

PROGRAM

Program of 4th International Conference on Materials Research and Innovation (ICMARI)

15th – 16th December 2022 at the Emerald hotel, Bangkok, Thailand

Thursday 15th December 2022

08.00-09.00 **Registration**

09.00-10.00 **Opening ceremony**
Petchchompoo Room

Welcome speech: *Assoc. Prof. Sutkhet Nakasathien (Vice President for Research and Creation of Kasetsart University)*

Opening speech: *Dr. Wiparat De-ong Executive Director of the National Research Council of Thailand (NRCT), Ministry of Higher Education, Science, Research and Innovation, Thailand*

10.00-10.30 **Plenary lecture:** 3-D printing assisted multifunctional porous materials for advanced applications
Petchchompoo Room

*Prof. Sadhan C. Jana**, *Akshata Kulkarni*, *Aparna Agrawal*, and *Pratik Gotad*
School of Polymer Science and Polymer Engineering, The University of Akron, USA

10.30-11.00 **Coffee break**

11.00-11.30 **Plenary lecture:** Functionalization of natural rubber for high value added and sustainability
Petchchompoo Room

*Assoc. Prof. Pranee Phinyocheep**
Department of Chemistry, Faculty of Science, Mahidol University, Thailand

11.30-12.00 **Plenary lecture:** New frontier of natural rubber as a sustainable green polymer
Petchchompoo Room

*Dr. Banja Junhasavasdikul**
Innovation Group Co., Ltd, Thailand

12.00-14.00 **Lunch**

Rubbers and Polymeric Materials I

Petchchompoo Room

Session chairs: Taweechai Amornsakchai and Jitladda Sakdapipanich

14.00-14.30 **O-01:** Challenges for natural rubber as a sustainable industrial polymer

*Jitladda Sakdapipanich**
Department of Chemistry and Center of Excellence for Innovation in Chemistry, Faculty of Science, Mahidol University, Thailand

14.30-14.50 **O-02:** A study of the optimum indicators to support the development of Thailand national forest management certification standard based on the forest stewardship council principles and criteria

*Kritsadapan Palakii**, *Khwanchai Duangsathaporn**, *Patsi Prasomsin*, *Yenemurwon Omule*, and *Pichit Lumyai*

Laboratory of Tropical Dendrochronology (LTD), Department of Forest Management, Faculty of Forestry, Kasetsart University, Thailand

14.50-15.10 **O-03:** Transparent flexible fluorescent films based on natural rubber composited with quantum dots for traffic equipment

Ongart Suntijitrungruang^{1,}*, *Weeraphat Pon-On¹*, and *Sutee Boonchui^{1,2}*

¹Department of Physics, Faculty of Science, Kasetsart University, Thailand; ²Center of rubber and polymer materials in agriculture and industry (RPM), Faculty of Science, Kasetsart University, Thailand

15.10-15.30 **O-04:** Incorporation of rubber waste to fiber cement composite: comparative study of rubber tire waste and rubber band waste

Surasit Kajon¹, Kanokon Hancharoen², Parames Kamhangrittirong², and Pimsiree Suwanna^{1,}*
¹Department of Materials Science, Faculty of Science, Kasetsart University, Thailand; ²Center of Building Innovation and Technology (CBIT), Department of Building Innovation, Faculty of Architecture, Kasetsart University, Thailand

15.30-16.00

Coffee Break

Rubbers and Polymeric Materials II

Petchchompoo Room

Session chairs: Taweechai Amornsakchai and Nanthiya Hansupalak

16.00-16.30 **O-05:** Development of leather alternative from natural rubber and pineapple leaf fiber

Sorn Duangsuwan¹, Preeyanuch Junkong¹, Pranee Phinyocheep¹, Sombat Thanawan², and Taweechai Amornsakchai^{1,3,}*

¹Polymer Science and Technology Program, Department of Chemistry, Faculty of Science, Mahidol University, Thailand; ²Rubber Technology Research Center, Faculty of Science, Mahidol University, Thailand; ³Center of Sustainable Energy and Green Materials, Faculty of Science, Mahidol University, Thailand

Bio - and Circular - Materials I

Petai Room

Session chairs: Prakrit Sukyai and Karine Mougine

14.00-14.30 **O-06:** Low carbon footprint composite composed of nettle fibres and recycled polypropylene

Karine Mougine^{1,}, Roua Skander^{1,2}, Frédéric Ruch², Budsaraporn Surajarusarn³, and Taweechai Amornsakchai³*

¹Institut de Science des Matériaux de Mulhouse, France; ²Cetim Grand Est, France; ³Mahidol University, Thailand

14.30-14.50 **O-07:** Development of bio-based polybenzoxazine composite post: effect of glass fiber content on mechanical properties and fracture behaviors

Phattarin Mora¹, Ukrit Srisorachatr², Sarawut Rimdusit³, and Chanchira Jubsilp^{1,}*

¹Department of Chemical Engineering, Faculty of Engineering, Srinakharinwirot University, Thailand; ²Institute of Dentistry, Department of Medical Services, Thailand; ³Research Unit in Polymeric Materials for Medical Practice Devices, Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Thailand

14.50-15.10 **O-08:** Effects of lignocellulose contents in bamboo charcoal on mechanical and thermal properties of polybenzoxazine based friction materials

Napatsorn Jantapanya¹, Phattarin Mora², Siriwan Srisorrachatr³, Sommas Kaewluan⁴, Sarawut Rimdusit¹, and Chanchira Jubsilp^{2,}*

¹Research Unit in Polymeric Materials for Medical Practice Devices, Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Thailand; ²Department of Chemical Engineering, Faculty of Engineering, Srinakharinwirot University, Thailand; ³Department of Civil and Environmental Engineering, Faculty of Engineering, Srinakharinwirot University, Thailand; ⁴Department of Mechanical Engineering, Faculty of Engineering, Srinakharinwirot University, Thailand

15.10-15.30 **O-09:** Synthesis and characterization of copolymer from waste PET used bottle and FDCA

Pusit Sommeechai¹, Saiwan Nawalertpanya^{1,}, and Jatuphorn Wootthikanokkhan²*

¹Department of Chemical Engineering, King Mongkut's University of Technology Thonburi, Thailand; ²School of Energy, Environment and Materials, King Mongkut's University of Technology Thonburi, Thailand

15.30-16.00

Coffee Break

Bio - and Circular - Materials II

Petai Room

Session chairs: Prakrit Sukyai and Karine Mougine

16.00-16.30 **O-10:** Computational approach to investigate the interaction between biomolecules and hard materials

*Arkadiusz Chworos**, Saranya Vasudevan, and Roza Pawlowska

Centre of Molecular and Macromolecular Studies, Polish Academy of Sciences, Poland

Special Advanced Materials I

Tabtim Room

Session chairs: Saree Phongphanphanee and Jirasak Wong-ekkabut

14.00-14.30 **O-11:** In-situ X-ray diffraction studies of hydration forces between aligned DNA fibers

Youli Li^{1,}*, Ryan Case², Hauke Schollmeyer², Phillip Kohl¹, and Cyrus R. Safinya^{2,*}

¹Materials Research Laboratory and BioPACIFIC MIP, University of California Santa Barbara, USA; ²Materials, Physics, Molecular, Cellular and Developmental Biology Departments, University of California Santa Barbara, USA

14.30-14.50 **O-12:** Artificial neural network model for predicting the energy loss of natural rubber foam

Pornsiri Kaewpradit^{1,}*, Nattapon Uthaipan², and Charoenyut Dechwayukul³

¹Department of Chemical Engineering, Faculty of Engineering, Prince of Songkla University, Thailand; ²Rubber Technology and Engineering program, International College, Prince of Songkla University, Thailand; ³Department of Mechanical Engineering, Faculty of Engineering, Prince of Songkla University, Thailand

14.50-15.10 **O-13:** Synthesis of self-organic assembly monolayers to improve the stability of perovskite solar devices

Peradon Phonglamjiakngam, and Nuttapol Pootrakulchote*

Department of Chemical Technology, Faculty of Science, Chulalongkorn University, Thailand

15.10-15.30 **O-14:** Effect of non-covalent interaction on properties of epoxidized natural rubber

Kwanchai Buaksuntear^{1,2}, and Wirasak Smitthipong^{1,2,*}

¹Specialized Center of Rubber and Polymer Materials in Agriculture and Industry (RPM), Department of Materials Science, Faculty of Science, Kasetsart University, Thailand; ²Office of Research Integration on Target-Based Natural Rubber, National Research Council of Thailand (NRCT), Thailand

15.30-16.00

Coffee Break

Special Advanced Materials II

Tabtim Room

Session chairs: Saree Phongphanphanee and Kensuke Osada

16.00-16.30 **O-15:** A safe liver sinusoidal wall coating agent to promote the efficacy of gene therapy drugs

*Kensuke Osada**

Institute for Quantum Medical Science, National Institutes for Quantum Science and Technology (QST), Japan

16.30-16.50 **O-16:** Theoretical analysis of high-harmonic generation in silicon nanotubes

Chayanon Summueang¹, Ongart Suntijitrungruang¹, and Sutee Boonchui^{1,2,*}

¹Department of Physics, Faculty of Science, Kasetsart University, Thailand; ²Center of Rubber and Polymer Materials in Agriculture and Industry (RPM), Faculty of Science Kasetsart University, Thailand

16.50-17.10 **O-17:** The generation of current in carbon nanotube springs due to variation of strain theory approach

Jakkapong Charoenpakdee¹, Ongart Suntijitrungruang¹, and Sutee Boonchui^{1,2,*}

¹Department of Physics, Faculty of Science, Kasetsart University, Thailand; ²Center of Rubber and Polymer Materials in Agriculture and Industry (RPM), Faculty of Science Kasetsart University, Thailand

08.00-09.00 **Registration**

09.00-09.30 **Plenary lecture:** Precise characterization of environmental and artificially generated microplastics
Petchchompoo Room

*Prof. Atsushi Takahara**

Research Center for Negative Emission Technologies, Kyushu University, Japan

09.30-10.00 **Plenary lecture:** Strengthening Thai upstream rubber industry toward the sustainability of downstream rubber industry in BCG era
Petchchompoo Room

Prof. Buncha Somboonsuke^{1,} and Chaiya Kongmanee^{2,*}*

¹Department of Agricultural Innovation and Management, Faculty of Natural Resource, Prince of Songkla University Thailand; ²Faculty of Economics, Prince of Songkla University, Thailand

10.00-10.30

Coffee Break

Rubbers and Polymeric Materials III

Petchchompoo Room

Session chairs: Wirunya Keawwattana and Nanthiya Hansupalak

10.30-11.00 **O-18:** Probing reversible noncovalent molecular interactions toward developing multifunctional soft materials and surfaces

*Hongbo Zeng**

University of Alberta, Canada

11.00-11.20 **O-19:** Liquid crystalline nanosheets with structural color

Nobuyoshi Miyamoto, Wenqi Yang, Shinya Yamamoto, Tareq Amen, and Takumi Inadomi
Graduate School of Engineering, Fukuoka Institute of Technology, Japan*

11.20-11.40 **O-20:** The analysis and designing of para rubber information system according to rubber control act.1999 and development of decision-making support system for rubber supply chain management

Montchai Pinitjitsamut^{1,}, Usa Sammapun², and Panuchart Bunyakiati³*

¹Department of Agricultural and Resource Economics, Faculty of Economics; ²Department of Computer Science, Faculty of Science; ³Department of Computer Engineering, Faculty of Engineering, Kasetsart University, Thailand

11.40-14.00

Lunch

Rubbers and Polymeric Materials IV

Petchchompoo Room

Session chairs: Nanthiya Hansupalak and Sombat Thanawan

14.00-14.30 **O-21:** Preparation of spent coffee grounds-rubber composite using natural rubber latex as binder

Sombat Thanawan^{1,}, Varittha Mitsaichon², Kanok-on Ruesrijan², Pranee Phinyocheep²,
Taweekchai Amornsakchai^{2,3}, and Preeyanuch Junkong²*

*¹Rubber Technology Research Center, Faculty of Science, Mahidol University, Thailand;
²Department of Chemistry, Faculty of Science, Mahidol University, Thailand; ³Center of Sustainable Energy and Green Materials, Faculty of Science, Mahidol University, Thailand*

14.30-15.00 **O-22:** Natural rubber situation in 2022

*Suvasitthi Dewan**

Deputy Secretary General, the Thai Rubber Association (TRA), Thailand

15.00-15.30 **O-23:** Future of Thai glove businesses! what needed to survive and growth?

*Adisak Kongwaree**

Thai Rubber Glove Manufacturers Association, Thailand

15.30-16.00

Coffee Break

Rubbers and Polymeric Materials V

Petchchompoo Room

Session chairs: Nanthiya Hansupalak and Sombat Thanawan

16.00-16.30	<p>O-24: Synthesis magnetic core-shell Al₂O₃ particles as material used to remove protein from natural rubber latex</p> <p><i>Phan T. Nghia</i>^{1,2,*}, <i>Bui T. T. Binh</i>^{1,2}, <i>Vu T. Thuy</i>^{1,2}, <i>Nguyen N. Thang</i>³, and <i>Seiichi Kawahara</i>⁴ ¹Center for Rubber Science and Technology, Hanoi University of Science and Technology, Vietnam; ²School of Chemical Engineering, Hanoi University of Science and Technology, Vietnam; ³School of Textile-Leather and Fashion, Hanoi University of Science and Technology, Vietnam; ⁴Department of Materials Science and Technology, Faculty of Engineering, Nagaoka University of Technology, Japan</p>
16.30-17.00	<p>O-25: Thai latex industry after Covid-19</p> <p><i>Sudebb Taechanuruk</i>[*] Thai Latex Association, Thailand</p>
10.00-10.30	Coffee Break
	<p>Bio - and Circular - Materials III Petai Room Session chairs: Kheng Lim Goh and Alexis D. Ostrowski</p>
10.30-11.00	<p>O-26: Creating photoresponsive materials with metal coordination in bio-based materials</p> <p><i>Alexis D. Ostrowski</i>[*] Department of Chemistry and Center for Photochemical Sciences, Bowling Green State University, USA</p>
11.00-11.30	<p>O-27: Materials technology for polymer composites: net zero prospects and challenges</p> <p><i>Kheng Lim Goh</i>^{1,2,*} ¹Newcastle University, Faculty of Science, Agriculture and Engineering, Newcastle upon Tyne, UK; ²Newcastle University in Singapore, Singapore</p>
11.30-14.00	Lunch
	<p>Bio - and Circular - Materials IV Petai Room Session chairs: Kiattawee Choowongkamon and Hisashi Okumura</p>
14.00-14.30	<p>O-28: Association between low allergenic latex gloves exposure and latex sensitization among nursing staff at tertiary university hospitals in northeastern of Thailand</p> <p><i>Chatpong Ngamchokwathana</i>¹, <i>Naesinee Chaiear</i>^{1*}, <i>Jitladda Sakdapipanich</i>², <i>Surasakdi Wongratanacheewin</i>³, <i>Sumalai Dechyotin</i>⁴, <i>Somsamai Sripramai</i>⁵, and <i>Prapassorn Khajornpipat</i>⁶ ¹Department of Community, Family and Occupational Medicine, Faculty of Medicine, Khon Kaen University, Thailand; ²Department of Chemistry, Faculty of Science, Mahidol University, Thailand; ³Department of Microbiology, Faculty of Medicine, Khon Kaen University, Thailand; ⁴Clinical Laboratory Section, Srinagarind Hospital, Faculty of Medicine, Khon Kaen University; ⁵Nursing Department, Srinagarind Hospital, Faculty of Medicine, Khon Kaen University; ⁶Queen Sirikit Heart Center of the Northeast, Faculty of Medicine, Khon Kaen University</p>
14.30-15.00	<p>O-29: Innovation group's circular material, processes, and additives to improve pain point properties</p> <p><i>Panisara Rattanapanyachot</i>[*] Innovation Group Co., Ltd, Thailand</p>
15.00-15.30	<p>O-30: Protein aggregation and disaggregation by generalized-ensemble and nonequilibrium molecular dynamics simulations</p> <p><i>Hisashi Okumura</i>^{1,2,3,*} ¹Exploratory Research Center on Life and Living Systems, Japan; ²Institute for Molecular Science, Japan; ³SOKENDAI (The Graduate University for Advanced Studies), Japan</p>
15.30-16.00	Coffee Break

Bio - and Circular - Materials V

Petai Room

Session chairs: Kiattawee Choowongkomon and Hisashi Okumura16.00-16.30 **O-31:** Anti-microbial agents for inhibiting odor in cup lumps

Kiattawee Choowongkomon^{1,2}, *Srifā Pumloifa*², *Wimonrat Insuan*³, and *Nanthiya Hansupalak*^{4,*}
¹Department of Biochemistry, Faculty of Science, Kasetsart University; ²Interdisciplinary of Genetic Engineering and Bioinformatics, Graduate School, Kasetsart University; ³Department of Veterinary Technology, Faculty of Veterinary Technology, Kasetsart University; ⁴Department of Polymer, Faculty of Engineering, Kasetsart University, Thailand

16.30-16.50 **O-32:** Preparation and characterization of novel membrane from waste PET and bio-based polymer

Lapasrada Jareonsri, *Saiwan Nawalertpanya*^{*}, and *Waritha Jantaporn*
Department of Chemical Engineering, King Mongkut's University of Technology Thonburi, Thailand

10.00-10.30

Coffee Break**Special Advanced Materials III**

Tabtim Room

Session chairs: Katsura Nishiyama and Norio Yoshida10.30-11.00 **O-33:** Molecular mechanisms of uptake of metal nanoparticles to crops— for application to biolabeling emitters of crops—

Katsura Nishiyama^{1,*}, *Tamon Kimura*², and *Makoto Ueno*³
¹Department of Environmental Engineering, Meijo University, Japan; ²Division of Environmental Science and Technology, Meijo University, Japan; ³Laboratory of Plant Pathology, Faculty of Life and Environmental Sciences, Shimane University, Japan

11.00-11.20 **O-34:** Synthesis of carbon nanoparticles from benzene mixed with ethanol by solution plasma for use as supercapacitor electrode materials

Myo MyoThu^{1,2}, and *Gasidit Panomsuwan*^{1,2,*}
¹Department of Materials Engineering, Faculty of Engineering, Kasetsart University, Thailand; ²ICE-Matter Consortium, ASEAN University Network/Southeast Asia Engineering Education Development Network (AUN/SEED-Net), Thailand

11.20-11.40 **O-35:** Influences of modified samarium oxide on neutron shielding, wear, dielectric, and mechanical properties of UHMWPE composites

Donruedee Toyen^{1,2}, *Ekachai Wimolmala*³, *Narongrit Sombatsompop*³, *Teerasak Markpin*³, *Nuatawan Thamrongsiripak*⁴, *Thiti Rungseesumran*⁴, and *Kiadtisak Saenboonruang*^{2,5,*}
¹Department of Materials Science, Faculty of Science, Kasetsart University; ²Special Research Unit of Radiation Technology for Advanced Materials (RTAM), Faculty of Science, Kasetsart University; ³Polymer PROCESSING and Flow (P-PROF) Research Group, Division of Materials Technology, School of Energy, Environment and Materials, King Mongkut's University of Technology Thonburi, Thailand; ⁴Thailand Institute of Nuclear Technology (Public Organization); ⁵Department of Applied Radiation and Isotopes, Faculty of Science, Kasetsart University, Thailand

11.40-12.00 **O-36:** SnO•GO composites for highly efficient photocatalytic degradation

*Tanawat Imboon*¹, *Pisanu Photiwut*¹, *Jeerawan Khumphon*¹, *Sougata Ghosh*^{1,2}, and *Sirikanjana Thongmee*^{1,*}
¹Department of Physics, Faculty of Science, Kasetsart University, Thailand; ²Department of Microbiology, School of Science, RK. University, Gujarat, India

12.00-14.00

Lunch**Special Advanced Materials IV**

Tabtim Room

Session chairs: Karine Mougín and Akira Kakugo14.00-14.30 **O-37:** Defects characterization in polymer materials: how Raman microscopy becomes the gold standard

Thibault Brulé^{*}, *Céline Eypert*, *Ludivine Fromentoux*, and *Massimiliano Rocchia*
HORIBA France SAS, France

14.30-15.00 **O-38:** New eco-friendly « chameleon » inks

*Karine Mougin^{1, *}, Ferial Ghellal^{1,2}, Guillaume Caffier², and Arnaud Spangenberg¹*
¹Institut de Science des Matériaux de Mulhouse, France; ²BIC Ecriture 2000, France

15.00-15.30 **O-39:** Molecular solvation theory for material design

Norio Yoshida^{}*
Graduate School of Informatics, Nagoya University, Japan

15.30-16.00

Coffee Break

Special Advanced Materials V

Tabtim Room

Session chairs: Katsura Nishiyama and Norio Yoshida

16.00-16.30 **O-40:** Exploring the potential of molecular swarm robots

Mousumi Akter¹, and Akira Kakugo^{1,2,}*
¹Faculty of Science, Hokkaido University, Japan; ²Graduate School of Chemical Sciences and Engineering, Hokkaido University, Japan

16.30-16.50 **O-41:** Theoretical study of effective attraction between like-charged particles and the reentrant condensation behavior

Ryo Akiyama^{}*
Department of Chemistry, Faculty of Science, Kyushu University, Fukuoka, Japan

Thursday 15th December 2022

18.00-21.00

Poster Sessions and Cocktail party (announcement of the Best Poster Award)

Morakot Room

P-01: Optimization of microwave-assisted biodiesel production using Fe₂O₃-CaO/AC derived from Asian green mussel shell as heterogeneous catalyst

*Vorrada Loryuenyong, Suttichai Kaewmanee, Sanee Rattanawaraporn, Nuengruethai Chimplenapanon, and Achanai Buasri**

Department of Materials Science and Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Thailand

P-02: Antibacterial coating of corona treated PLA/ PBS film with chitosan and zinc oxide nanoparticle

Nattakarn Hongscriphan, Jutamane Nualyung, Natthawadee Yaothaisong, and Pajaera Patanathabutr*

Department of Materials Science and Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Thailand

P-03: Effects of fiber surface modification on mechanical properties of short pineapple leaf fiber-carbon black reinforced natural rubber hybrid composites

Satit Thaiwattananon¹, Sombat Thanawan², and Taweechai Amornsakchai^{1,3,}*

¹Department of Chemistry and Center of Excellence for Innovation in Chemistry, Faculty of Science, Mahidol University, Thailand; ²Rubber Technology Center, Faculty of Science, Mahidol University, Thailand; ³Center of Sustainable Energy and Green Materials, Faculty of Science, Mahidol University, Thailand

P-04: Preparation and properties of carboxymethyl cellulose/ β -cyclodextrin hydrogel

*Napadson Panyakaew, Chanchai Thongpin, and Sudsiri Hemsri**

Department of Materials Science and Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Thailand

P-05: New type of stabilizer on the storage hardening of natural rubber

Piyanut Promkaowthong¹, and Wirasak Smitthipong^{1,2,}*

¹Specialized Center of Rubber and Polymer Materials in Agriculture and Industry (RPM), Department of Materials Science, Faculty of Science, Kasetsart University, Bangkok, Thailand; ²Office of Research Integration on Target-Based Natural Rubber, National Research Council of Thailand (NRCT), Bangkok, Thailand

P-06: Synthesis and characterization of calcium carbonate/ carbon from water lettuce via hydrothermal carbonization process

Nattapat Chaiammart^{1,2}, Nattapon Srisuk¹, Natnicha Mueanpun¹, and Gasidit Panomsuwan^{1,2,}*

¹Department of Materials Engineering, Faculty of Engineering, Kasetsart University, Thailand; ²Special Research Unit for Biomass Conversion Technology for Energy and Environmental Materials, Kasetsart University, Thailand

P-07: Bacterial cellulose: An eco-friendly low cost biomaterial for dye removal

*Sirirat Sukphan, Peraya Buapho, Nuchanat Laingamnuay, and Phimchanok Jaturapiree**

Department of Biotechnology, Faculty of Engineering and Industrial Technology, Silpakorn University, Thailand

P-08: Effect of blowing agents on properties of cellular rubber of NR/CR blends

Chanchai Thongpin, and Lueruang Angsupanich*

Department of Materials Science and Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Sanamchandra Palace Campus, Thailand

P-09: Green synthesis of Mn-doped TiO₂ photocatalysts using aloe vera extract for degradation of methylene blue dye

Nicha Choophun¹, Jirayu Kongtip¹, Gil Felicisimo S. Cabrera², Juvy J. Monserate², and Gasidit Panomsuwan^{1,}*

¹Department of Materials Engineering, Faculty of Engineering, Kasetsart University, Thailand;

²Department of Chemistry, Central Luzon State University, Philippines

P-10: Teak sawdust-derived nitrogen-doped carbons as cathode electrocatalysts for oxygen reduction reaction

Jirayu Kongtip¹, Thandavarayan Maiyalagan² and Gasidit Panomsuwan^{1,3,}*

¹Department of Materials Engineering, Faculty of Engineering, Kasetsart University, Thailand;

²Department of Chemistry, College of Engineering & Technology, SRM Institute of Science and Technology, India; ³Special Research Unit for Biomass Conversion Technology for Energy and Environmental Materials, Kasetsart University, Thailand

P-11: The study of electrical resistance of silver nanowires in isopropanol for heater application

Rawat Jaisutti¹, Naraporn Indrarit¹, Kuntima Pattanarat¹, Thaweewat Khamla², and Nattasamon Petchsang^{2,3,}*

¹Department of Physics, Faculty of Science and Technology, Thammasat University, Khlong Nueng, Thailand; ²Department of Materials Science, Faculty of Science, Kasetsart University, Thailand; ³ Specialized Center of Rubber and Polymer Materials for Agriculture and Industry (RPM), Faculty of Science, Kasetsart University, Thailand

P-12: Biosynthesis of silver nanoparticles using extract of banana peel waste assisted by microwave irradiation

Thanyporn Phoemthaisong¹, Bussarin Ksapabutr¹, Nattawut Chaiyut¹, and Manop Panapoy^{1,2,}*

¹Department of Materials Science and Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Sanamchandra Palace Campus, Thailand; ²Center of Excellence on Petrochemical and Materials Technology, Chulalongkorn University, Thailand

P-13: Microwave-assisted green synthesis of silver nanoparticles using extract of mint leaves

Apisit Thanasakonpong^{1,2}, Bussarin Ksapabutr¹, and Manop Panapoy^{1,2,}*

¹Department of Materials Science and Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Sanamchandra Palace Campus, Thailand; ²Center of Excellence on Petrochemical and Materials Technology, Chulalongkorn University, Thailand

P-14: Static properties of the laser deposited and powder bed fusion printed part

Mikko Hietala^{}, Timo Rautio, Jarmo Mäkikangas, and Antti Järvenpää Kerttu Saalasti Institute, University of Oulu, Finland*

P-15: Production of dextran by *Lactobacillus fermentum* OR1 isolated from pickled mango juice

Nannapat Karnthanachotikul, and Phimchanok Jaturapiree^{}*

Department of Biotechnology, Faculty of Engineering and Industrial Technology, Silpakorn University, Thailand

P-16: Dry electropolishing of laser powder bed fusion manufactured cobalt-chrome

Timo Rautio^{}, Matias Jaskari, and Antti Järvenpää*

Future Manufacturing Technologies, University of Oulu, Finland

P-17: Innovative process of natural rubber foam: Dunlop/Talay/Bubbling method

Weena Anantawut¹, and Wirasak Smitthipong^{1,2,}*

¹Specialized Center of Rubber and Polymer Materials in Agriculture and Industry (RPM), Department of Materials Science, Faculty of Science, Kasetsart University, Bangkok, Thailand; ²Office of Research Integration on Target-Based Natural Rubber, National Research Council of Thailand (NRCT), Bangkok, Thailand

P-18: A study of CO₂ solubility in Sylgard-184 ultrathin films at room temperature using QCM

Nutthon Yokajaksusri, Sinan Feng, Shinichi Murata, and Atsushi Takahara^{}*

Research Center for Negative Emission Technologies, Kyushu University, Japan

P-19: Fabrication and properties of gelatin/dialdehyde chitosan films

Sudsiri Hemsri^{}, Nopparuj Junwattarunggu, Worawut Rueangsawang, and Sathita Aramsrithum
Department of Materials Science and Engineering, Faculty of Engineering and Industrial
Technology, Silpakorn University, Thailand*

P-20: Development of natural rubber foam using nano-reinforcement filler

Haruthai Klommueang¹, and Wirasak Smitthipong^{1,2,}*

*¹Specialized Center of Rubber and Polymer Materials in Agriculture and Industry (RPM),
Department of Materials Science, Faculty of Science, Kasetsart University, Bangkok, Thailand;*

*²Office of Research Integration on Target-Based Natural Rubber, National Research Council of
Thailand (NRCT), Bangkok, Thailand*

P-21: Liquid crystalline monodisperse titanate nanosheets columns stabilized by interlayer
alkylammoniums

Yuji Nakashima¹, Momoka Miyoshi¹, Riki Kato^{1,2}, Takashi Kato², and Nobuyoshi Miyamoto^{1,}*

¹Graduate School of Engineering, Fukuoka Institute of Technology, Fukuoka, Japan;

²Department of Chemistry and Biotechnology, School of Engineering, The University of Tokyo
