



**The 8th Global Conference on Polymer  
and Composite Materials  
(PCM 2021) & (GNN 2021)**

**The 3rd International Conference on  
Graphene and Novel Nanomaterials**

**Conference Program**

**August 16-19, 2021**

**ONLINE via MS Teams**

**China Standard Time (UTC/GMT+8:00)**

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# Part I Conference Schedule Summary

Monday, August 16, 2021

MS Teams Link: <http://www.academicconf.com/teamslink?confname=pcm2021>

09:30-12:00 MS Teams Online Conference Testing

14:00-17:00 MS Teams Online Conference Testing

Tuesday, August 17, 2021

MS Teams Link: <http://www.academicconf.com/teamslink?confname=pcm2021>

## WELCOME SPEECH (PCM 2021)

08:30-08:35 *Prof. Esteban Broitman, SKF Research & Technology Development, the Netherlands*

## WELCOME SPEECH (GNN 2021)

08:35-08:40 *Prof. Tingkai Zhao, Northwestern Polytechnical University, China*

08:40-09:25 **Keynote Speech 1: A Microtwist Theory on Polarized Mechanical Metamaterials**

*Prof. Guoliang Huang, University of Missouri-Columbia, U.S.A*

09:25-10:10 **Keynote Speech 2: Application of Waste Plastics to Enhance Sustainability of Construction**

*Prof. Elham Fini, Arizona State University, U.S.A*

10:10-10:25 **BREAK**

10:25-11:10 **Keynote Speech 3: Electrical and Mechanical Properties of Modified Polylactic Nanocomposites for Advanced Applications**

*Prof. Sahrin Ahmad, Universiti Kebangsaan Malaysia, Malaysia*

11:10-11:55 **Keynote Speech 4: Application of Carbon-Based Nanomaterials as Drug Delivery Systems**

*Prof. Josef Jampilek, Palacky University in Olomouc, Czech Republic*

11:55-12:40 **Keynote Speech 5: Novel Insights in the Mechanical Characterization of Polymers, Composites and Nanomaterials by Nanoindentation**

*Prof. Esteban Broitman, SKF Research & Technology Development, The Netherlands*

12:40-13:30 **BREAK**

13:30-19:35 **Oral Session 1\_Biomedical Materials and its Applications**

**Wednesday, August 18, 2021**

*MS Teams Link: <http://www.academicconf.com/teamslink?confname=pcm2021>*

08:30-12:55 Oral Session 2\_ Environmental-Friendly Materials

12:55-14:00 **BREAK**

14:00-19:20 Oral Session 3\_ Nano-Materials

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19:20-19:25 Poster Presentations

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**Thursday, August 19, 2021**

*MS Teams Link: <http://www.academicconf.com/teamslink?confname=pcm2021>*

08:30-12:25 Oral Session 4\_ Fibers and Multi-Functional Polymers

12:25-14:00 **BREAK**

14:00-19:15 Oral Session 5\_Novel Applications

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## Part II Keynote Speeches

### Keynote Speech 1: A Microtwist Theory on Polarized Mechanical Metamaterials



*Prof. Guoliang Huang*

*James C. Dowell Professor*

*Department of Mechanical and Aerospace Engineering*

*University of Missouri-Columbia*

*U.S.A*

**Biography:** Dr. Guoliang Huang is currently a James C. Dowell Distinguished professor of mechanical and aerospace engineering at University of Missouri-Columbia. He received his Ph.D. degree from University of Alberta, Canada, in 2004. Dr. Huang's research interests include wave propagation and mechanics in elastic/acoustic metamaterials and structural materials, topological and active mechanics, structural dynamics, vibration and sound wave mitigation. Dr. Huang's research has been funded by NSF, Air Force of Scientific Research, Army Research Office, Office of Naval Research, DURIP, Department of Energy, NASA, and major industries. He has authored one book, 4 book chapters and more than 130 journal papers (include Nature Reviews Materials, Nature Communications, Proceedings of the National Academy of Sciences (PNAS), Advanced Materials, Physical Review Letters, Journal of Mechanics and Physics of Solids, et al.).

**Abstract:** Recently, it was discovered that geometric distortions in isostatic Kagome lattices triggered zero mode distributions that overpopulate some edges of a finite sample while deserting the opposite edges. This polarization phenomenon leads to an apparent static non-reciprocity and can be used to develop a new class of Polarized Mechanical Metamaterials whose behavior is soft on one side and hard on the opposite side. The conventional theory of elasticity cannot account for these effects. In this talk, we present a new theory of elasticity capable of capturing the microstructural mechanisms in the metamaterial by which polarization emerges or fades on a macroscopic scale, and explore unusual static and dynamics behavior that can be obtained and controlled with this class of metamaterials.

## Keynote Speech 2: Application of Waste Plastics to Enhance Sustainability of Construction



*Prof. Elham Fini*

*School of Sustainable Engineering and the Built Environment  
Arizona State University  
PO Box 873005, U.S.A*

**Biography:** Dr. Ellie Fini is an Associate Professor at Arizona State University, an Invention Ambassador at the American Association for the Advancement of Science, a Fulbright Scholar of Aalborg University of Denmark, a Senior Sustainability Scientist at the Global Institute of Sustainability and Innovation and the Director of the Innovation Network for Materials, Methods and Management. Her research focuses on the production, characterization and atomistic modelling of sustainable novel materials for use in construction. In addition to more than 200 scholarly publications and numerous invited talks, her research has been featured by BBC Women in STEM, Science Nation, Wired Magazine, and CNBC. She is editor of the ASCE Journal of Materials and Journal of Resources, Conservation & Recycling. She has served as the president of ASCE's North Carolina Northern Branch and a program director of the National Science Foundation. Her achievements have been recognized via multiple awards including an NSF CAREER award, ASEE Gerald Seeley award, BEYA Emerald STEM Innovation award, NC BioTech Research Excellence award and WTS Innovative Transportation Solution award to name a few.

**Abstract:** This paper evaluates the efficacy of a hybrid treatment for waste-plastic granules using a bio-oil and carbon coating to make the plastic granules compatible with asphalt binder to both promote environmental sustainability and enhance pavement performance. The bio-oil used in this study was derived from waste vegetable oil, and carbon coating was performed using graphene nanoparticles. To evaluate the extent of surface treatment of plastic granules, the formation of surface functional groups was tracked using Fourier transform infrared spectroscopy and Raman spectroscopy, and their surface energy before and after treatment was measured using inverse gas chromatography. In addition, the thermo-mechanical properties and phase separation of asphalt binders containing treated-plastic granules were studied. The study results showed the total surface energy of plastic was increased by 49% after treatment-promoting interactions between plastics and binder. This in turn led to an 86% reduction in the separation of plastics and binder. The viscosity of binder containing plastics increased significantly; however, the binder with treated plastic had 56% lower viscosity than the binder with non-treated plastic. Binder with treated plastic had increased resistance to fatigue cracking, as evidenced by a significant reduction in  $G^*\sin(\delta)$  compared to the binder with non-treated plastic. Low-temperature properties were also improved for binder with treated plastic compared to binder with non-treated plastic. Finally, the moisture-induced shear-thinning index showed that the presence of treated plastic granules in binder made the binder less susceptible to moisture.

**Keywords:** waste plastic, polyethylene-terephthalate, moisture susceptibility, waste vegetable oil, asphalt binder



## Keynote Speech 3: Electrical and Mechanical Properties of Modified Poly(lactic acid) Nanocomposites for Advanced Applications



*Prof. Dr. Sahrim Ahmad*

*School of Applied Physics  
Faculty of Science and Technology  
Universiti Kebangsaan Malaysia, Malaysia*

**Biography:** Professor Dr Sahrim Ahmad obtained his PhD from University of Loughborough, United Kingdom in 1988. He is an expert in the field of magnetic, nanocomposites and advanced materials. He has completed more than 50 research projects and consultancy work as a leader and co-researcher. His work on novel radar absorbing materials (RAM) subjected to transverse electromagnetic (TEM) has been successfully developed. His team managed to produce products that offered proper characteristics for handling, flexibility and lightweight, meeting requirement for various applications. He has published more than 200 papers in various journals and supervised more than 50 PhD students. Dr Sahrim was former Dean of Faculty Science of Technology for more 7 years and Editor in Chief of Journal Sains Malaysiana (ISI/WOS). He has won many innovation awards at international level.

**Abstract:** Although poly(lactic acid) (PLA) is among widely used biodegradable polymers, it has limited applications due to its inherent brittleness, low elongation at break and toughness. Blending with natural rubber (NR) and epoxidised natural rubber (ENR) seems to be a promising alternative, as both materials are derived from renewable resources. In this work, we report a melt blend of poly(lactic acid)(PLA)/epoxidized natural rubber (ENR) with liquid natural rubber (LNR). The LNR was synthesized by a photochemical degradation technique and used as a compatibilizer in the PLA/rubber binary blending systems. In this study also we were prepared various types of nanocomposites by incorporating different types of nanoparticles in the modified PLA matrix such as graphene nanoplatelets (GNP), magnetite and cellulose nanofibers. Natural rubber was melt blended with poly(lactic acid) in an internal mixer. Liquid epoxidised natural rubber (LENR) was used as a compatibiliser in the binary blending system of thermoplastic natural rubber (TPNR). It was found that the addition of LENR compatibiliser improved the stress at break and Young's modulus in the blend system of 40/60 PLA/rubber compositions. The increase in stress at break and Young's modulus were associated with the ability of LENR to compatibilise the PLA/NR binary blends. The PLA/LNR/PANI nanocomposites filled with GNP was prepared via melt blending method using an internal mixer. The contents of the GNP fillers were varied from 0.2 weight% (wt%) to 1.0 wt%. The findings showed positive properties improvement with the addition of GNP at low content in the polymer matrix. The results of tensile, impact and thermal stability properties indicated the optimum content was achieved at 0.4 wt%. Based on the flexural and the TCA tests, the optimum improvement was obtained at 0.6 wt% and 0.8 wt% of GNP, respectively. TEM micrograph has shown good dispersion of GNP in the PLA/NR blend. Electrical properties showed an improvement with the present of treated-GNP and the percolation threshold occurs at low treated and untreated GNP content.

**Keywords:** Nanocomposites, polylactic acid, epoxidised natural rubber, mechanical properties, melt blending, renewable resources

## Keynote Speech 4: Application of Carbon-Based Nanomaterials as Drug Delivery Systems



*Prof. Josef Jampilek*

*Faculty of Natural Sciences, Comenius University in Bratislava (Slovakia)*

*Institute of Neuroimmunology, Slovak Academy of Sciences, Regional Centre of Advanced Technologies and Materials, Palacky University in Olomouc, Czech Republic*

**Biography:** Josef Jampilek completed his Ph.D. degree in Medicinal Chemistry at the Faculty of Pharmacy of the Charles University (Czech Republic) in 2004. In 2004-2011, he worked in expert and managerial posts in the R&D Division of the pharmaceutical company Zentiva (Czech Republic). Prof. Jampilek deepened his professional knowledge at the Medicinal Chemistry Institute of the Heidelberg University (Germany) and at multiple specialized courses. In 2017, he was designated as a Full Professor of Medicinal Chemistry. At present he works at the Faculty of Natural Sciences, Comenius University in Bratislava (Slovakia), the Institute of Neuroimmunology of the Slovak Academy of Sciences and the Regional Centre of Advanced Technologies and Materials, Palacky University in Olomouc (Czech Republic). In addition, he is a visiting professor at the University of Silesia in Katowice (Poland) and Hong Kong Baptist University (Hong Kong SAR, China) and an invited professor/expert at various higher educational institutions. He is an author/co-author of more than 30 patents/patent applications, more than 220 peer-reviewed scientific publications, 7 university textbooks, more than 35 chapters in monographs, and many invited lectures at international conferences and workshops. He also received several awards for his scientific results, e.g., from Aventis, Elsevier, Willey, Sanofi and FDA. The research interests of Prof. Jampilek include design, synthesis, and structure-activity relationships of heterocyclic compounds as anti-invasive and anti-inflammatory agents as well as drug delivery nanosystems. He is also interested in ADME, drug bioavailability and solid-state pharmaceutical analysis.

**Abstract:** Targeted drug delivery and modified drug delivery is still a major challenge. In addition to conventional drug delivery systems, drug delivery nanosystems using a variety of materials are increasingly emerging. Carbon-based nanomaterials have also become one of widely used materials. Carbon is one of the most abundant elements on Earth, and in addition to known crystallographic modifications such as diamond or graphite, other allotropic carbon modifications, such as graphene-based nanomaterials and carbon nanotubes, have recently come to the fore. These carbon nanomaterials can be designed to help deliver and/or target drugs more effectively and to innovate therapeutic approaches, especially for the treatment of cancer (but not only), but also for the development of new diagnostics, and are expected to help combine molecular imaging and therapy. Thus this contribution is devoted to nanomaterials, such as graphene, graphene quantum dots, graphene oxide, reduced graphene oxide, fullerenes, single- and multi-walled carbon nanotubes and various



carbon doped nanocomposites, which are intensively studied in terms of their properties, modifications and application potential to deliver biologically active agents.

**Keywords:** Carbon, drug delivery nanosystems, nanoformulations, nanoparticles, nanocomposites, anticancer drugs, anti-infective drugs, anti-inflammatory drugs, experimental drugs

**Acknowledgements:** This study was supported by the Slovak Research and Development Agency (Project No. APVV-17-0373) and by the Ministry of Education of the Czech Republic (Project No. CZ.02.1.01/0.0/0.0/17\_049/0008441).

## Keynote Speech 5: Novel Insights in the Mechanical Characterization of Polymers, Composites and Nanomaterials by Nanoindentation



*Prof. Dr. Esteban Broitman*

*SKF Research & Technology Development  
3992 AE Houten  
The Netherlands*

**Biography:** Esteban Broitman holds a Ph.D. in Physics from the University of Buenos Aires (Argentina), and a Docent (Habilitation) degree in Tribology from Linköping University (Sweden). He has been doing research and teaching at the University of Buenos Aires (Argentina), The College of William & Mary (USA), Carnegie Mellon University (USA), Linköping University (Sweden), and Invited Professor at University of Sao Pablo (Brazil), and the Chinese Academy of Sciences (CAS - China). He is presently a Senior Scientist in the area of Coatings at the SKF Research and Technology Development Center in Netherlands. He has published more than 200 per-reviewed articles and book chapters, and presented numerous Plenary, Keynote and Invited Lectures. His activities focus on the use of advanced surface engineering to control friction and wear at the macro-, micro-, and nano-scales of coatings like DLC, nanocomposites, and softer materials like soft metals and polymers.

**Abstract:** During the last decade, novel polymers and nanocomposite materials have been developed for applications as micro- and nanodevices. In these applications, conventional mechanical characterization techniques like tensile, compression and bending tests are inapplicable due to the size of the samples. Nanoindentation technique, widely used to characterize the mechanical properties of hard metals and ceramics, has started to be used also to characterize polymers, composites and nanomaterials. The interest in the area has been confirmed by a review article published by the author comparing mechanical measurement techniques at macro-, and nano-scales, which resulted in one of the most downloaded and cited articles in the area (\*).

In this talk, the application of indentation techniques to measure the hardness, elastic modulus, and creep of polymers and composite materials is discussed. A comparison between nanoindentation results and macroscopic properties is presented. Challenges and future perspectives in the application of a novel statistical nanoindentation technique is also suggested.

(\*) “*Indentation Hardness Measurements at Macro-, Micro-, and Nanoscale,*” E. Broitman, Tribology Letters 65 (2017) 23.

# Part III Oral Presentations

## Online Oral Presentation Guidelines

- ✚ Online Oral Presentation will be conducted via **Microsoft Teams Meeting**.
- ✚ All presenters are requested to reach the Online Session Room prior to the schedule time and complete their presentation on time.
- ✚ All presentation times are shown in China Standard Time (GMT+8:00).
- ✚ If a presenter is not able to show up via Teams, the session chair / conference secretary will download and play the pre-recorded video presentation during his/her scheduled presentation time, if listeners have questions about the presentation, please contact the conference secretary to forward the questions.
- ✚ If a presenter cannot show up on time or have problem with internet connect, the session chair has the right to rearrange his/her presentation, and let the next presentation start.
- ✚ Signed and stamped electronic presentation certificate would be issued via e-mail after conference.

## Best Oral Presentations Selection

The session chair will select one best oral presentation from his/her session based on the following criteria:

- ✓ Research Quality
- ✓ Presentation Performance
- ✓ Presentation Language
- ✓ PowerPoint Design

## Best Oral Presentations Award

The Best Presenter will receive an official certificate and a free registration to the PCM 2022 / GNN 2022.

## Session 1\_ Biomedical Materials and its Applications

Time: 13:30-19:35, August 17, 2021

Session Chairs:

13:30-16:20 Assoc. Prof. Kou Okuro, The University of Hong Kong, China

16:30-19:20 Dr. Shaowei Guo, Technion-Israel Institute of Technology, Israel

Session Room Link: <http://www.academicconf.com/teamlink?confname=pcm2021>

13:30-13:45	GNN1197 (Video)	A DNA nanodevice simultaneously activating the EGFR and integrin for enhancing cytoskeletal activity and cancer cell treatment <i>Dr. Baig, Mirza Muhammad Faran Ashraf, The University of Hong Kong, China</i>
13:45-14:00	PCM3142	Effect of Benzyl Isothiocyanate encapsulated biocompatible Nanoemulsion prepared via ultrasonication on microbial strains and breast cancer cell line MDA MB 231 <i>Dr. KhushwinderKaur, Panjab University, India</i>
14:00-14:15	PCM3151	Fabrication and characterization of biopolymer-based hydrogels for biomedical applications <i>Dr. Hafiz Abdul Mannan, University of the Punjab, Pakistan</i>
14:15-14:30	PCM3172 (Video)	Tiger 17 and pexiganan peptides anchored onto PVA-based electrospun mats reinforced with cellulosic polymers to enhance the surface antimicrobial action <i>Ms. Marta A. Teixeira, University of Minho, Portugal</i>
14:30-14:45	PCM3162	Innovative polymer-carbon nanotube based conducting electrodes <i>Ms. Anna Prioriello, IRCCS Neuromed, Italy</i>
14:45-15:00	PCM3171 (Video)	Ala-Ala-Pro-Val-containing co-axial, wet-spun microfibers for the treatment of chronic wounds <i>Ms. Catarina S. Miranda, University of Minho, Portugal</i>
15:00-15:15	PCM3203	Guanidinium-based molecular glue as a “Universal Module” for conversion of biochemical signals <i>Assoc. Prof. Kou Okuro, The University of Hong Kong, China</i>
15:15-15:30	PCM3169 (Video)	Examination of essential oils-loaded nanofibers inhibitory action against the Escherichia virus MS2, mimic of SARS-CoV-2 <i>Dr. Helena P. Felgueiras, University of Minho, Portugal</i>
15:30-15:55	GNN1171	In-vivo energy harvesting autonomous nano robots for drug delivery and cancer identification <i>Prof. Shlomi Dolev, Ben-Gurion University of the Negev, Israel</i>
15:55-16:20	PCM3153	“ONE CLICK AWAY” – Click chemistry in the creation of novel peptide-based constructs to tackle skin and soft tissue infections <i>Prof. Paula Gomes, Universidade do Porto, Portugal</i>
16:20-16:30	<b>BREAK</b>	

16:30-16:45	GNN1210	Nanofeatured titanium surfaces for dental implantology: microRaman analysis of the crystalline structure of the TiO <sub>2</sub> layer <i>Prof. Saturnino Marco Lupi, University of Pavia, Italy</i>
16:45-17:00	PCM3154	Intranasal delivery of mesenchymal stem cell derived exosomes loaded with phosphatase and tensin homolog siRNA repairs complete spinal cord injury <i>Dr. Shaowei Guo, Technion-Israel Institute of Technology, Israel</i>
17:00-17:15	PCM3184	Chitosan and polyvinyl alcohol-based films loaded with cinnamon leaf and clove essential oils to act against bacterial survival and prosperity <i>Dr. Joana C. Antunes, University of Minho, Portugal</i>
17:15-17:30	GNN1204	Graphene nanosystems and breast cancer therapy: Expansion in last decade <i>Prof. Ishrat Younus, Hamdard University Karachi, Pakistan</i>
17:30-17:55	GNN1201	Assessment of biological effects caused by inhaled nanoparticles <i>Prof. Eleonore Fröhlich, Medical University of Graz, Austria</i>
17:55-18:10	GNN1176	Modified structures of phospholipid membranes induced by graphene oxide <i>Dr. Sajal Kumar Ghosh, Shiv Nadar University, India</i>
18:10-18:25	PCM3202	Nanovenoms, a new tool formed by Silica nanoparticles and Cdt venom <i>Dr. Federico G. Baudou, Universidad Nacional de Luján (UNLu), Argentina</i>
18:25-18:50	PCM3133 (Video)	Understanding protein adsorption on polymer and other surfaces <i>Prof. James J Hickman, University of Central Florida, U.S.A</i>
18:50-19:05	PCM3210	Effect of Adding Nanoalumina and Marble Dust Powder on the Physical, Mechanical, and Thermo-Mechanical Characterization of Dental Composite <i>Dr. Anoj Meena, Malaviya National Institute of Technology, India</i>
19:05-19:20	GNN1190	Fabrication and optimization of pH-sensitive mannose anchored nano vehicle as a promising approach for macrophage uptake <i>Dr. Hussain Ali, Quaid-i-Azam University, Pakistan</i>

## Session 2\_ Environmental-Friendly Materials

Time: 08:30-12:55, August 18, 2021

Session Chairs:

08:30-10:25 Dr. Sook-Wai Phang, Tunku Abdul Rahman University College, Malaysia

10:40-12:55 Dr. Tong sai Jamnongkan, Kasetsart University, Thailand

Session Room Link: <http://www.academicconf.com/teamlink?confname=pcm2021>

08:30-08:45	GNN1195	Lubricating properties of bismuth sulfide nanoparticles, an eco-friendly solid lubricant <i>Dr. Germán Prieto, Universidad Nacional del Sur, Argentina</i>
08:45-09:00	PCM3183	Addition of Sm <sub>0.2</sub> Ce <sub>0.8</sub> O <sub>1.9</sub> carbonate in solid oxide fuel cell components for low temperature operation: A review <i>Dr. Tan Kang Huai, INTI International University, Malaysia</i>
09:00-09:15	PCM3182	Ternary photocatalyst of polyaniline-TiO <sub>2</sub> -Fe <sub>3</sub> O <sub>4</sub> nanocomposites for photodegradation of organic dyes <i>Dr. Sook-Wai Phang, Tunku Abdul Rahman University College, Malaysia</i>
09:15-09:30	PCM3174	Photocatalytic degradation of organic dyes using ZnAl <sub>2</sub> O <sub>4</sub> spinel and mechanism insight <i>Dr. Archana Chaudhary, Medi-Caps University, India</i>
09:30-09:45	PCM3179	Concept of green chemistry for cassava flour chain: Starch-based and xylooligosaccharide biopolymers correlated to biosurfactant production <i>Prof. Cristiano José de Andrade, Federal University of Santa Catarina (UFSC), Brazil</i>
09:45-10:10	GNN1194	Graphene/silicon composite synthesized by facile, inexpensive, and environmentally-friendly method and its application to Lithium-ion battery <i>Prof. Ichiro Imae, Hiroshima University, Japan</i>
10:10-10:25	PCM3158	Synthesis and characterization of natural cork suberin originated eco-friendly biopolyester syntactic foam with high damping capability <i>Mr. Seung-Hyun Cho, Sungkyunkwan University, Republic of Korea</i>
10:25-10:40		<b>BREAK</b>
10:40-11:05	PCM3207	A comprehensive evaluation the antibacterial efficacy of PLA/ZnO nanofiber filament for 3D printing application <i>Dr. Tong sai Jamnongkan, Kasetsart University, Thailand</i>
11:05-11:20	GNN1184	Recent trends in the green synthesis of carbon dots <i>Dr. Manju Kurian, Mar Athanasius College, India</i>
11:20-11:45	GNN1174	Nanocomposites for water research innovations <i>Dr. Ajay Kumar Mishra, Academy of Nanotechnology and Waste Water Innovations, South Africa</i>



11:45-12:10	PCM3145	Synthesis of biobased, self-healable and reprocessable polymers <i>Prof. Aman Ullah, University of Alberta, Canada</i>
12:10-12:25	PCM3150	Environmentally friendly biochar derived from agro wastes and its performances <i>Assoc. Prof. V. Arumugaprabu, Kalasalingam Academy of Research and Education, India</i>
12:25-12:40	PCM3209	The Brazilian Federal Constitution (1988) made the environment an asset that should be protected: The importance of public policies that encourage companies to decarbonize the environment and invest in clean technologies <i>Prof. Thais Helena Sydenstricker Flores-Sahagun, Federal University of Paraná, Brazil</i>
12:40-12:55	GNN1212 (Video)	Silver impregnated advance adsorbents for elemental mercury removal from contaminated air <i>Ms. Pragati Shukla, Bhabha Atomic Research Centre, India</i>

### Session 3\_ Nano-Materials

Time: 14:00-19:35, August 18, 2021

Session Chairs:

14:00-16:40 *Prof. Amit Nag, BITS Pilani Hyderabad Campus, India*

16:50-19:35 *Dr. Jalil Abdul, Northwestern Polytechnical University, China*

Session Room Link: <http://www.academicconf.com/teamslink?confname=pcm2021>

14:00-14:15	GNN1191	Plasmonic enhanced Au decorated TiO <sub>2</sub> nanotube arrays as a visible light active catalyst towards photocatalytic CO <sub>2</sub> conversion to CH <sub>4</sub> <i>Prof. Azrina Abd Aziz, Universiti Malaysia Pahang, Malaysia</i>
14:15-14:30	PCM3118	Structure and properties of polyamide 66 nanocomposites reinforced with nanodiamond <i>Dr. Seira Morimune-Moriya, Chubu University, Japan</i>
14:30-14:45	GNN1205	Natural convective heat transfer flow of Al <sub>2</sub> O <sub>3</sub> -water nanofluid in a square vessel <i>Dr. Md. Jashim Uddin, Daffodil International University, Bangladesh</i>
14:45-15:10	GNN1186	Flow model of carbon nanotubes embedded by nanofluid materials added to kerosene oil and water liquids <i>Prof. Mohammad Ferdows, University of Dhaka, Bangladesh</i>
15:10-15:25	GNN1203	Exploring the potential of metal tungstate nanomaterials for detection and photocatalytic degradation application <i>Dr. Waheed S. Khan, National Institute for Biotechnology and Genetic Engineering (NIBGE), Pakistan</i>
15:25-15:40	GNN1207	Carbon nanoparticles as smart optical sensors and nanomedicine <i>Prof. Amit Nag, BITS Pilani Hyderabad Campus, India</i>

15:40-15:55	GNN1208 (Video)	Plasmonic features of interdispersed silver nanoparticles in CsCl thin films and ageing effects on its stability <i>Prof. Chhaya Ravi Kant, Indira Gandhi Technical University for Women, India</i>
15:55-16:10	PCM3201 (Video)	Microwave synthesized reduced graphene oxide/metal nanocomposites as active surface enhanced raman scattering substrate <i>Dr. Heena Wadhwa, Govt. College, India</i>
16:10-16:25	PCM3147 (Video)	Photocatalytic activity of Ag@ZnO core-shell nanostructures <i>Dr. Himanshu Rajbongshi, Bahona College, India</i>
16:25-16:40	GNN1198	Zinc oxide and Zinc oxide nanoparticles carbon past ion selective electrode: A cyclic voltammetry comparison study <i>Dr. Emad Salaam Abood, Hilla University College, Iraq</i>
16:40-16:50	<b>BREAK</b>	
16:50-17:15	GNN1187	Field emission characterization of two-dimensional nanosheets <i>Dr. Filippo Giubileo, CNR-SPIN Salerno, Italy</i>
17:15-17:30	GNN1188	Effect of electric field on structural, electronic and optical properties of III-V monolayers <i>Dr. Jalil Abdul, Northwestern Polytechnical University, China</i>
17:30-17:55	GNN1209 (Video)	Development of a Cr-based hard composite processed by spark plasma sintering <i>Prof. José M. Torralba, Universidad Carlos III de Madrid, Spain</i>
17:55-18:10	GNN1196	Signatures of van der waals and electrostatic forces in the deposition of binary mixtures of nanoparticle <i>Prof. Ofer Manor, Technion-Israel Institute of Technology, Israel</i>
18:10-18:35	PCM3097	Development of multifunctional, inorganic lanthanide-based (nano)materials exhibiting luminescence phenomena, and their application as contactless optical sensors <i>Prof. Marcin Runowski, Adam Mickiewicz University in Poznań, Poland</i>
18:35-18:50	PCM3208	Matrix synthesis of nano-SiO <sub>2</sub> <i>Ms. Poselskaya Yu.V., South Ural State Humanitarian and Pedagogical University, Russia</i>
18:50-19:05	PCM3173	Advanced nanocomposite for congo red dye removal: Adsorption isotherms, kinetics and optimization studies <i>Ms. Sowmya S R, M S Ramaiah Institute of Technology, India</i>
19:05-19:20	GNN1179 (Video)	Activation energy on the graphene oxide dissipative flow with suspended thermal convective conditions <i>Dr. Chakravarthula S K Raju, GITAM Deemed to be University, India</i>
19:20-19:35	GNN1213 (Video)	Atmospheric humidity impact on the ultimate adhesion performance of sustainable adhesive nanomaterials <i>Dr. Adrián Tenorio-Alfonso, University of Huelva, Spain</i>

## Session 4 \_ Fibers and Multi-Functional Polymers

Time: 08:30-12:25, August 19, 2021

Session Chairs:

08:30-10:20 *Dr. Noor Afizah Rosli, Universiti Kebangsaan Malaysia (UKM), Malaysia*

10:30-12:25 *Prof. Abbaraju Venkataraman, Gulbarga University, India*

Session Room Link: <http://www.academicconf.com/teamlink?confname=pcm2021>

08:30-08:45	PCM3121	Cellulose crystallinity: Manipulating the mechanical and biodegradation properties of biopolymer- and synthetic polymer-based composites <i>Dr. Noor Afizah Rosli, Universiti Kebangsaan Malaysia (UKM), Malaysia</i>
08:45-09:00	GNN1193 (Video)	Chemical and physical variations on cotton wires <i>Dr. Clara Silvestre de Souza, Universidade Federal do Rio Grande do Norte, Brazil</i>
09:00-09:25	PCM3101	Nano-structuring of polymer blends at the interface driven by topology <i>Prof. Giuseppe Pellicane, University of Kwazulu-Natal, South Africa</i>
09:25-09:50	PCM3140	Photo synthesis of poly acrylamide-g-carboxymethyl starch silver nanocomposite and the corresponding hydrogel <i>Prof. Manal A. El-Sheikh, Textile Research Division, National Research Centre, Egypt</i>
09:50-10:05	PCM3204	Sensing of some important high energy molecules through fluorescence quenching studies employing conducting polymers as fluorophores <i>Prof. Abbaraju Venkataraman, Gulbarga University, India</i>
10:05-10:20	PCM3192	A review of cellulose as natural flocculants: Synthesis, modification, and flocculation analysis <i>Ms. Dinda Fauzani, Bandung Institute of Technology, Indonesia</i>
10:20-10:30	<b>BREAK</b>	
10:30-10:55	PCM3144 (Video)	Evaluating the self-diffusion coefficient of entangled chain by only NMR free induction decay <i>Prof. Eugeny M. Pestryaev, Ufa State Petroleum Technological University, Russia</i>
10:55-11:10	PCM3163	F( $\beta$ ) analysis method for $\beta$ -PVDF thin films <i>Dr. Valerio Scacco, University of Rome "Tor Vergata", Italy</i>
11:10-11:25	PCM3196	A review of research on phenol hydrogenation to cyclohexanol and cyclohexanone <i>Dr. Mohammad Ashraf Ali, Jazan University, Saudi Arabia</i>
11:25-11:40	PCM3106	Investigation of penetration forces during tufting of stacked carbon-fiber preforms <i>Ms. Shima Norouzi, Technical University of Munich, Germany</i>

11:40-11:55	PCM3194 (Video)	Experimental and digital identification of the spatial configuration of monofilament threads in the inner layer of knitted spacer fabrics <i>Ms. Aleksandra Walkowska, Lodz University of Technology, Poland</i>
11:55-12:10	PCM3191	Lignin acting as both copolyol and filler to potentiate the mechanical behavior of castor oil-based cushioning materials <i>Dr. Antonio M Borrero-López, Universidad de Huelva , Spain</i>
12:10-12:25	PCM3135	ICL sustainable flame retardants for modern polymer systems <i>Dr. Daisy Li, Industrial Products/ICL, China</i>

## Session 5\_ Novel Applications

**Time: 14:00-19:30, August 19, 2021**

**Session Chairs:**

**14:00-16:15** *Dr. Teik-Cheng Lim, Singapore University of Social Sciences, Singapore*

**16:25-19:15** *Dr. Awadesh Kumar Mallik, Hasselt University, Belgium*

**Session Room Link:** <http://www.academicconf.com/teamslink?confname=pcm2021>

14:00-14:15	PCM3165	Aspect ratio and size effects of a metacomposite inspired by Islamic geometrical pattern using interconnected Y-elements <i>Dr. Teik-Cheng Lim, Singapore University of Social Sciences, Singapore</i>
14:15-14:30	PCM3164	Microstructure gradient in alumina particle reinforced aluminum matrix composite fabricated by accumulative roll bonding <i>Mr. Wenchuang Liu, Hiroshima University, Japan</i>
14:30-14:45	GNN1182	A study of thermal properties of Au <sub>25</sub> Pd <sub>75</sub> alloy using X-ray diffraction <i>Dr. Naseeb Ahmad, Khwaja Fareed University of Engineering and Information Technology, Pakistan</i>
14:45-15:00	GNN1185	Multi-route reaction mechanism and steady state flow: A MATLAB based Aanalysis <i>Dr. Faisal Sultan, University of Haripur, Pakistan</i>
15:00-15:15	PCM3178 (Video)	Enhancing the optical properties of a Ba <sup>2+</sup> - substituted activator ion in a BaO-containing tellurite glass by exploiting the surrounding strong Ionic field of the precursor ion <i>Dr. Radhaballabh Debnath, Jadavpur University, India</i>
15:15-15:30	PCM3156 (Video)	Surface polarity engineering of ZnO film grown by pulsed laser deposition <i>Prof. Francis Chi-Chung Ling, The University of Hong Kong, China</i>
15:30-15:45	PCM3103 (Video)	Systematic analysis of additive manufacturing for printing on semi-finished parts <i>Ms. Melike Kizak, Technical University of Munich, Germany</i>
15:45-16:00	PCM3152	Thymos – An open hardware small scale testing frame <i>Dr. Jan Novak, Czech Technical University in Prague, Czech Republic</i>

16:00-16:15	GNN1180	Low temperature nanodiamond growth on GaN surfaces <i>Dr. Awadesh Kumar Mallik, Hasselt University, Belgium</i>
16:15-16:25	<b>BREAK</b>	
16:25-16:40	PCM3123	CuIn <sub>1-x</sub> Ga <sub>x</sub> Se <sub>2</sub> compounds for photovoltaic application <i>Dr. Beddiaf Zaidi, University of Batna, Algeria</i>
16:40-16:55	GNN1200	Mechanical alloying and characterization of chlorine doped hydroxyapatite nanopowders <i>Ms. Abreeq Naqshbandi, National Institute of Technology Srinagar, India</i>
16:55-17:10	PCM3190	Influence of morphology on photocatalytic performance in hierarchical nanostructures of Bi <sub>2</sub> WO <sub>6</sub> <i>Prof. Marcio Aurelio Pinheiro Almeida, Federal University of Maranhão, Brazil</i>
17:10-17:35	PCM3206	Weak ferromagnetic component in goethite ( $\alpha$ -FeOOH) <i>Prof. Daniel Farinha Valezi, State University of Londrina (UEL), Brazil</i>
17:35-17:50	PCM3111	Diffuse and corona discharge in atmospheric air and their applications <i>Prof. Victor F. Tarasenko, Institute of High-Current Electronics, Russia</i>
17:50-18:05	PCM3168	New lightweight materials for automotive applications: Some recent developments and potential opportunities <i>Prof. Rosli Ahmad, Universiti Tun Hussein Onn Malaysia, Malaysia</i>
18:05-18:20	PCM3109 (Video)	Delamination properties and in-situ monitoring of z-pinned carbon fiber/epoxy composites <i>Mr. Zhe Che, Beihang University, China</i>
18:20-18:35	PCM3167	Effect of vibration on solidification behavior and mechanical properties of weld joints <i>Dr. Pravin Kr. Singh, AMITY University Jharkhand, India</i>
18:35-18:50	GNN1181	ZnO: A potential host for Spintronics devices <i>Dr. Neha Kondal, Chandigarh University, India</i>
18:50-19:15	PCM3212	Soft-materials and Soft-machines <i>Dr. Per A. Löthman, Foviatech GmbH, Germany</i>

## Part IV Poster Presentations

### Online Poster Guidelines

Online Poster Presentations will consist of two parts:

- ✚ **Poster Presentations:** A collection of posters in PDF format (with/without audio) will be available at conference website for attendees to view starting on July 20, 2021.
- ✚ **Poster Q&As:** Live poster Q&A sessions will be held via Microsoft Teams Meeting for attendees to meet virtually with presenters and ask questions or give feedbacks.
- ✚ Signed and stamped electronic presentation certificate would be issued via e-mail after conference.

### Best Poster Presentations Selection

One best Poster presentation will be selected based on the “**Vote**” received on the website.

#### *Selection Criteria*

- ✓ Research Quality
- ✓ Poster Design

### Best Poster Presentations Award

The Best Presenter will receive an official certificate and a free registration to the PCM 2022 / GNN 2022.



## List of Posters

GNN1173	Theoretical investigated of magnetic, magnetocaloric and thermoelectric properties of perovskite LaFeO <sub>3</sub> compound: First principles and Monte Carlo calculations <i>Prof. Najim Tahiri, Mohammed V University in Rabat, Morocco</i>
GNN1192	Quantitative evaluation of elastic properties of Nickel-Base Superalloys at nanoscales using atomic force acoustic microscopy <i>Dr. M. Kalyan Phani, OP Jindal University, India</i>
PCM3124	Vacuum-deposited metal/dye-filled fluoropolymer thin films <i>Prof. Kostyantyn Grytsenko, Institute of Semiconductor Physics, Ukraine</i>
PCM3125	Polymer based inhibition of quorum sensing in gram negative bacteria <i>Ms. Rawan Alshalan, University of Sheffield, U.K</i>
PCM3189	4D printing intelligent soft robot with untethered motion ability and tactile perception <i>Mr. Fei Zhai, Tianjin University, China</i>
PCM3199	Lignin/PVP-based nanostructures by electrospinning <i>Mr. José Fernando Rubio Valle, ETSI University of Huelva, Spain</i>
PCM3200	Rheological study of acetylated lignin gel-like dispersions in vegetable oil: Influence of acetylation degree <i>Mr. Manuel Trejo, ETSI University of Huelva, Spain</i>
PCM3188	Single Li ion conducting solid-state polymer electrolytes based on poly(lithium 4-styrene sulfonate) and citric acid carbon quantum dots for Li-metal batteries <i>Mr. Zeyu Li, Tianjin University, China</i>
PCM3180	Study of the composite cathode of alkaline fuel cells containing Fe-Co-N-pyrocatalyst <i>Dr. E A Kiseleva, Joint Institute for High Temperatures of the Russian Academy of Sciences, Russia</i>

# Part V Acknowledgements

On behalf of the PCM2021 and GNN2021 Organizing Committee, we would like to take this opportunity to express our sincere gratitude to our participants. We would also like to express our acknowledgements to the Technical Program Committee members who have given their professional guidance and valuable advice as reviewers. For those who contribute to the success of the conference organization without listing the name below, we would love to say thanks as well.

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