

Characterization of ZnO/polyhydroxyalkanoate nanocomposites for packaging applications fabricated using melt-processing and centrifugal fiber spinning

Supplementary material

BUNTINX, Mieke & VANHEUSDEN, Chris (2022) Characterization of ZnO/polyhydroxyalkanoate nanocomposites for packaging applications fabricated using melt-processing and centrifugal fiber spinning. In: Polymer Science and Composite Materials Conference, Rome, Italy, 3rd to 5th October 2022.

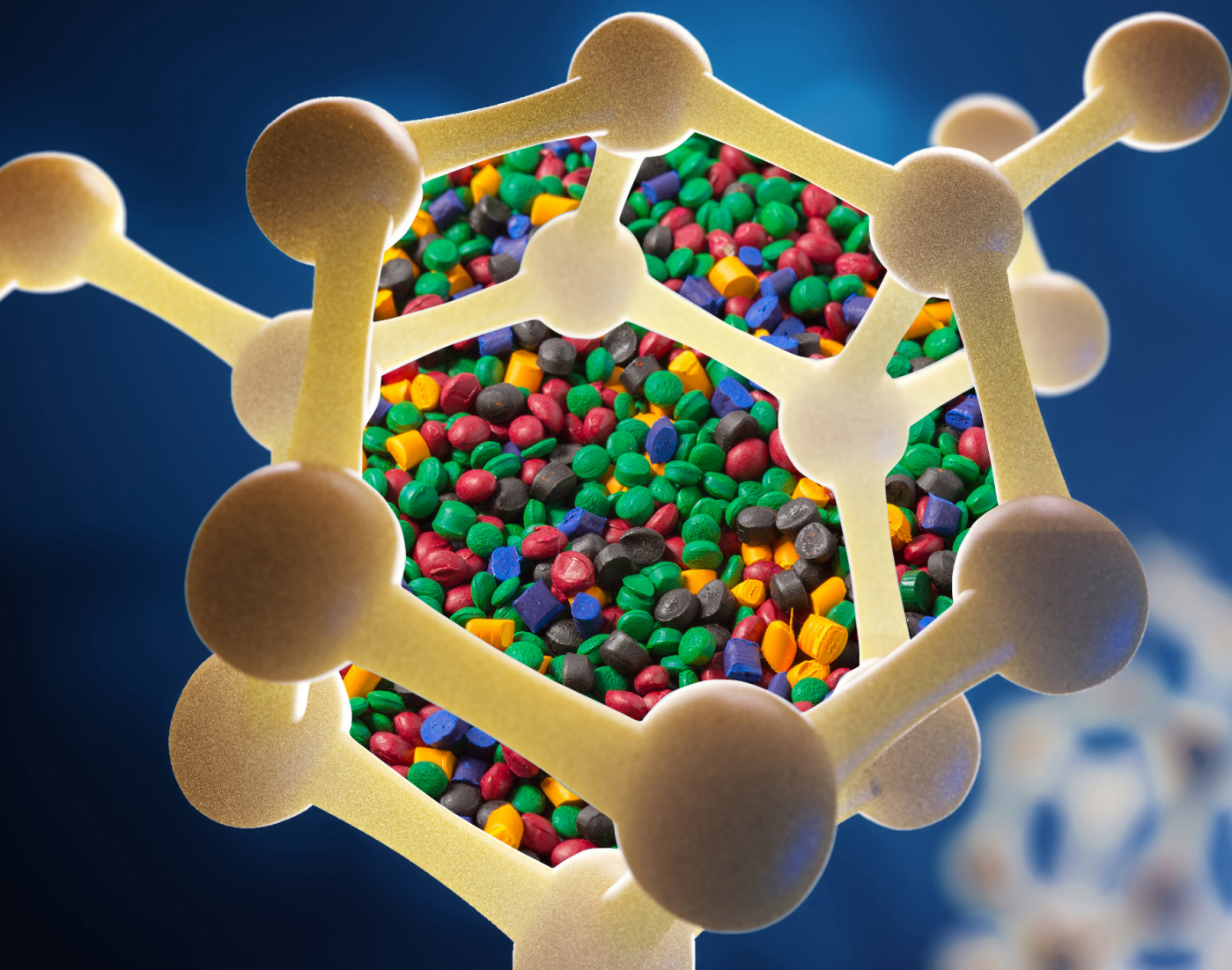
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3rd International Conference on Polymer Science and Composite Materials

October 03-04, 2022 | Rome, Italy
October 05, 2022 | Virtual

Venue:
Crowne Plaza Rome – St. Peter's,
Via Aurelia Antica 415, Rome, 00165, Italy



Join Zoom Meeting:
<https://us06web.zoom.us/j/81345623638?pwd=OStUckhqL1BDN1pYTk9TaDhPR2g1QT09>

In-Person
 Meeting ID: **813 4562 3638**
 Passcode: **927704**

08:30-08:55 On Site **Registrations**
 08:55-09:00 Opening Ceremony

@ADRIANO

Moderator: Ilara Fratodi, University Sapienza of Rome, Italy

PLENARY TALKS
(25 MINUTES+ 5 MINUTES Q&A)

09:00-09:30 **Jute Cellulose Biopolymer as an Alternate for Single-use Plastic: Real-life Examples**
Mubarak Ahmad Khan, Atomic Energy Res. Establishment, Bangladesh

09:30-10:00 **Polymers of Intrinsic Microporosity: Why They are so Interesting as Membrane Materials, but so Complicated Too**
Johannes C. Jansen, CNR-ITM, Italy

INVITED TALKS
(20 MINUTES+ 5 MINUTES Q&A)

10:00-10:25 **Fire Retardance in Polymer Materials**
Giovanni Camino, Politecnico di Torino, Italy

10:25-10:50 **Using Polymer Physics to Enable Stemcell Differentiation**
Miriam Rafailovich, Stony Brook University, United States

10:50-11:15 **Tuning Optical and Structural Properties with Gold Nanoparticles/P3HT Blends**
Ilaria Fratoddi, University Sapienza of Rome, Italy

11:15-11:35 **Coffee Break**

@Foyer

ORAL PRESENTATIONS
(15 MINUTES+5 MINUTES Q&A)

Session: Nanomaterials, Nano Structured Materials & Synthetic Polymers

Chair: Ilara Fratodi, University Sapienza of Rome, Italy

11:35-11:55 **Carbon Black Functionalization as Efficient Tool to Improve the Thermomechanical Stability and Crystallization Rate of Biodegradable Polyester Nanocomposites**
Maria Rosaria Acocella, University of Salerno, Italy

11:55-12:15 **Development of Zn/Polyhydroxyalkanoate Nanocomposites for Packaging Applications Fabricated Using Melt-processing and Centrifugal Fiber Spinning**
Mieke Buntinx, University of Hasselt, Belgium

12:15-12:35 **Adsorptive Behavior of HA520E-Fe for Simultaneous Nitrate and Phosphate Removal from Aquaculture Wastewater Using Combination of MXRF, EXAFS, XPS and DFT Techniques**
Surapol Padungthon, Khon Kaen University, Thailand

12:35-12:55 **Organosilicon Coatings Prepared by Plasma-enhanced Chemical Vapor Depositiona**
Stepanka Kelarova, Masaryk University, Czech Republic

12:55-13:45 **Lunch Break**

Session: Biodegradable and Biomedical Polymers Bio-Polymers in Pharma & Medicine

Chairs: **Roberta Censi**, University of Camerino, Italy
Maria Rosaria Acocella, University of Salerno, Italy

- 13:45-14:05 **Investigation of Poly P-Dioxanone as Promising Biodegradable Polymer for Short-term Medical Application**
Stefanie Ficht, Technical University of Munich, Germany
- 14:05-14:25 **Strategies to Improve the Antibacterial Performance of 3d Printed Poly(Ether-Ether-Ketone) Based Nanocomposites for Dental Applications**
Graciela Elizabeth Morales, Applied Chemistry Research Center, Mexico
- 14:25-14:45 **Nanoparticles and Nanofibers Based on Poly(Methyl Methacrylate-Co-Methacrylic Acid) for the Development of Ph-Responsive Drug-Loading Systems**
Javier Enriquez, Applied Chemistry Research Center, Mexico
- 14:45-15:05 **Quadratic ODE and PDE Models of Drug Release Kinetics from Neat and Blended Biodegradable Polymer Films**
Michel Delfour, CRM, Universite de Montreal, Canada
- 15:05-15:25 **Influence of Biopolymer Characteristics and Surfactants in the Microencapsulation of Essential Oils**
Arianne Lopez, Intexter (UPC), Spain
- 15:25-15:45 **Polysaccharide-based Capsules for Potential Treatment of Coronavirus Infection**
Viktoria Milkova, Bulgarian Academy of Sciences, Bulgaria
- 15:45-16:05 **Antimicrobial Activity and Mineralization Potential of Polyacrylamide – Silver Decorated Carbon Nanotubes Composites**
Andrada Serafim, University Politehnica of Bucharest, Romania
-
- 16:05-16:25 **Coffee Break** @Foyer
-
- 16:25-16:45 **MRI Study of Plasma-synthesized Pyrrole-derived Polymer Evolution Implanted in Rhesus Monkey Spinal Cord Transection Model**
Axayacatl Morales-Guadarrama, Universidad Autonoma Metropolitana, Mexico
- 16:45-17:05 **Acute Response Evaluation of a PLA-pPPy/I Scaffold Implant by MRI in a Rat Spinal Cord Transection Model**
Diana Maria Osorio Londono, Universidad Autónoma Metropolitana, Mexico
- 17:05-17:25 **Numerical Approach for the Determination of Global Mechanical Properties of a Flame Retardant Class Material (FR4)**
Ange ATINTOH, CEA Tech/LEM3, France

----- End of Day - 1 -----

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08:45-09:00 Opening Remarks

In-Person

Meeting ID: **813 4562 3638**

Passcode: **927704**

@ADRIANO

ORAL PRESENTATIONS (15 MINUTES+5 MINUTES Q&A)

Session: Composites and High-Performance Materials

Chair: **Gardette Jean-Luc**, ICCF/CNRS-University Clermont Auvergne, France

- | | |
|-------------|---|
| 09:00-09:20 | Potentiality of Flax Gum-filled Epoxy Resin for Composite
Bastien WATBLED , Université du Littoral Côte d'Opale, France |
| 09:20-09:40 | Design and Fabrication of Green Nanocomposites of Poly(N-vinyl pyrrolidone)
Ayşe Cagil Kandemir , TED University, Turkey |
| 09:40-10:00 | Diazirine-based Universal Polymer Crosslinkers: Applications in Material Strengthening and Composite Material Fabrication
Jeremy Wulff , University of Victoria, Canada |
| 10:00-10:20 | Sustainable Polybenzoxazines: Upcoming Class of Phenolic Polymers
Bimlesh Lochab , Shiv Nadar University, India |
| 10:20-10:35 | Coffee Break <div style="float: right;">@Foyer</div> |
| 10:35-10:55 | Elaboration of Composites Based on Polypropylene or High Density Polyethylene and Cork Wastes
Svetlanat Petlitckaia , University of Corsica, France |
| 10:55-11:15 | Magnetic Field Distribution in Moulds for Injection of Hard Ferrite-based Magnets
Duarte Dias , CeNTI, Portugal |
| 11:15-11:35 | P(pressure)-T(Temperature) Path Based Control Technology to Achieve High Weight Reduction and Foaming Quality for Thermoplastic Polyurethane (TPU)
Ching-Te Feng , Chung Yuan Christian University, Taiwan |
| 11:35-11:55 | Control of the Final Morphology of Epoxy-Thermoplastic Blends
Anne Coloigner , Solvay / CNRS / Mateis, France |

**Session: Polymer Degradation & Stability
Sustainable Polymers**

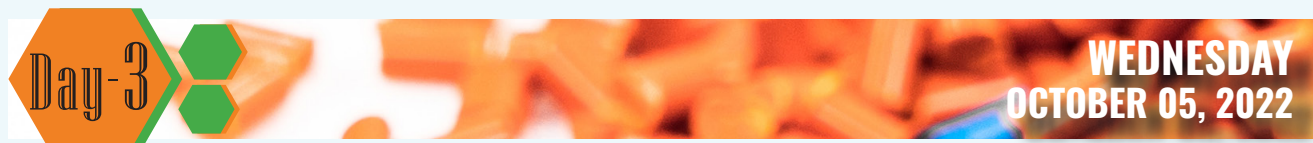
Chair: **Givanni Camino**, Politecnico di Torino, Italy

- | | |
|-------------|--|
| 11:55-12:15 | Weathering of Polymers: Investigations from Molecular Scale Towards Material Properties
Gardette Jean-Luc , ICCF/CNRS-University Clermont Auvergne, France |
| 12:15-12:35 | Multiscale Analysis of the Photodegradation of Polymer Blends and Composites
Sandrine Therias , ICCF/CNRS-University Clermont Auvergne, France |
| 12:35-12:55 | The Use of Oxidized Regenerated Cellulose in Breast Surgery
Gianluca Franceschini , Fondazione Policlinico Universitario Agostino Gemelli IRCCS Rome, Italy |
| 12:55-13:45 | Lunch Break |
| 13:45-14:05 | Ordering in Thin Block Copolymer Films Induced by In-Plane Alternating Electric Field
Yaroslav V. Kudryavtsev , Russian Academy of Sciences, Russia - Online |
| 14:05-14:25 | Self-Assembly of Diblock Copolymers with Thermoresponsive Blocks in Solution
Elena Govorun , Moscow State University, Russia - Online |

14:25-14:45	Mechanisms of Luminescence in Lanthanide Materials: A Crucial Role of Metal-Ligand Covalency Liviu Chibotaru , KU Leuven, Belgium - Online
14:45-15:05	Plasma Pen in Surface Modification and Crosslinking of Natural Polymers Renata Antoun Simao , Federal University of Rio de Janeiro PEMM/COPPE/UFRJ, Brazil
15:05-15:25	Utilization of Bio-sourced Terpene Monomers to Produce More Sustainable Elastomers Ramon Diaz de Leon , Research Center for Applied Chemistry, Mexico
15:25-15:45	A Study of Thermal and Mechanical Properties of Recycled Polypropylene Obtained from Packaging Waste Tatiana Zhiltsova , University of Aveiro, Portugal
15:45-16:05	Chemical and Physical Aging Diglycidlether of Bisphenol A (DGEBA) Epoxy Thermosets and Predicting Structural Implications of the Aging Jamie Kropka , Sandia National Laboratories, United States
16:05-16:25	Coffee Break @Foyer
16:25-16:45	The Role of Electrostatic Interactions in the Mechanics of Solids-state Biopolymers Suellen Pereira Espindola , Delft University of Technology, Netherlands
16:45-17:05	Design and Manufacturing Process of an Unmanned Aerial Vehicle with Polylactic Acid (PLA) Cevher Yusuf İnan , Turkish Aerospace Industry, Turkey
17:05-17:25	Polylactic Acid (PLA) based Avionics Table Design Optimization for Unmanned Aerial Vehicle (UAV) with Additive Manufacturing Technique Ecem Baskin , Turkish Aerospace Industry, Turkey
17:25-17:45	Exploration of the Adsorption Reduction of the Pigment Aggregates Strength Under the Effect of Surfactants in Water-dispersion Paints Aida Lutsenko , North Kazakhstan State university named after M.Kozybayev, Kazakhstan
18:00-19:00	Poster Presentations and Drinks
P-01	Influence of Yarn Structure on Biodegradability Ivana Schwarz , University of Zagreb Faculty of Textile Technology, Croatia
P-02	Hydrazone Bond-containing Di-Block Copolymers as Bio-responsive Vectors for Gene Delivery Eliska Hrda , Institute of Macromolecular Chemistry, Czech Academy of Sciences, Czechia
P-03	Distinctions of Soil Temperature and Humidity Beneath Different Nonwoven Mulch Raw Materials Dragana Kopitar , University of Zagreb Faculty of Textile Technology, Croatia
P-04	Biodegradability of Hemp Fibres Conditioned by Soil Type and Conditions Ivana Schwarz , University of Zagreb Faculty of Textile Technology, Croatia
P-05	Fabrication and Characterisation of Nanocomposites Based on Green Methods Giuseppe Greco , Università del Salento, Italy
P-06	Reduce the Density with Enhanced Flame Retardancy of the Urethane-Silicone Hybrid Foam by Application of Physical Blowing Agent Asell Kim , Inha University, South Korea
P-07	Synthesis of Crosslinker Containing Fluorine to Maintain Fluorine Content During Fluorosilicone Curing Lee Chung Soo , Inha University, South Korea
P-08	Effects of Fluorosilicone Rubbers on Electrochemical Performance and Durability of Proton Exchange Membrane Fuel Cell Yoo Lim Sim , Inha University, South Korea

- P-09 **Investigation of Resin Functionality Effect on Powder Coating Formulations**
Aysenur Ozdemir, Bogazici University, Turkey
- P-10 **Investigation of Supramolecular Interactions Based on Polyester Chain Structure**
Goknil Susler, Bogazici University, Turkey
- P-11 **Enhancing the Fire and Smoke Safety of Bio-based Rigid Polyurethane Foam via a Reactive Flame Retardant and Silica Aerogel Powder**
Yunjun Yan, Huazhong University of Science and Technology, China
- P-12 **Evaluation of the Method for Determining Woven Fabric Roughness**
Snjezana Brnada, University of Zagreb Faculty of Textile Technology, Croatia
- P-13 **Radiation Sensitivity of Adhesives and Potting Materials for Space Environments**
Jamie Kropka, Sandia National Laboratories, United States
- P-14 **Preparation of Transparent Glass-fiber Reinforced Epoxy Matrix Composites and their Optical Characteristics**
Dong Kyu Kim, Korea Carbon Industry Promotion Agency, South Korea
- P-15 **Effect of Accelerated Thermal Aging on Dispersion Stabilities of Fine-denier Silicone Emulsions for Carbon Fibers**
Jae-Yeon Yang, Korea Carbon Industry Promotion Agency, South Korea
- P-16 **Comparison of the Characteristics of Recycled Carbon Fibers/Polymer Composites by Different Recycling Techniques**
Kwan-Woo Kim, Korea Carbon Industry Promotion Agency, South Korea
- P-17 **Superporous Sodium Alginate Microbeads for Mesalazine Release Used in the Treatment of Inflammatory Bowel Diseases**
Adi Ghebaure, University POLITEHNICA of Bucharest, Romania
- P-18 **Effect of the Particle Size and the Layer Thickness of GNP Filler on the Dielectric Properties and Actuated Strain of the GNP-PDMS Composites**
JinSung Seo, Inha University, South Korea

----- End of Day - 2 -----



WEDNESDAY
OCTOBER 05, 2022

Virtual Presentations (Zoom Meetings)
Time Zone: CEST (GMT +2)

Join Zoom Meeting:

<https://us06web.zoom.us/j/81345623638?pwd=OStUckhqL1BDN1pYTk9TaDhPR2g1QT09>

Meeting ID: **813 4562 3638**

Passcode: **927704**

VIRTUAL SESSION

CEST (Local Time: Italy)

KEYNOTE TALK

09:00-09:40 **Circular Economy: New Opportunities in Sustainable Nano Materials and Polymer Bio-Nanocomposites**
Sabu Thomas, MG University, India

ORAL PRESENTATIONS

09:40-10:00 **Multi-functionalities on the Moth-eye Surfaces**
Yoshihiro Uozu, Mitsubishi Chemical Corp., Japan

10:00-10:20 **Harnessing the Pseudo-Doping Effect of Hfp/Tfe Solvent System – Physico-Chemical and Biological Studies**
Fabio FF Garrudo, Instituto de Telecomunicacoes and Instituto Superior Tecnico, Portugal

10:20-10:40 **Synthesis and Mechanical Properties of Thermoplastic Cellulose Esters**
Tessei Kawano, Kyushu Institute of Technology, Japan

10:40-11:00 **Superabsorbent Polymer (SAP) Solubilized Instantly by Decrosslinking with Sodium Hypochlorite**
Nobuhiro Kihara, Kanagawa University, Japan

11:00-11:20 **Esterification of Microcrystalline Cellulose with Fatty Acid Chain via Mechanochemical-Assisted Method**
Jacqueline Lease, Kyushu Institute of Technology, Japan

11:20-11:40 **Photocurable Bio-based Acrylate Coatings : Processing and Performance**
Pieter Samyn, Smart Coatings LAB, Diepenbeek, Belgium

11:40-12:00 **Electroconductive Platforms for the Electrical Stimulation of Stem Cells – An Approach to the Design of Artificial Human Tissue Microenvironments**
Fabio FF Garrudo, Instituto de Telecomunicacoes and Instituto Superior Tecnico, Portugal

E-POSTER PRESENTATION

12:00-12:15 **Sustainable Polypropylene Light-weight Dripline Fittings**
Georgia Papaparaskeva, Elysee Irrigation Ltd, Cyprus

12:15-12:30 **Fabric-elastomer Composites as a Basic Component for Protection Against CBRN Agents - Preliminary Results**
Bogumila Delczyk-Olejniczak, Institute of Security Technologies "MORATEX", Poland

----- **End of Day - 3** -----

THANK YOU SEE YOU AT POLYMERCONNECT-2023



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