Science Diliman

ISSN 0115-7809

SCIENCE DILIMAN is published semi-annually (June and December) by the University of the Philippines Diliman through the Office of the Vice-Chancellor for Research and Development. The journal features articles of pure and applied sciences.

Editorial Board

Editor-in-Chief Marco Nemesio E. Montaño, PhD

Associate Editors

Ma. Patricia V. Azanza, PhD Jose Maria P. Balmaceda, PhD Carlos Primo C. David, PhD Joel Joseph S. Marciano Jr., PhD Jonas P. Quilang, PhD Arnel A. Salvador, PhD Irene M. Villaseñor, PhD

Managing Editor Violeda A. Umali, PhD

Editorial Assistants Epifania M. Domingo Dercylis G. Mararac

On the Cover:

Variety of fruits displayed at the Roma's Fruits Stand, UP Shopping Center, Diliman. Photo taken by Marvic A. Pastrana of the OVCRD, UP Diliman.

Contents of this journal may not be reproduced without the publisher's written permission except for fair use, i.e., for personal, educational and research purposes, in accordance with copyright law. Reprinting and republication in any other journal or compilation is likewise prohibited except as provided in the Publication Agreement when the author reprints his/her article for inclusion in any publication where he/she is the author or editor, subject to giving proper credit to the original publication of the article in the journal.

The views expressed in the articles are those of the authors and do not necessarily reflect the views of the publisher and the editors. January-June 2013 • Volume 25 No.1

INTERNATIONAL ADVISORY BOARD

Rigoberto C. Advincula, PhD Department of Chemistry University of Houston

Alfonso M. Albano, PhD Department of Physics Bryn Mawr College, Bryn Mawr, Pennsylvania

Kenneth Buckel, PhD Food Science and Technology Group School of Chemical Sciences and Engineering The University of New South Wales Sydney, Australia

Jose B. Cruz, PhD Department of Electrical and Computer Engineering Ohio State University

Flor Crisanta F. Galvez, PhD Quality Assurance and Technical Manager Kerry Ingredients and Flavours (Americas Region) 7989-82nd St., Delta, VC V4G 1L7, Canada

Victor C. Gavino, PhD Department of Nutrition University of Montreal, Canada

Kelvin S. Rodolfo, PhD Department of Earth and Environmental Sciences University of Illinois, Chicago, Illinois

Rudolf A. Roemer, PhD Centre for Scientific Computing and Department of Physics University of Warwick

Luis G. Sison, PhD Electrical and Electronics Engineering Institute University of the Philippines Diliman

University of the Philippines Ditir

Raul K. Suarez, PhD Department of Ecology, Evolution and Marine Biology

University of California, Sta. Barbara

