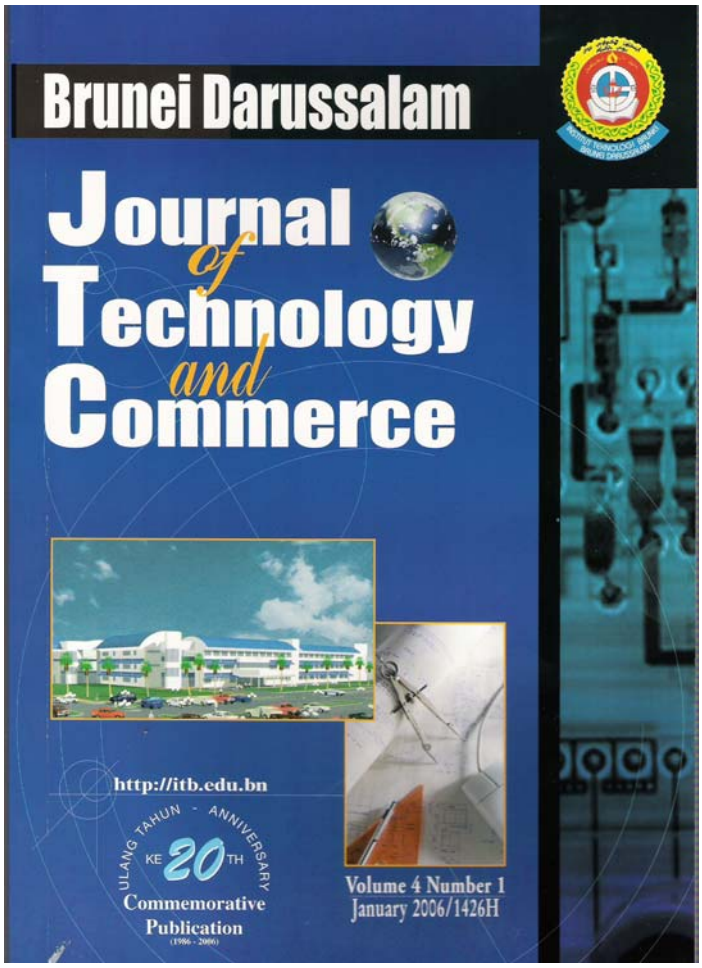
View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by Universiti Teknologi Malaysia Institutional Repository

# Brunei Darussalam Journal of Technology and Commerce
# Front Cover



Brunei Darussalam Journal of

Technology and Commerce

## Aims and Scope

The Brunei Darussalam Journal of Technology and Commerce will cover all aspects of the practice of engineering, computer technology and commerce. It is intended to provide the community of engineers, technologists, entrepreneurs and researchers in government, industry and academia with a forum for discussion and exchange of information relating to recent advances and applications in the fields of technology and commerce. The Journal will be published annually.

**Patron**
Yang Berhormat Pehin Orang Kaya Seri Lela Dato Seri Setia Dato Dr. Awang Haji Abdul Rahman bin Dato Setia Haji Mohammad Taib,
**Minister of Education, Negara Brunei Darussalam.**

**Editor-in-Chief**
Dr.Hj Kassim bin Haji Daud [PSB PIKB BSc Hon (Bradford) MSc (London) PhD (Liverpool)]
**Director, Institut Teknologi Brunei**

**Assistant Editor-in-Chief**
Dr Hajah Naemah binti Haji Basir[DMS MSc PhD (UK)]
**Deputy Director, InstitutTeknologi Brunei**

**Secretary Editor**
Dr Nabil M Abdul Kadir
[BSc.Eng(Mosul), PhD(Southampton), CEng, MIEE, MIEEE]

**Publishing Committee**

Zainidi bin Hj Abdul Hamid
*[BEng(Anglia), MSc(Brunel), AMIEE]*

DK Rafidah Pg Haji Petra[BEng (Glasgow)]

Dr Hjh Noralam Pg Tuah [BEng (Glasgow)]

**Editorial Members:**

Dr Faqir Gul
Dr Sophiana Chuaa Abdullah

Dr Hakim Abass
Dr Ifzaal H Seyal
Hjh Rose binti Abdullah
Hj Mosidi Hj Kassim
Hj KBM Shafiuddin

## Subscriptions

For subscriptions, please contact,

**InstitutTeknologi Brunei**
**JalanTungku Link Gadong**
**BE1410**
**Brunei Darussalam**

**Tel: 00 (673) 246-1020**
**Fax: 00 (673) 246-1036**
**Email: journal@itb.edu.bn**

## Subscription Rate

B$10 (10 Brunei Dollars) for those resident in Brunei Darussalam and B$15 (15 Brunei Dollars) for overseas subscribers including postage.

Copyright

ISSN 1605-2285

Copyright of Institut Teknologi Brunei.

This publication may only be reproduced, stored or transmitted with prior permission in writing from the publishers.

Under the copyright designs and patent regulations to uphold fair dealing, copying is only permitted for private study, review or criticism.

## Disclaimer

Statements and opinions expressed in the articles and correspondences are those of the authors and do not reflect the opinion of the Editors or Publisher. The Editors and Publisher disclaim any responsibility or liability for such material and do not guarantee, warrant or endorse any product or service advertised in this publication nor do they guarantee any claim made by the manufacturer of such product or service.

## Sponsors/ Advertisers

Brunei LNG Sendirian Berhad, Datastream Technology (B) Sendirian Berhad, Processta Printing & Trading Compan

# Contents of Volume 4
# Brunei Darussalam Journal of Technology and Commerce


| | | Page |
|---|---|---|
| 1 | **Institute Teknology Brunei; Twenty Years of Ecellence inTechnical Education**;<br>Dr Hjh Naemah binti Hj Basir | **1** |
| 2 | **Porous Media Utilizations in Energy Systems**<br>Professor AA Mohamed | **6** |
| 3 | **Hydraulic modelling of the effects of tidal flows and Sediment transport on channel geometry and flow in Klang river estuary**<br>Suleyman Aremu Muyibi | **14** |
| 4 | **Prediction for the Thermal Performance of Flat Plate Collector Using Expert System**<br>Bashria A. A. Yousef, Adam N. M. | **26** |
| 5 | **High-speed Data Access for Medical Applications**<br>M. Poulose, Sarah Paul, and Winny Jose | **38** |
| 6 | **New Technique in Fingerprint Matching based on An-AVL tree Search Algorithm**<br>Ahmed Baba Elmadani,Veeraraghavan Prakash, | **48** |
| 7 | **Implementation of Resonant Frequency and H Bridge Inverters in Induction Heating**<br>Nabil Abdul Kadir, Ahmed Maliki, Ferry Syafrizal | **54** |
| 8 | **Changes in Carbon, Nitrogen and the Carbon /Nitrogen Ratio during composting of sewage sludge**<br>Kabbashi, N. A, Fakhru'l-Razi Ahmadun | **64** |
| 9 | **TowardsIimplemneting Multimedia Technologies for Classroom Learning in Brunei Darussalam**<br>M M Poulose, Zainidi bin Hj Abdul Hamid and Joffry Hj. Bungsu | **72** |
| 10 | **Protocol Conversion FROM HDLC TO IEC 870 Communication Protocol Standards**<br>Laith Ihsan Khalil, Sarkout N. Abdullah | **79** |

| | | |
|---|---|---|
| 11 | **Student's Perception of English Language Programs: A Comparative Study at two Technical Colleges**<br>Afzaal H. Seyal, Anthony Phillips , and Abbas Zaidi | **86** |
| 12 | **Performance comparison of Gray-coded M- quadrature amplitude modulation in coded and uncoded orthogonal frequency division multiplexing techniques over additive white Gaussian noise**<br>Nor K. Noordin, Borhanuddin M. Ali, S. S. Jamuar, | **93** |
| 13 | **El-Nino and la-Nina – in the context of Brunei Darussalam**<br>Dr Sikandar Khan Khatri | **99** |
| 14 | **Aircraft Family Concepts for High Subsonic Regional Aircraft**<br>Ir. Prasetyo Edi | **104** |
| 15 | **Clustering Location of Forest Fires Using Self-organizing Map**<br>Ali Selamat and Md. Hafiz Selamat | **113** |
| 16 | **Trademark Matching Based on Robust Features Using Counter Propagations Neural Network**<br>Muhammad Faisal Zafar and Dulkifli Mohmad | **121** |
| 17 | I**mpact And Bending Properties of Pineapple Leaf Fibre (PALF) Reinforced Polypropylene (PP) Laminated Composites;**<br>R. M. N. Arib, S. M. Sapuan, M. A. M. M. Hamdan | **130** |
| 18 | **Strenghting ATM Authentication Protocols**<br>L. A. Mohammed, Abdul Rahman Ramli, and M. Daud | **136** |
| 19 | **A Quasi-Analytic Method for Calculating Photon and Carrier Densities in Super Luminescent Light-Emitting Diodes**<br>S. Yunus and T.J. Fairclough | **143** |
| 20 | **Caution Required to Interpret Results of Experimental Studies –A Botto Friction Case Study**<br>Dr Sikandar Khan Khatri | **148** |