21st IAPRI World Conference on Packaging 2018

Packaging: Driving a Sustainable Future

Zhuhai, China 19-22 June 2018

Editor:

Zhi-Wei Wang

ISBN: 978-1-5108-7975-1

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by DEStech Publications, Inc. All rights reserved.

Printed by Curran Associates, Inc. (2019)

For permission requests, please contact DEStech Publications, Inc. at the address below.

DEStech Publications, Inc. 439 North Duke Street Lancaster PA 17602-4967 USA

Phone: (717) 290-1660 Fax: (717) 509-6100

info@destechpub.com

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA

Phone: 845-758-0400 Fax: 845-758-2633

Email: curran@proceedings.com Web: www.proceedings.com

Table of Contents

Organizers and Sponsors
Preface
Committees
Keynote Speakers
ACTIVE & INTELLIGENT PACKAGING
Research and Application Progress of Anti-counterfeiting Technology Based on Intelligent Material
Controlled Release of Potassium Sorbate from Pectin/Carboxymethyl Cellulose Active Films
Intelligent Film Based on Agar and Natural Dye from Arnebia Euchroma Root Extracts as a Visual Colorimetric Indicator
Major Technical Challenges to Overcome for Successful Exploitation of Active and Intelligent Packaging Technologies
Development of Alginate Based Edible Antifungal Film Containing Turmeric Essential Oil and Its Various Characterization
Release of Nanoparticles from Polymer Nanocomposites: Influence of Size and Others

Monitoring of Oxygen Using Colorimetric Indicator Based on Graphene/TiO ₂ Composite with First-order Kinetics of Methylene Blue for Modified Atmosphere Packaging
Research Progress of Anti-counterfeiting Based on Information Technology
Radio Frequency Identification in Packaging System: Applications and Issues
Design and Application of Double Active Integrated Fresh-keeping Packaging in Fresh Keeping for Banana
Application and Research of Vanadium Dioxide in Intelligent Temperature Control Package
DISTRIBUTION PACKAGING
A Simplified Method of Cushioning-Package Design Using Structural Corrugated Boards
Developing Test Schedules for Simulating Multiaxial Vibratory Motions of Delivery Vehicles
Investigation on Vibration Scuffing Life Curves
Influence of Jumping Phenomenon on Response of Package Under Random Vibration
Proposal of Simple Shock Testing Method for Protective Packaging
Analytical Model Construction of Natural Frequency for Paper Honeycomb Sandwich Plate—Block System

Influence of Relative Humidity on Energy Absorption of Honeycomb Paperboard
Panel in-Plane Stiffness from Vertical Strain Analysis in Box Compression Test
Damping and Cushioning Characteristics of a Polyjet 3D Printed Photopolymer Kelvin Foam
Comparison Study on Simulation Effect of Improved Simulation Methods for Packaging Random Vibration Test
Evaluation of Damage to Soft Fruits Due to Cumulative Fatigue Caused by Repetitive Shock: A Review
Reproduction of an Actual Transport Packaging Damage Based on Weighted Gaussians Decomposition
Decomposition of the Acceleration Levels Distribution of a Road Transport into a Sum of Weighted Gaussians: Application to Vibration Tests
Observation of Stacked Corrugated Paper Boxes' Motion Under Vibration Simulation
A Technique to Quantify Damage of the Flute Profile in the Mid-Plane of Corrugated Fibreboard
Numerical Analysis on Cushioning Performance of Wooden Transport Packaging System Based on DTM
In-plane Dynamic Cushioning Mechanics of Circular Honeycomb Cores

Preliminary Study on Numerical Simulation of Multi-layer Stacking Packages
LOGISTICS & SUPPLY CHAIN
Evaluation of Stability of Unit Loads for Tilt and Shock Events During Distribution
Ecommerce Retail: Challenges and Opportunities for CPG Related Distribution Packaging
The Influence of Stretch Wrap Containment Force on Load Bridging in Unit Loads
Investigation of Pallet Stacking Pattern on Unit Load Bridging 227 EDUARDO MOLINA, LASZLO HORVATH and MARSHALL WHITE
Stopping Process Effects over Stability Tests Results
PACKAGING DESIGN, ERGONOMICS & HUMAN FACTORS
Senior Friendly New Design Blister Package with the Function of Fall Prevention
Investigation of Innovative Dot Code with Press through Package (PTP) for Visually Impaired Patients
Toward Patient-centered Packaging Design: An Industry Perspective on Processes, Functions, and Constraints
Communicating Packaging Functionality for Food Waste Reduction Influences Consumer Choices

Integrating Key Figures and Consumer Benefits into a Packaging
Development Method
Packaging Value by Generation—Results of a Finnish Study 269 VIRPI KORHONEN and KERTTU-MAARIA YLIPOTI
The Influence of Packaging Design Features on Consumers' Purchasing & Recycling Behaviour
The Universal Packaging Design on Foreigner Perception in the Case Study of Thai Souvenir
Application of Augmented Reality in Product Package with Two-dimensional Code
An Anti-counterfeiting Method of Pharmaceutical Packaging Based on Encrypted Quick Response Code
Literature Review on the Role of Packaging in Marketing
Research on Brand Packaging Design of Chinese Women's Cosmetics
Cross-boundary Vehicle Car Door Modeling Analysis and Simulation Verification Based on Comfort
Analysis of the Effect of Correlated Color Temperature of LED Light Source about the Natural Degree of Vegetables
Research on the Competitiveness of Packaging Cultural and Creative Industry from the Regional Perspective
MEDICAL, COSMETIC & PHARMACEUTICAL PACKAGING
Research on the Packaging of Male Skin Cleaning Products Based on Eye-movement Experiment

PACKAGING PRINTING & GRAPHICS

Influence of Hardcopy Types on Extraction Quality of Holographic Watermark
YONG XIE, LIN LIU, KAI-LI WANG, YA-FANG GAO, SHI-HAO ZHANG and HAI-LONG BAI
Color Matching Method of Three Wavelengths Based on Density Measurement
A Color Image Watermarking Algorithm Based on Sparse Representation
The Study of the Quality Test and Control Technology of the Digital Printing
PACKAGING FOR FOOD & AGRICULTURE
Mechanical and Barrier Properties of Bio-based Antimicrobial Nanocomposite Films for Food Packaging Applications
Use of Monte Carlo Simulation in Yogurt Logistic Management System for Quality Prediction
Prediction of Two Isothiazolinone Biocides Migrating from Coated Paper into Liquid Food Simulants and Assessment of Human Exposure
Migration of Irgafos 168 and its Degradation Products from Nanocopper/Polypropylene Composite Films and its Prediction by AKTS-SML Software
Effect of Compound Fresh-Keeping Liquid on Fresh Corn Preservation
Evaluating Food Packaging Based on OWA Operators and Distance Measures under Hesitant Fuzzy Linguistic Environment

Effect of Ozone on Prolonging the Shelf Life of Mango and Broccoli During Cold Storage and Distribution
Thymol Fumigation in Combination with Modified Atmosphere Packaging as an Alternative to SO ₂ Treatment on the Decay Prevention and Pericarp Browning of Longan Fruit
Molecular Dynamics Simulation of Nano-ZnO Cluster' Diffusion in Polyethylene
Usability of Food and Beverage Packs in Hospital—Experiences from the Renal Ward470 ALISON BELL, KAREN WALTON and KELLY LAMBERT
Influence of the Parameter of Micro-holes and Temperature on the Gas Transmission Rate of Micro-perforated Film
Influence of Coating Time on the Preservation Performance of Chitosan/Montmorillonite Composite Coating on Tangerine Fruits
Predicting the Shelf-life of Hurood Cheese Using Near Infrared Spectroscopy Based on RBF Neural Networks
Effect of Compound Preservative on Fresh-Keeping of Fresh-Cut Water Chestnut
The Analysis of Mineral Oil Saturated Hydrocarbons in Local Paper Food Packaging Materials
Preparation and Application of Antibacterial Coatings Based Nanometer TiO ₂
Study on Ecological Coating Film Packaging Paper for Food Packaging531 QI GUO, JUN-YAN HUANG, QING-HUA GAO and CHONG-CHONG JIA

Effect of Carbon Dioxide Modified Atmosphere Packaging (MAP) for Extension of Shelf-life of Chilled Freshwater Shrimp 540 XIN-XIAO ZHANG, HAI-HONG WU, YONG-ZHI ZHU, HUAN BIAN and WEI-MIN XU
Actively Controlled High Carbon Dioxide Concentration Container for Improved Preference and Preservation of Kimchi, a Korean Fermented Vegetable
Quantitation Analysis of Nonylphenol and Octylphenol in the Food Simulants
The Effect of Packaging Materials and Storage Condition On the Quality of Jasmine Rice
PACKAGING FOR HAZARDOUS & DANGEROUS GOODS
Drop Performance of Dangerous Goods Packages in the Aspect of Parcel Delivery Standards
Influence of the Length of the Internal Sleeve Valve on the Release of Powdery Substances from the Closures of Valved Bags for Dangerous Goods
PACKAGING MACHINERY & SYSTEMS
Research on Fault Feature Extraction Method Based on SVM of Printing Machine
Fault-tolerant Control for Demagnetization Faults in Permanent Magnet Synchronous Machine
PACKAGING MATERIALS
Experimental Investigations on Three-point Bending Fatigue of Corrugated Board

A Systematic Optimization Method for Plastic Injection Molding Operational Parameters
JIAMING LI, HAE CHANG GEA and EUIHARK LEE
Water-free Bonding of Corrugated Board
Preparation and Mechanical Properties of Modified Nanocellulose/PLA Composites from Cassava Residue
High Barrier Layer Though Dielectric Barrier Discharge (DBD) Plasma Assisted Atomic Layer Deposition Alumina at Atmospheric Pressure on Polylactic Acid Web
Effects of Surface-Modified Nano-TiO ₂ /Ag ⁺ on the Properties of HDPE Plastic Sheet
Influence of Urea and Sorbitol on Packaging Properties of Biodegradable PVA/Hemicellulose Blend Films
Synthesis of PEDOT/CB Composites via in Situ Chemical Oxidative Polymerization and Application in Conductive Ink
Analysis of the Thermal Behavior of Poly(lactic acid)/ Montmorillonoid (I.34TCN) Composites
Synthesis and Characterization of Functionalized Graphene/Low Density Polyethylene Nanocomposite Films
Comparative Study of Stability of Cellulose-based Aqueous Pulp Foam from Various Surfactants
Synthesis of Eu _{1-x} Gd _x (TTA) ₃ Phen Complexes and Preparation of Water-based Fluorescent Anti-counterfeiting Ink

Crystallization, Mechanical and Barrier Properties of PA6-66 Films under Constrained Uniaxial Stretching
Highly Compressible Ultra-Light Cellulose/Graphene Aerogel Fabricated by Bidirectional Freeze Drying for Selective Oil Absorption
Effect of Biaxial-Simultaneous Stretching Conditions on OTR and CO ₂ Permeation of CO ₂ Laser Perforated Poly(lactic acid) Film
Selection of Cushioning Packaging Materials Based on the Improved Entropy Weight Grey Correlation
Mechanical Properties and Anaerobic Biodegradation of Thermoplastic Starch/Polycaprolactone Blends
Anaerobic Biodegradation of Bioplastic Packaging Materials730 SWATI HEGDE, ELIZABETH DELL, CHRISTOPHER LEWIS, THOMAS A. TRABOLD and CARLOS A. DIAZ
Influence of Aroma Compound Sorption on the Thermal Properties of Biopolymer Films
The Migration Study of Plasticizer in PVC Food Packaging Film under Microwave Condition
Study on Preparation and Performance of Saturated Polyester Coating
Viscoelastic Properties of Bamboo Fiber and Its Polymer Composites Revealed with Nanodynamic Mechanical Analysis

Study on the Influence of Ultrasound to Extract Vinasse Cellulose
Fast Preparation of a Superhydrophobic Surface with Anti-corrosion Property on a Copper Foil
Effects of Surface Modification on the Properties of Polyamide 6-66/Montmorillonite Nanocomposites
Effect of Solution Aging on Mechanical Properties of Poly(ethylene terephthalate)
Study on the Structure of Poly(ethylene terephthalate) with Thermal-oxidative Aging
PACKAGING SUSTAINABILITY
Packaging and Logistics Sustainability for the 21st Century 817 S. PAUL SINGH, KEVIN D. SMITH, JAY SINGH and NICHOLAS RUTLEDGE
Modeling Fluid Milk Waste and the Role of Packaging within the Home
Implementing Sustainability Considerations in Packaging
Design Curricula
The Dutch Sector Innovation Plans for Sustainable Packaging: A First Reflection
Sustainability Priorities Across the Strategic and Operational Level in Packaging Development
Analysis on Recycling Mode of Pesticide Packaging Waste at Home and Abroad—Based on Chinese Perspective

Evaluation Method of Sustainable Indicator Based on DEA Model	9
Study on the Development Mode of China Green Packaging Industry from the View of Circular Economy	′2
Comparative Study of Life Cycle Assessment on Two Flexible Packaging Lamination Processes	'9
PACKAGING STANDARDS & LEGISLATION	
A Study on Packaging Law and Regulation System in China 88 WEI TAN and QI-HAO BAI	9
Author Index89	8