

Biochemistry and Biochemical

Technology Applied Mathematics
Biology Applied Microbiology
Chemistry Applied Physics

Computer Science Applied Statistics

Gemology Biology

Geology Bioinformatics
Industrial Chemistry Biotechnology
Materials Science Chemistry

Mathematics Computer Science

Microbiology Environmental Science**

Physics Forensic Science

Statistics Geology

Zoology Industrial Chemistry

Integrated Science - Mathematics

Materials Science Mathematics

Petroleum Geoscience*

Physics

Teaching Biology
Teaching Mathematics
Teaching Physics

Doctoral Degree Programs

Applied Microbiology Applied Physics

Biology Biodiversity and Ethnobiology

Biotechnology Chemistry**

Computer Science***

Geology**

Materials Science**

Mathematics

Industrial Chemistry

Nanoscience and Nanotechnology* Physics**

*International Programs **Normal and International Programs ***English Program

For further information about any of these study programs, please contact:

Associate Dean for Academic Affairs Faculty of Science, Chiang Mai University

Chiang Mai 50200

Thailand

Tel.: (66-53) 943302, 943315-6 FAX: (66-53) 222268, 943439



Chiang Mai J. Sci. Vol. 46 No. 2 March 2019

Published by Faculty of Science, Chiang Mai University, Chiang Mai 50200, Thailand