

# Journal of **Mechanics**

Published on behalf of  
**The Society of Theoretical and Applied Mechanics, R.O.C.**

**Volume 28 Issue 1 March 2012**

ISSN: 1727-7191



**CAMBRIDGE**  
UNIVERSITY PRESS



# Journal of Mechanics

## Aims and Scope:

The objective of the Journal of Mechanics is to provide an international forum to foster exchange of ideas among mechanics communities in different parts of world. The Journal of Mechanics publishes original research in all fields of theoretical and applied mechanics. The Journal especially welcomes papers that are related to recent technological advances, such as micro/nanomechanics, medical and biological systems, and microscale heat transfer. The contributions, which may be analytical, experimental or numerical, should be of significance to the progress of mechanics. Papers which are merely illustrations of established principles and procedures will generally not be accepted. Reports that are of technical interest are published as Short articles. Review articles are published only by invitation.

**Publisher:** C. C. Yu, former President of National Taiwan University

## Editor-in-Chief and Chairman of Editorial Board:

K. C. Wu, Institute of Applied Mechanics, National Taiwan University, Taipei 106, Taiwan, R.O.C.

## International Associate Editors:

A. Bejan, Department of Mechanical Engineering and Materials Science, Duke University, U.S.A.  
Y. Benveniste, Faculty of Engineering, Tel-Aviv University, Israel  
W. S. Chan, Mechanical and Aerospace Engineering, University of Texas at Arlington, U.S.A.  
H.-D. Cheng, Department of Civil Engineering, University of Mississippi, U.S.A.  
V. M. Fomin, Russian Academy of Sciences, Novosibirsk, Russia  
H. Gao, School of Engineering, Brown University, U.S.A.  
M. Iguchi, Division of Materials Science and Engineering, Graduate School of Engineering, Hokkaido University, Japan  
A. M. Korsunsky, Department of Engineering Science, Oxford University, U.K.  
Y. L. Shen, Department of Mechanical Engineering, University of New Mexico, U.S.A.  
T. C. T. Ting, Division of Mechanics and Computation, Stanford University, U.S.A.  
T. Wang, Department of Mechanical Engineering, University of New Orleans, U.S.A.

## Local Associate Editors:

C. K. Chao, Dept. of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan  
J. C. Chen, Dept. of Mechanical Engineering, National Central University, Jhongli City, Taiwan  
J. T. Chen, Dept. of Harbor and River Eng. / Dept. Mech and Metramechanical Eng., Taiwan Ocean University, Keelung, Taiwan  
T. Y. Chen, Dept. of Civil Engineering, National Cheng Kung University, Tainan, Taiwan  
S. S. Hsieh, Dept. of Mechanical and Electro-Mechanical Engineering, National Sun Yat-sen University, Kaohsiung, Taiwan  
R. F. Huang, Dept. of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan  
T. H. Huang, Dept. of Civil Engineering, National Taiwan University, Taipei, Taiwan  
M. K. Kuo, Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan  
U. Lei, Institute of Applied Mechanics, National Taiwan University, Taipei, Taiwan  
C. C. Ma, Dept. of Mechanical Engineering, National Taiwan University, Taipei, Taiwan  
J. J. Miao, Dept. of Aeronautics & Astronautics, National Cheng Kung University, Tainan, Taiwan  
C. K. Sung, Dept. of Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan  
W. F. Wu, Dept. of Mechanical Engineering, National Taiwan University, Taipei, Taiwan  
D. L. Young, Dept. of Civil Engineering, National Taiwan University, Taipei, Taiwan

## Editorial Advisory Board:

W. H. Chen	Y. N. Chen	Z. C. Hong	S. J. Hsieh	J. S. Hwang
R. R. Hwang	C. C. Lin	C. F. Lin	C. Y. Lin	D. Shaw
J. Q. Tarn	Y. C. Tsai	C. B. P. Tsay	H. T. Wang	

## Executive Editor:

Y. C. Shu, Institute of Applied Mechanics, National Taiwan University, Taipei 106, Taiwan, R.O.C.

## Abstracted/indexed in:

SCI Expanded; Engineering Index (EI Compendex); Current Content; Research Alert; International Aerospace Abstract; Cambridge Scientific Abstracts; Chemical Abstracts Service; Advanced Polymers Abstract; Aluminum Industry Abstracts; Composites Industry Abstracts; Computer and Information Systems Abstracts Journal; Corrosion Abstracts; Earthquake Engineering Abstracts; Electronics and Communications Abstracts Journal; Engineered Materials Abstracts; Environmental Engineering Abstracts (Online Edition); Materials Business File; METADEX; World Ceramics Abstracts (Online); Environmental Science and Pollution Management; Solid State and Superconductivity Abstracts.

## Publication Office:

The Society of Theoretical and Applied Mechanics, R.O.C.  
Institute of Applied Mechanics, National Taiwan University, 106, Taiwan, R.O.C.

## Subscription Information:

For general price and subscription enquiries, please contact Cambridge University Press:

For United Kingdom, Europe and Rest of the World:	For the United States, Canada and Mexico:
Cambridge University Press	Cambridge University Press
The Edinburgh Building	100 Brook Hill Drive
Shaftesbury Road	West Nyack, NY 10994-2133
Cambridge CB2 8RU	USA
United Kingdom	Phone: +1-845-353-7500
Phone: +44-(0)-1223-326070	Toll free: +1-800-872-7423
Fax: +44-(0)-1223-325150	Fax: +1-845-353-4141
Email: <a href="mailto:journals@cambridge.org">journals@cambridge.org</a>	Email: <a href="mailto:subscriptions_newyork@cambridge.org">subscriptions_newyork@cambridge.org</a>

Visit the *Journal of Mechanics* online at: <http://journals.cambridge.org/jom>

## Acknowledgement:

The financial support from the National Science Council of the Republic of China is gratefully acknowledged.

Copyright © 2012 The Society of Theoretical and Applied Mechanics, R.O.C.

Edited & Printed by DnE Information Service Net, Taiwan, Tel: +886-2-2221-2552, Fax: +886-2-2221-8872, website: [www.dneinfo.com](http://www.dneinfo.com)