

INTERNATIONAL POLYMER PROCESSING

THE JOURNAL OF THE POLYMER PROCESSING SOCIETY



Polymer Processing Society

**EDITOR-IN-CHIEF AND EDITOR
FOR EUROPE, MIDDLE EAST AND
AFRICA**

José A. Covas, Guimarães

**ASSOCIATE EDITOR FOR THE
AMERICAS**

Marianna Kontopoulou, Kingston

**ASSOCIATE EDITOR FOR EAST
ASIA AND AUSTRALIA**

Toshihisa Kajiwara, Fukuoka

EDITORIAL BOARD

J. F. Agassant, Valbonne

V. Altstädt, Bayreuth

S. Bhattacharya, Melbourne

M. Bousmina, Rabat

M. Cakmak, Akron, OH

P. Cassagnau, Lyon

N. Demarquette, Montreal

M. Fujiyama, Yamaguchi

C. Holzer, Leoben

C. Hopmann, Aachen

T. Kanai, Anegaski

T. Kikutani, Tokyo

J. K. Kim, Pohang

S.-J. Liu, Taipei

E. di Maio, Naples

P. Moldenaers, Leuven

M. Ohshima, Kyoto

C. B. Park, Toronto

L. A. Pessan, Sao Carlos

S. Sinha Ray, Gauteng

L. Sun, Storrs, CT

L.-S. Turng, Madison, WI

J. Vlachopoulos, Hamilton

H. Xia, Sichuan

DE GRUYTER

ABSTRACTED/INDEXED IN Baidu Scholar · Chemical Abstracts Service (CAS): CAPlus; SciFinder · CNKI Scholar (China National Knowledge Infrastructure) · CNPIEC: cnpLINKer · Dimensions · EBSCO Discovery Service · Google Scholar · J-Gate · Journal Citation Reports/Science Edition · KESLI-NDSL (Korean National Discovery for Science Leaders) · MyScienceWork · Naver Academic · Naviga (Softweco) · Primo Central (ExLibris) · ReadCube · Scilit · SCImago (SJR) · SCOPUS · Semantic Scholar · Sherpa/RoMEO · Summon (ProQuest) · TDNet · WanFang Data · Web of Science: Current Contents/Engineering, Computing, and Technology; Science Citation Index Expanded · WorldCat (OCLC) · X-MOL · Yewno Discover

ISSN 0930-777X · e-ISSN 2195-8602

IPP is the official journal of the Polymer Processing Society, 810 E. 10th St. Lawrence, KS 66044, United States, pps@allenpress.com

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at <http://www.degruyter.com/ipp>

RESPONSIBLE EDITORS J.A. Covas, Institute for Polymers and Composites, Dept. of Polymer Engineering, University of Minho, 4804-533 Guimarães, Portugal, e-mail: jcovas@dep.uminho.pt; M. Kontopoulou, Department of Chemical Engineering, Queen's University Kingston, ON K7L3N6 Canada, e-mail: kontopm@queensu.ca; T. Kajiwara, Department of Chemical Engineering, Kyushu University, 744 Motooka, Nishi-ku, Fukuoka 819-0395, Japan, e-mail: kajiwara@chem-eng.kyushu-u.ac.jp

PUBLISHER Walter de Gruyter GmbH, Berlin/Boston, Genthiner Straße 13, 10785 Berlin, Germany

JOURNAL COORDINATOR Birgit Zoglmeier, De Gruyter, Germany, Tel.: +49 (0)89 76902426, e-mail: Birgit.Zoglmeier@degruyter.com

RESPONSIBLE FOR ADVERTISEMENTS Markus Kügel, De Gruyter, Rosenheimer Str. 143, 81671 München, Germany. Tel.: +49 89 76 902-424, e-mail: anzeigen@degruyter.com

© 2024 Walter de Gruyter GmbH, Berlin/Boston, Germany

TYPESETTING TNQ Tech Private Limited, Chennai, India

PRINTING Franz X. Stückle Druck und Verlag e.K., Ettenheim



Contents

Research Articles

Ganesan Brindha, Sujin Jose Arul, A. Haiter Lenin and
Jani Stanly Kochappa Premila

Investigation of the effects of water uptake on the mechanical properties of wood dust particle filled Prosopis Juliflora reinforced phenol formaldehyde hybrid polymer composites — 125

Ponnusamy Natarajan, Manoharan Mohanraj,
Murugesan Kumar and Selvaraj Sathish

Experimental investigation on mechanical and tribological analysis of pineapple leaf (*Ananas comosus*) and sisal (*Agave sisalana*) fibers reinforced hybrid epoxy composites — 134

Rafik Halimi, Fares Mohamed Laid Rekbi, Oussama Mimouni,
Özkan Özbek, Wahiba Djerir and Amine Rezzoug

An experimental study of weave pattern effect on the mechanical and dynamic behavior of composite laminates — 143

Michael Wolf and Dietmar Drummer

Structuring step dependent characteristics in joining using pin-like structures in the vibration welding process — 152

Xu Zhang, Zhaoqian Wang, Simiao Sun, Yiming Wang,
Zhi Wang and Hua Xie

Fabrication of expandable graphite and soybean oil-based synergistic modified polyurethane foam with improved thermal stability and flame retardant properties — 162

Pham Le Quoc, Dmitriy V. Anuchin, Roman O. Olekhovich,
Vera E. Sitnikova, Mayya V. Uspenskaya, Arina V. Kremleva and
Nguyen Hong Thanh

Fabrication of electrospun nanofiber from a blend of PVC and PHB — 176

Rajdeep Paul and Sumit Bhowmik

Investigation of mechanical and tribological performance of wood dust reinforced epoxy composite under dry, wet and heated contact condition — 186

Erik Steinmetz, Seamus Scanlon, Tyler Schneider and João Maia
Multi-layer co-extrusion blow molding — 202

Lucas Bogedale, Stephan Doerfel, Alexander Schrodtt and
Hans-Peter Heim

Predicting part quality early during an injection molding cycle — 210

Mst. Nasima Bagum, Md. Ahsan Habib,
Choudhury Abul Anam Rashed, Md. Mehedi Hasan Kibria and
Syeda Kumrun Nahar

Optimizing laser-based micro-cutting for PMMA microfluidic device fabrication: thermal analysis and parameter optimization — 220

Shengkai Li, Zhengyang Jin, Yutong Chen, Changpeng Shan and
Yan Xu

Preparation of PVDF/PVA composite films with micropatterned structures on light-cured 3D printed molds for hydrophilic modification of PVDF — 237

Akifumi Kurita, Yohei Yoshimura, Makoto Suzuki,
Hidetoshi Yokoi and Yusuke Kajihara

Evaluation of thermal contact resistance of molten resin-mold interface during high-thermal-conductivity polyphenylene sulfide filling in injection molding — 242

Tianlei Liu, Tianwen Dong and Bangxiong Liu
Effect of sinusoidal pulsating speed enhancement on the mixing performance of plastics machinery — 260

X. Roshan Xavier, K. Suderson, K. Viswanath and D. Velmurugan
Experimental investigation on the mechanical and wear behavior of epoxy/Indian almond/peepal hybrid composites — 273

Huimin Xue, Chun Li, Jiayang Sui, Lifei Liu, Xiaokun Ma,
Chenhong Liang and Weizhen Zhao

Exploration of the thermal and mechanical characteristics of polymethyl methacrylate-based copolymers: implications for wind turbine blades applications — 284