THE DHAKA UNIVERSITY JOURNAL OF SCIENCE

Vol. 64(1)

January 2016

Editor

Prof. Dr. Mohammed Abdul Aziz Dean, Faculty of Science Dhaka University, Dhaka-1000, Bangladesh e-mail: deansc@du.ac.bd

Associate Editor

Prof. Dr. Nilufar Nahar Department of Chemistry Dhaka University, Dhaka-1000, Bangladesh e-mail: nilufarnahar@yahoo.com

Members of the Editorial Board

Prof. Shamima Choudhury Department of Physics Dhaka University, Dhaka-1000 **Prof. Dr. Md. Abdus Samad** Department of Applied Mathematics Dhaka University, Dhaka-1000

Prof. Dr. Amulya Chandra Mandal Department of Mathematics Dhaka University, Dhaka-1000 **Prof. Md. Lutfor Rahaman** Department of Statistics, Biostatistics and Informatics Dhaka University, Dhaka-1000

Published in January, 2016 by the Editor on behalf of the Editorial Board of the Journal. Computer Typesetting and Printing by: Noor Card Board Box Factory (Offset Press) 19/1, Nilkhat, Babupura, Dhaka 1205, Phone : 8627368

THE DHAKA UNIVERSITY JOURNAL OF SCIENCE

General Information

PUBLICATION : Dhaka Univ. J. Sci. is generally published half-yearly in January and July as two issues per annual volume.

SUBSCRIPTION INFORMATION : Subscription price per issue is : Tk. 100.00 (Inland)/US\$ 15.00 (Foreign). Subscription orders should be sent to : Dhaka Univ. Journal of Science, Dhaka University, Dhaka-1000, Bangladesh. **EDITORIAL CORRESPONDENCE :** Editorial correspondence should be addressed to : **Prof. Dr. Mohammed Abdul Aziz** Dean, Faculty of Science Dhaka University. Dhaka Univ. J. Sci., Dhaka University, Dhaka-1000, Bangladesh. e-mail: deansc@du.ac.bd,

Information for Authors

SCOPE: Dhaka Univ. J. Sci. publishes original research papers and short communications submitted by the teachers and scholars of the Dhaka University on any branch of Physical and Mathematical Sciences and their applications. In the case of joint authorship of a paper, one of the authors must be from Dhaka University.

FORM OF MANUSCRIPT : Manuscript must be **typed double spacing** (font size 11) on one side of A4 (210 mm x 297 mm) bond papers with margins. The first page of the typescript should contain title of article, name(s) of author(s) with academic or professional affiliation(s) and address of the author (in case of joint authorship) to whom communications should be made. The title, **not exceeding 50 characters**, should be provided for page headings. The title page should be followed by a page containing only the full title and in case of a full paper, an abstract of up to **150 words** describing the main results. No abstract is necessary for short communications. Considering the high cost of printing, contributions should be as concise as possible, and must not exceed **ten typed pages** in the case of full papers and **two typed pages** in the case of short communications. Tables, graphs and figures should be kept to a minimum. Tables of data represented by graphs should not be included unless they are absolutely necessary. Footnotes should be avoided as far as possible. **Disk, in MS Word, must be supplied with final manuscript.**

REFERENCES : All references must be numbered consecutively according to their occurrence in the text. Reference citations in the text should be indicated by superscripts, e.g., Smith¹, solution^{2,3} and keyed to a numbered reference list at the end according to the following style:

For a paper in a journal : Edmonds, J. and K.M. Karp, 1997. Theoretical Inprovements in Algorithmic Efficiency for Network Flow Problems. J. Assoc. Comput. March 19, 248-264.

For a book : Pines, D. and P. Noziirs, 1966. The Theory of Quantum Liquids. Vol. 1, Benjamin, N.Y.

For a paper in a contributed volume : Zahed, I.A., 1974. *Calculas of Fuzzy restrictions. In :* I. A. Zahed, K.S., Fu, K. Tanaka and M. Shimura (ed.). Fuzzy Sets ad their application to Cognitie and Decision Process, Academic Press, N. Y.

SUBMISSION OF MANUSCRIPT : Authors should submit two copies of their manuscripts typed as per style and format of the journal and complete with necessary diagrams to the Editor. The authors, at the time of submitting their manuscript, must certify that the work was carried out by him/them and the contents of the paper were not published before or submitted for publication in any other Journal.

To assist the referees, authors are requested to furnish copies of relevant unpublished or inaccessible references.

EDITORIAL PROCESS: All papers will be refereed. The Editor will process the paper in consultation with the department member of the Editorial Board, and the authors may be required to incorporate necessary changes as suggested by the referees. Final decisions on the papers will be made by the Editorial Board on the basis of the reports of the referees.

PROOFS: Authors will receive page-proofs. These should be corrected and returned within forty eight hours of receipt. No new material may be inserted in the text at the time of proof reading, except where permission in advance has been obtained from the Editor.

OFFPRINTS: Twenty five off prints of each article published will be supplied free of charge. Additional off prints may be ordered at cost price at the time of returning the corrected page-proofs.

THE DHAKA UNIVERSITY JOURNAL OF SCIENCE

Vol. 64(1)

Januuary 2016

CONTENTS

1.	Structural and Optical Characterization of Magnesium Doped Zinc Oxide Thin Films Deposited by Spray Pyrolysis <i>Mitali Biswas, Mehnaz Sharmin, Chitra Das, Jibon Poddar and Shamima Choudhury</i>	1
2.	Sensitivity Analysis of the Tetrapolar Electrical Impedance Measurement Systems Using COMSOL Multiphysics for the non-uniform and Inhomogeneous Medium Onic Islam Shuvo and Md. Naimul Islam	7
3.	Measuring Threshold Potentials of Neuron Cells Using Hodgkin-Huxley Model by Applying Different Types of Input Signals Molla Manjurul Islam and Naimul Islam	15
4.	Drowning of Under 18 Children in Bangladesh: Analysis of Risk Factors Using MICS 2006 Data Farzana Chowdhury and Jahida Gulshan	21
5.	Cyclic Voltammetric Study of the Interaction of Biologically Important Metal Ion with Proton Pump Inhibitors <i>Milton C. Das, Rajib Biswas, Humaiara Akter, M. A. Haque, P. K. Bakshi and A. A. Shaikh</i>	25
6.	Effects of Different Boundary Conditions at the Surfaces of the Extended Computational Domain in Computing the Natural Convection Flow in an Open Cavity <i>Roushanara Begum and M. Z. I. Bangalee</i>	31
7.	Avoiding Low Energy Routing Node in MANET Based on Critical Energy Level Rezvi Shahariar, Abu Naser and Riham Morsed	39
8.	A New Technique for Solving Transportation Problems by Using Decomposition-Based Pricing and its Implementation in Real Life Sajal Chakroborty and M. Babul Hasan	45
9.	A Proposed Technique for Solving Quasi-Concave Quadratic Programming Problems with Bounded Variables by Objective Separable Method M. Asadujjaman and M. Babul Hasan	51
10.	Radiation Effect on Unsteady Mixed Convection Boundary Layer Flow, Heat and Mass Transfer over a Wedge <i>N. C. Roy, M. N. Firoza and A. K. Halder</i>	59
11.	MHD Mixed Convection Flow of a Micropolar Fluid Past a Wedge Fixed in a Fluctuating Free Stream and Surface Temperature <i>N. C. Roy, P. Akther and A. K. Halder</i>	65
12.	Structural Properties and Crystallization Behavior of FINEMET Fe₇₄Cu_{1.5}Nb_{2.5}Si₁₂B₁₀ Alloy Under Different Annealing Condition <i>Enayet Hossain, Shamima Choudhury, D K Saha and M A Hakim</i>	71
13	A Theoretical Investigation of the Structural, Spectroscopic and Optical Properties of Adenine <i>M. Alauddin, M. M. Islam, M. K. Hasan, T. Bredow and M. A. Aziz</i>	77
14.	Structure Elucidation of Soluble Dietary Fiber from Cauliflower Nilufar Nahar, A K M Ahsan Habib, S M Mizanur Rahman and Tofail Ahmed Chowdhury	83
15.	Dissipation of Cypermethrin in Bean and Cauliflower Nilufar Nahar, Mohammad Motaher Hossain, Md. Nashir Uddin Al Mahmud, Mohammad Shoeb, Gulshan Ara Latifa and Kamal Humayun Kabir	89