

PROGRAM

Program of International Conference on Materials Research and Innovation

15th – 16th December 2021 at Chatrium Hotel Riverside, Bangkok, Thailand

17th December 2021 via Zoom Video Conference

Wednesday 15th December 2021

08.00-09.00 **Registration**

09.00-10.00 **Opening ceremony**

The River

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

Opening speech: *Ms. Nisakorn Jungjaroentharn* (Former Director General of Department of Science Service and Advisor to the Minister of Ministry of Higher Education, Science, Research and Innovation)

10.00-10.30 **Plenary lecture:** Strategy of innovation and business trend of material for sustainability

The River

*Dr. Wilaiporn Chetanchan**

Siam Cement Public Company Limited (SCG), Bangkok, Thailand

10.30-11.00

Coffee break

11.00-11.30 **Plenary lecture:** Navigating a reliable translation of mussel adhesion

The River

*Prof. Herbert Waite**

University of California at Santa Barbara, USA

11.30-12.00 **Plenary lecture:** Science and technology of functional materials design from various polymer materials including wastes

The River

*Prof. Sadhan C. Jana**

School of Polymer Science and Polymer Engineering, The University of Akron, USA

12.00-14.00

Lunch

Rubbers and Polymeric Materials 1

The River I

Session chairs: Wirunya Keawwattana, and Nanthiya Hansupalak

14.00-14.30 **Invited lecture:** Deciphering the discoloration in the production process of natural rubber

*Jitladda Sakdapipanich**

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

14.30-14.50 **O-01:** Manufacturing processes and properties of PVC composites containing Bi₂O₃ and Para rubber wood particles as X-ray shielding materials

Worawat Poltabtim¹, Ekachai Wimolmala², Teerasak Markpin², Narongrit Sombatsompop², and Kiadtisak Saenboonruang^{1,3,}*

¹Department of Applied Radiation and Isotopes, Faculty of Science, Kasetsart University; ²Polymer PROCESSING and Flow (P-PROF) Research Group, Division of Materials Technology, School of Energy, Environment and Materials, King Mongkut's University of Technology Thonburi;

³Specialized Center of Rubber and Polymer Materials in Agriculture and Industry (RPM), Faculty of Science, Kasetsart University, Bangkok, Thailand

14.50-15.10 **O-02:** Development of high-performance particleboard from sawdust of Para wood cover by vulcanized natural rubber and veneer wood sheet

Zakee Niseng^{1,}, Anuwat Worlee¹, Nabil Hayeemasae², Arfan Haseemae¹, and Sareef Chekmae¹*
¹Faculty of Science and Technology, Fatoni University; ²Department of Rubber Technology, Faculty of Science and Technology, Prince of Songkla University - Pattani Campus, Pattani, Thailand

15.10-15.30 **O-03:** Influence of nanofiller types on morphology and mechanical properties of natural rubber nanocomposites

Bunsita Wongvasana¹, Abdulhakim Masa², Hiromu Saito³, Tadamoto Sakai⁴, and Natinee Lopattananon^{1,}*

¹Department of Rubber Technology and Polymer Science, Faculty of Science and Technology, Prince of Songkla University; ²Rubber Engineering & Technology Program, International College, Prince of Songkla University; ³Department of Organic and Polymer Materials Chemistry, Tokyo University of Agriculture and Technology; ⁴Tokyo Office, Shizuoka University, Japan

15.30-16.00 **Coffee Break**

Rubbers and Polymeric Materials 2

The River I

Session chairs: Wirunya Keawwattana, and Nanthiya Hansupalak

16.00-16.30 **Invited lecture:** Ultrafine fully vulcanized natural rubber modified by graft-copolymerization with styrene and acrylonitrile monomers

Sarawut Rimdusit^{1,}, Krittaphorn Longsiri¹, Phattarin Mora¹, Chanchira Jubsilp², and Kasinee Hemvichian³*

¹Research Unit on Polymeric Materials for Medical Practice Devices, Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University; ²Department of Chemical Engineering, Faculty of Engineering, Srinakharinwirot University; ³Thailand Institute of Nuclear Technology, Thailand

Bio - and Circular - Materials 1

The River II

Session chairs: Chomdao Sinthuvanich, Prakit Sukyai, and Pichamon Kiatwuthinon

14.00-14.30 **Invited lecture:** Structural and functional biomaterials in medical applications

*Arkadiusz Chworos**

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

14.30-15.00 **Invited lecture:** Single-stranded DNA-packaged polyplex micelle as AAV-inspired compact gene vector to systemically target stroma-rich pancreatic cancer

*Kensuke Osada**

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

15.00-15.20 **O-04:** Plant growth promotion traits and antagonistic effect in white root disease of rhizobacteria in *Hevea* rubber of Thailand

Mathurot Chaiharn^{1,}, and Saisamorn Lumyong²*

¹Programmed in Biotechnology, Faculty of Science, Maejo University, Chiangmai; ²Department of Biology, Faculty of Science, Chiangmai University, Chiangmai, Thailand

15.20-15.40 **O-05:** Injection molding and characterization of polylactide stereocomplex blended with thermoplastic starch and chain extender

Yottha Srithep^{1,}, Dutchanee Pholharn², and Onpreeya Veang-in¹*

¹Manufacturing and Materials Research Unit, Faculty of Engineering, Mahasarakham University; ²Department of Chemistry, Faculty of Science and Technology, Rajabhat Mahasarakham University, Thailand

15.40-16.10 **Coffee Break**

Bio - and Circular - Materials 2

The River II

Session chairs: Chomdao Sinthuvanich, Prakrit Sukyai, and Pichamon Kiatwuthinon

16.10-16.30 **O-06:** Crosslinked polyvinyl alcohol/polyvinyl pyrrolidone hydrogel sheets by electron beam irradiation for wound dressings

Rattanakorn Chiangnoon¹, Pranita Meepean², Natawan Sritapanya², Sirirat Phakpaknam², Kanchana Chahorm³, Thanapon Yooyen³, Nuatawan Thamrongsiripak⁴, and Pimpon Uttayarat^{1,}*
¹Nuclear Technology Research and Development Center, Thailand Institute of Nuclear Technology (Public Organization); ²Department of Biology, Faculty of Science and Technology, Suan Sunandha Rajabhat University; ³Irradiation Center, Thailand Institute of Nuclear Technology (Public organization); ⁴Development and Service Section, Thailand Institute of Nuclear Technology (Public Organization), Thailand

Special Advanced Materials 1

The River III

Session chairs: Jukkrit Mahujchariyawong, and Chanapa Kongmark

14.00-14.30 **Invited lecture:** Development of a laboratory SAXS beamline with synchrotron level performance for high throughput characterization of bio-derived polymers

Youli Li^{}, Phillip Kohl, Miguel Zepeda-Rosales, Alvin Pan, and Ryan Willat*
Materials Research Laboratory and BioPacific MIP, University of California at Santa Barbara, USA

14.30-14.50 **O-07:** Raman microscopy applied to polymer characterization

Chutchai Juntasaro^{}*
Horiba Thailand LTD, Scientific Department, Thailand

14.50-15.10 **O-08:** Valorization of rubberwood waste into porous carbon

Ronnachai Songthan¹, Voranuch Somsongkul^{1,}, and Chanapa Kongmark^{2,**}*
¹Department of Industrial Chemistry, Faculty of Applied Science, King Mongkut's University of Technology North Bangkok; ²Department of Materials Science, Faculty of Science, Kasetsart University, Thailand

15.10-15.30 **O-09:** Properties of hydroxyapatite based geopolymer synthesized from calcined kaolin

Kanyapak Poolkwan¹, Suwimol Asavapisit^{1,}, and Rungroj Piyapanuwat²*
¹Environmental Technology Program, School of Energy, Environment and materials, King Mongkut's University of Technology Thonburi; ²Innovative Environmental Management and Smart Construction Material Laboratory, King Mongkut's University of Technology Thonburi (Ratchaburi Learning Park), Thailand

15.30-16.00 **Coffee Break**

Special Advanced Materials 2

The River III

Session chairs: Jukkrit Mahujchariyawong, and Chanapa Kongmark

16.00-16.30 **Invited lecture:** Toward the development of sensors and actuators by 4D printing

Karine Mougini^{1,}, Quentin Bauerlin¹, Xingyu Wu¹, Benjamin Leuschel¹, Ferial Ghellal¹, Damien Favier², Christian Gauthier², Thierry Roland², and Arnaud Spangenberg¹*
¹Institut de Science des Matériaux de Mulhouse; ²Institut Charles Sadron, France

08.00-09.00 **Registration**

09.00-09.30 **Plenary lecture:** Structure and electronic properties of optical materials through the eyes of computational approach
The River

Songwut Suramitr^{1,2,}, and Prof. Supa Hannongbua^{1,2,*}*

¹Department of Chemistry, Faculty of Science, Kasetsart University, Bangkok; ²Center for Advanced Studies in Nanotechnology for Chemical, Food and Agricultural Industries, Kasetsart University, Bangkok, Thailand

09.30-10.00 **Plenary lecture:** Statistical mechanics solvation theory for nano- and bio-materials
The River

*Assoc. Prof. Norio Yoshida**

Department of Chemistry, Graduate School of Science, Kyushu University, Japan

10.00-10.30 **Coffee Break**

Rubbers and Polymeric Materials 3

The River I

Session chairs: Wirunya Keawwattana, and Nanthiya Hansupalak

10.30-11.00 **Invited lecture:** Thermoplastic natural rubber based on biodegradable polyesters and linear-low-density polyethylene

Rangrong Yoksan^{1,2,}, and Wanchana Wannawitayapa¹*

¹Department of Packaging and Materials Technology, Faculty of Agro-Industry, Kasetsart University; ²Center for Advanced Studies for Agriculture and Food, Kasetsart University Institute for Advanced Studies, Kasetsart University, Thailand

11.00-11.30 **Invited lecture:** Carbon fibre reinforced polymer composites: damage, repair, and future prospects

*Kheng Lim Goh**

Newcastle University in Singapore, Singapore

11.30-11.50 **O-10:** Preliminary study of laser-assisted technique for vulcanizing rubber latex in additive manufacturing

Kanchanabhorn Chansoda¹, Panithi Wiroonpochit², and Watcharapong Chookaew^{1,}*

¹Material and Manufacturing Innovation Research Group, Department of Mechanical Engineering, Mahidol University; ²Innovative Rubber Manufacturing Research Group, National Metal and Materials Technology Center, National Science and Technology Development Agency (NSTDA), Thailand

11.50-14.00 **Lunch**

Rubbers and Polymeric Materials 4

The River I

Session chairs: Kiadtisak Saenboonruang, and Nanthiya Hansupalak

14.00-14.30 **Invited lecture:** Finite element analysis of elastomer: case study – rolling resistance of pneumatic and solid tyres

Pairote Jittham^{1,}, Sedthawatt Sucharitpawatskul¹, Satit Siriruk¹, and Sira Meesaringkarn²*

¹National Metal and Materials Technology Center (MTEC), National Science and Technology Development Agency (NSTDA); ²Rubber Technology Research Centre (RTEC), Faculty of Science, Mahidol University, Thailand

14.30-15.00 **Invited lecture:** Combining fractional order derivatives and spectral variable selection for crosslink density evaluation of Para rubber latex by Vis–NIR spectroscopy

Chin Hock Lim¹, Jetsada Posom^{2,}, and Panmanas Sirisomboon³*

¹Thai Rubber Latex Group Public Company Limited; ²Department of Agricultural Engineering, Faculty of Engineering, Khon Kaen University; ³Department of Agricultural Engineering, School of Engineering, King Mongkut's Institute of Technology Ladkrabang, Thailand

15.00-15.20 **O-11:** Electrospun polylactic acid (PLA) fibers loaded with Ag/CaCO₃ filler for antimicrobial applications

Moe Ei Ei Zin^{1,2}, and Wimonlak Sutapun^{1,2,}*

¹*School of Polymer Engineering, Institute of Engineering, Suranaree University of Technology;*

²*Research Center for Biocomposite Materials for Medical Industry and Agricultural and Food Industry, Suranaree University of Technology, Thailand*

15.20-16.00 **Coffee Break**

Rubbers and Polymeric Materials 5

The River I

Session chairs: Kiadtisak Saenboonruang, and Nanthiya Hansupalak

16.00-16.30 **Invited lecture:** Near infrared spectroscopy and machine learning classifier of crosslink density level of prevulcanized natural rubber latex

Panmanas Sirisomboon¹, Chin Hock Lim², and Jetsada Posom^{3,}*

¹*Department of Agricultural Engineering, School of Engineering, King Mongkut's Institute of Technology Ladkrabang;* ²*Thai Rubber Latex Group Public Company Limited;* ³*Department of Agricultural Engineering, Faculty of Engineering, Khon Kaen University, Thailand*

16.30-16.50 **O-12:** Prediction of Crosslink density of Natural Rubber Latex by spectroscopic method based on fractional order derivative (FOD)

Chin Hock Lim¹, Jetsada Posom^{2,}, and Panmanas Sirisomboon³*

¹*Thai Rubber Latex Group Public Company Limited;* ²*Department of Agricultural Engineering, Faculty of Engineering;* ³*Department of Agricultural Engineering, School of Engineering, King Mongkut's Institute of Technology Ladkrabang, Thailand*

16.50-17.10 **O-13:** Effect of NR filled carbon black and ratio of NR/NBR on the thermal and oil aging properties

*Wongsathorn Rattanaprechachai, Chakrit Suvanjumrat, and Watcharapong Chookaew**

Material and Manufacturing Innovation Research Group, Department of Mechanical Engineering, Mahidol University, Thailand

10.00-10.30 **Coffee Break**

Bio - and Circular - Materials 3

The River II

Session chairs: Chomdao Sinthuvanich, and Pichamon Kiatwuthinon

10.30-11.00 **Invited lecture:** Optimising the friction welding of wood

Darshil Shah^{1,}, Thomas Reynolds², Scott Andrews³, Bertrand Flipo³, Kate Franklin³, Steve Dodds³, Michael Ramage¹, and Eleni Toumpanaki⁴*

¹*University of Cambridge, Department of Architecture, Centre for Natural Material Innovation, Cambridge;* ²*University of Edinburgh, School of Engineering;* ³*TWI, Granta Park, Great Abington, Cambridge;* ⁴*University of Bristol, Department of Civil Engineering, Queen's Building, University Walk, UK*

11.00-11.20 **O-14:** Development of rubber tapping automatic robot and rubber tapping tool

*Chanin Joochim**

College of Industrial Technology King Mongkut's University of Technology North Bangkok, Thailand

11.20-11.40 **O-15:** Study on rapid measurement technic of dry rubber content in latex cup lump by electrical properties

Preedawan Chaisrichonlathan, and Chusak Chavapradit*

Agricultural Engineering Research Institute, Department of Agriculture, Thailand

11.40-14.00 **Lunch**

Bio - and Circular - Materials 4

The River II

Session chairs: Chomdao Sinthuvanich, and Pichamon Kiatwuthinon

14.00-14.30 **Invited lecture:** A bioinorganic approach to photoresponsive materials: V and Fe coordination in polysaccharides

*Alexis D. Ostrowski**, *Carina Haddad*, and *E. A. Kalani D. Edirisinghe*
Bowling Green State University, USA

14.30-14.50 **O-16:** Evaluation on physicochemical properties and stability of Thanaka bark powder for natural face powder products

Nway Yu Hnin¹ and *Mayuree Kanlayavattanaku^{1,2,*}*
¹School of Cosmetic Science, Mae Fah Luang University, Chiang Rai; ²Phytocosmetics and Cosmeceuticals Research Group, Mae Fah Luang University, Chiang Rai, Thailand.

14.50-15.10 **O-17:** Utilization of lignin extracted from Thai agro-waste as UV-blocking agent for polylactic acid film

Pawarisa Wijaranakul^{1,}*, *Bongkot Hararak^{2,**}*, *Charinee Winotapun²*, *Chayanon Chotirotsukon³*, and *Weerawan Laosiripojana¹*
¹Department of Tool and Materials Engineering, Faculty of Engineering, King Mongkut's University of Technology Thonburi; ²National Metal and Materials Technology Center (MTEC), National Science and Technology Development Agency; ³National Center for Genetic Engineering and Biotechnology (BIOTEC), National Science and Technology Development Agency, Thailand

15.10-15.30 **O-18:** The study of Para rubber farming system development changing from monoculture to integrated farming for smallholder rubber farms

Wandee Sutthinarakorn¹, *Pattarawat Jeerapattanatorn¹*, *Somkiat Sutthinarakorn²*, *Somkid Sangmanee³*, *Aruunprapha Thanakijkosat⁶*, *Arunothai Sarigakham⁶*, *Roongnapa Korpraditsakul¹*, *Ramita Sutthinarakorn⁶*, *Onuma Natseeta⁴*, and *Nusara Larppuwanart⁵*
¹Kasetsart University; ²Arsomsilp Institute; ³Trang Province Farmer Council; ⁴Chitralada Technology Institute; ⁵Suan Dusit University; ⁶Independent Academic, Thailand

15.30-16.00 **Coffee Break**

Bio - and Circular - Materials 5

The River II

Session chairs: Chomdao Sinthuvanich and Pichamon Kiatwuthinon

16.00-16.30 **Invited lecture:** Diffusion coefficient of one macromolecule in an aqueous solution: the system size dependence of the viscosity in the estimation method using MD simulations

Tomoya Iwashita¹, *Masaaki Nagao¹*, *Akira Yoshimori²*, *Masahide Terazima³*, and *Ryo Akiyama^{1,*}*
¹Department of Chemistry, Kyushu University; ²Department of Physics, Niigata University; ³Department of Chemistry, Kyoto University, Japan

16.30-16.50 **O-19:** Development of high performance particle board based Para wood reinforced with thermoplastic and bonding with citric acid and moltosdaxtrin

Arfan Haseemae^{1,}*, *Anuwat Worlee¹*, *Nabil Hayeemasae²*, *Zakee Niseng¹*, and *Sareef Chekmae¹*
¹Faculty of Science and Technology, Fatoni University; ² Department of Rubber Technology, Faculty of Science and Technology, Prince of Songkla University - Pattani Campus, Thailand

16.50-17.10 **O-20:** Comparison of prediction of moisture content of oven-dried Para rubber timber between small portable NIR spectrometer and commercial digital moisture meter

Sirinad Noypitak^{1,}*, *Anupun Terdwongworaku¹*, *Naridol Paunrat²*, *Amornrit Puttipipatkajorn³* and *Amorndej Puttipipatkajorn⁴*
¹Department of Agricultural Engineering, Faculty of Engineering at Kamphaengsaen, Kasetsart University; ²Agriculture Innovation and management program, Faculty of Science and Technology, Nakhon Pathom Rajabhat University; ³Department of Computer Engineering, Faculty of Engineering at Kamphaengsaen, Kasetsart University; ⁴Department of Food Engineering, Faculty of Engineering at Kamphaengsaen, Kasetsart University, Thailand

10.00-10.30	Coffee Break
	<p>Special Advanced Materials 3 The River III Session chairs: Nattasamon Petchsang, and Sutee Boonchui</p>
10.30-11.00	<p>Invited lecture: Structural characterization of polymer and polymer composite with synchrotron x-ray</p> <p><i>Supagorn Rugmai*</i>, <i>Siriwat Soontaranon</i>, <i>Nuntaporn Kamonsutthipaijit</i>, and <i>Sirinart Srichan</i> <i>Synchrotron Light Research Institute (Public Organization), Thailand</i></p>
11.00-11.20	<p>O-21: High-harmonic generation (HHG) in silicene</p> <p><i>Thanakrit Fudulwatjananon</i>, <i>Chavanon Summueang</i>, and <i>Sutee Boonchui*</i> <i>Department of Physics, Faculty of Science, Kasetsart University, Bangkok, Thailand</i></p>
11.20-11.40	<p>O-22: Development of ternary blended rubber foam for using as ceiling board</p> <p><i>Kim Bunsreyneang</i>¹, <i>Kanokon Hancharoen</i>², <i>Phattarawadee Nun-anan</i>³, <i>Kanoktip Boonkerd</i>^{1,3}, ¹<i>Department of Materials Science, Chulalongkorn University;</i> ²<i>Center of Building Innovation Technology, Department of Building Innovation, Faculty of Architecture, Kasetsart University;</i> ³<i>Center of Excellence on Petrochemical and Materials Technology, Faculty of Science, Chulalongkorn University, Thailand</i></p>
11.40-14.00	Lunch
	<p>Special Advanced Materials 4 The River III Session chairs: Sutee Boonchui, and Saree Phongphananee</p>
14.00-14.30	<p>Invited lecture: Application of near infrared spectroscopy for quality evaluation in Para rubber industry</p> <p><i>Anupun Terdwongworakul</i>^{1,*}, <i>Amorndej Puttipipatkajorn</i>², <i>Amornrit Puttipipatkajorn</i>³, <i>Sirinad Noypitak</i>¹, and <i>Dharell Siano</i>¹ ¹<i>Department of Agricultural Engineering, Faculty of Engineering at Kamphaeng Saen, Kasetsart University;</i> ²<i>Department of Food Engineering, Faculty of Engineering at Kamphaeng Saen, Kasetsart University;</i> ³<i>Department of Computer Engineering, Faculty of Engineering at Kamphaeng Saen, Kasetsart University, Thailand</i></p>
14.30-14.50	<p>O-23: Properties of hydroxyapatite based geopolymer synthesized from bituminous fly ash</p> <p><i>Sirirat Yoolamnan</i>¹, <i>Suwimol Asavapisit</i>^{1,*}, <i>Rungroj Piyapanuwat</i>² ¹<i>Environment Technology Program, School of Energy, Environment and materials, King Mongkut's University of Technology Thonburi;</i> ²<i>Innovative Environmental Management and Smart Construction Material Laboratory, King Mongkut's University of Technology Thonburi (Ratchaburi Learning Park), Thailand.</i></p>
14.50-15.10	<p>O-24: A comparative study of the drying methods on drying efficiency of natural rubber gloves using microwave and hot air sources</p> <p><i>Pornthip Keangin*</i>, <i>Aphisara Charoenlerdchanya</i> and <i>Teerawat Jamsai</i> <i>Department of Mechanical Engineering, Faculty of Engineering, Mahidol University, Thailand</i></p>
15.10-15.30	<p>O-25: Development of contact pressure model for motorcycle tires by experiment</p> <p><i>Ravivat Rugsaj</i>^{1,2}, <i>Juthanee Phromjan</i>^{1,2}, and <i>Chakrit Suvanjumrat</i>^{1,2,*} ¹<i>Department of Mechanical Engineering, Faculty of Engineering, Mahidol University;</i> ²<i>Laboratory of Computer Mechanics for Design (LCMD), Department of Mechanical Engineering, Faculty of Engineering, Mahidol University, Thailand</i></p>
15.30-16.00	Coffee Break

Special Advanced Materials 5

The River III

Session chairs: Sutee Boonchui, and Saree Phongphanphanee

16.00-16.20 O-26: Monte Carlo simulations of nanotube filler in composite material: optimize programming code

*Nathanon Kerdkaen^{1,2,3}, Thana Sutthibutpong^{2,3,4,**}, Saree Phongphanphanee^{2,5,6},
Sutee Boonchuay^{1,6}, and Jirasak Wong-ekkabut^{1,2,3,6,*}*

¹Department of Physics, Faculty of Science, Kasetsart University; ²Computational Biomodelling Laboratory for Agricultural Science and Technology (CBLAST), Faculty of Science, Kasetsart University; ³Thailand Center of Excellence in Physics (ThEP Center), Ministry of Higher Education, Science, Research and Innovation; ⁴Department of Physics, Faculty of Science, King Mongkut's University of Technology Thonburi (KMUTT); ⁵Department of Material Science, Faculty of Science, Kasetsart University; ⁶Specialized Center of Rubber and Polymer Materials for Agriculture and Industry (RPM), Faculty of Science, Kasetsart University, Thailand

16.20-16.40 O-27: Solid-state reaction synthesis and characterization of Mn-doped LiFePO₄ cathode material

Aye Myint Myat Kyaw^{1,2}, Gasidit Panomsuwan^{1,2}, and Ratiporn Munprom^{1,2,}*

*¹Department of Materials Engineering, Faculty of Engineering, Kasetsart University;
²International Collaborative Education Program for Materials Technology, Education, and Research (ICE-Matter), ASEAN University Network/Southeast Asia Engineering Education Development Network (AUN/SEED-Net), Thailand*

16.40-17.00 O-28: Self-energy generation from graphene vibrations

*Thanaset Mongkolsawat¹, Ongart Suntijitrungruang¹, Jakkapong Charoenpakdee¹, and
Sutee Boonchui^{1,2,*}*

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

Wednesday 15th December 2021

18.00-21.00

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

The Curve

P-01: Study of non-negligible chemical reduction of ZnO in the rubber industry

Watcharapong Wilaiwong¹, and Wirasak Smitthipong^{1,2,}*

¹Kasetsart University; ²National Research Council of Thailand (NRCT), Thailand

P-02: Study of nylon textile-reinforced natural rubber composite

Nantinee Choosang¹, and Wirasak Smitthipong^{1,2,}*

¹Kasetsart University; ²National Research Council of Thailand (NRCT), Thailand

P-03: Effect of potassium oleate on chemical structure-compression relationship of natural rubber foam

Peerayut Kunklang¹, and Wirasak Smitthipong^{1,2,}*

¹Kasetsart University; ²National Research Council of Thailand (NRCT), Thailand

P-04: Study of chemical structure and mechanical properties of anionic surfactant on natural rubber foam

Noppawan Tundiew¹, and Wirasak Smitthipong^{1,2,}*

¹Kasetsart University; ²National Research Council of Thailand (NRCT), Thailand

P-05: Study of yield percentage of epoxidized natural rubber preparation

Kesine Panmanee¹, and Wirasak Smitthipong^{1,2,}*

¹Kasetsart University; ²National Research Council of Thailand (NRCT), Thailand

P-06: Study of particle size of natural latex/polysaccharide composite

Kanyapat Wongphul¹, and Wirasak Smitthipong^{1,2,}*

¹Kasetsart University; ²National Research Council of Thailand (NRCT), Thailand

P-07: Theophylline extended-release monolithic matrix comprising natural rubber latex as binder

Pornsit Chaiya¹, and Thawatchai Phaechamud^{2,}*

¹School of Pharmacy, Walailak University, Tha sala, Nakhon Si Thammarat; ²Department of Pharmaceutical Technology, Faculty of Pharmacy, Silpakorn University, Thailand

P-08: Screening for antimicrobial activity from some Thai medicinal plants

Worrakanya Narakornwit^{1,}, Juree Charoenteeraboon², and Thawatchai Phaechamud³*

¹Department of Pharmacognosy; ²Department of Biopharmacy; ³Department of Pharmaceutical Technology, Faculty of Pharmacy, Thailand

P-09: Effect of arecoline, aqueous and methanolic areca nut crude extracts on rumen fluke

Napaphol Puyathorn¹, Chanokporn Sukonpan², Prapansak Toungsuwan³,

Worrakanya Narakornwit⁴, and Thawatchai Phaechamud^{5,}*

¹Program of Pharmaceutical Engineering; ²Department of Pharmaceutical Chemistry;

³Department of Lifelong Education; ⁴Department of Pharmacognosy; ⁵Department of Pharmaceutical Technology, Faculty of Pharmacy, Silpakorn University, Thailand

P-10: A grafting reaction of acrylamide onto saponified natural rubber using UV irradiation

Nichapat Juntree¹, Porntip Rojruthai², and Jitladda Sakdapipanich^{1,2,}*

¹Department of Chemistry and Center of Excellence for Innovation in Chemistry, Faculty of Science, Mahidol University; ²Division of Chemistry Industrial Process and Environment, Faculty of Science, Energy and Environment, King Mongkut's University of Technology North Bangkok, Thailand

P-11: A photochemical modification of deproteinized natural rubber latex (DPNRL) to be a hydroxyl-terminated DPNRL using TiO₂ film as a catalyst

*Phattharawadi Saekhow, Apisara Sillapasuwana, and Jitladda Sakdapipanich**

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

P-12: A model study on the impact of metal Ions on prevulcanization of concentrated natural rubber latex and dipped-products

Narueporn Payungwong¹, Porntip Rojruthai² and Jitladda Sakdapipanich^{1,}*

¹Department of Chemistry and Centre of Excellence for Innovation in Chemistry, Faculty of Science, Mahidol University; ²Division of Chemical Industrial Process and Environment, Faculty of Science, Energy and Environment, King Mongkut's University of Technology North Bangkok, Thailand

P-13: Role of non-rubber components on the properties of silica-filled rubber compounds in the presence of TESP as a silane coupling agent

*Apisara Sillapasuwana, Sirawan Kaewsikoun, and Jitladda Sakdapipanich**

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

P-14: Elemental analysis of natural rubber latex from RRIM 251 and RRIM 600 clones

Voranuch Somsongkul¹, Yanatanich Chintapunyakul², and Jitladda Sakdapipanich^{2,}*

¹Department of Industrial Chemistry, Faculty of Applied Science, King Mongkut's University of Technology North Bangkok; ²Department of Chemistry and Center of Excellence for Innovation in Chemistry, Faculty of Science, Mahidol University, Thailand

P-15: The validation HPLC method for determination of gambogic acid in gamboge resin

Ei Mon Khaing¹, Kritamorn Jitrangsri², Jongjan Mahadlek³, Chanokporn Sukonpan⁴, and Thawatchai Phaechamud^{1,5,}*

¹Program of Pharmaceutical Engineering, Faculty of Pharmacy, Silpakorn University; ²Program of Pharmaceutical Sciences, Faculty of Pharmacy, Silpakorn University; ³Pharmaceutical Intellectual Unit "Prachote Plengwittaya", Faculty of Pharmacy, Silpakorn University; ⁴Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Silpakorn University; ⁵Natural Bioactive and Material for Health Promotion and Drug Delivery System Group (NBM), Faculty of Pharmacy, Silpakorn University, Thailand

P-16: A new procedure of powder-free latex glove manufacturing using a mixture of carboxylated nitrile butadiene rubber and polychloroprene for surface coating of NR film

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P-17: Electrochemical performance of binder-free and flexible spinel NiCo₂O₄ electrode

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P-18: Study of porous rubber pipes reinforced with waste tire fibers and pineapple leaf fibers for smart irrigation system

Monticha Junpunya¹, Boonharn Ou-udomying², Taweechai Amornsakchai³, and Ittipol Jangchud^{1,}*

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P-19: Study of bladder release agent formulas and comparative study to evaluate release agent efficiency by using reciprocating tribometer

Noppawan Tanboriphan¹, Boonyawat Teeraprawatekul², Sithipong Mahathanabodee³, and Ittipol Jangchud^{1,}*

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P-20: Wood Plastic Composites (WPCs) from multilayer packaging waste and rHDPE as pallets for green industry

Thitikul Boonsri¹, Suparat Rukchonlatee^{1,2}, and Ittipol Jangchud^{1,}*

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P-21: Bio-based cellulose nanocrystals filled epoxidized natural rubber/chitosan composites: self-healing and enhanced mechanical properties

*Oranooch Somseemee, and Chomsri Siriwong**

Applied Chemistry Division and Center of Excellence for Innovation in Chemistry (PERCH-CIC), Department of Chemistry and Materials Chemistry Research Center (MCRC-KKU), Faculty of Science, Khon Kaen University, Thailand

P-22: Cure characteristics and tensile properties of styrene-butadiene rubber composites: influence of ZnOs types as an effective curing activator

*Supparoeak Boopasiri, and Chomsri Siriwong**

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P-23: Investigation of heated silver nanowires under surface modification

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P-24: Investigation of freshly prepared AgCl for high yield silver nanowires under polyol method

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P-25: The effect of shot peening on corrosion performance of anodized laser powder bed fusion manufactured AlSi₁₀Mg

Timo Rautio, Atef Hamada, Jani Kumpula, and Antti Järvenpää*

Kerttu Saalasti Institute, University of Oulu, Finland

P-26: Mechanical properties of laser welded and adhesively bonded ultra-high-strength steel lap joints

Mikko Hietala, Markku Keskitalo, and Antti Järvenpää*

Kerttu Saalasti Institute, University of Oulu, Finland

P-27: Physico-chemical properties of artificial tear ducts from fractionated Thai silk fibroin solution

Pitsinee Limteamcharoen^{1,2}, and Sorada Kanokpanont^{1,2,}*

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Series seminars on UN Sustainable Development Goals (SDGs) in the field of Materials Research and innovation: 17th December 2021 (All participants are invited without additional fees) via Zoom Video Conference

Friday 17th December 2021

09.00-12.00 **Speaker 1:** Sustainable development goals

*Nattasamon Petchsang**

Department of Materials Science, Faculty of Science, Kasetsart University, Thailand

Speaker 2: Knowledge transfer from university to community for sustainable community development: A case study of Khung Bang Kachao communities, Phra Pradaeng district, Samut Prakan province

Wirasak Fungfuang^{1,}, Uthaiwan Kovitvadhi¹, Pramote Chumnanpuen¹,*

Wanwipa Vongsangnak¹, Apinya Hirunwong², Chantha Wongoutong², Attawit Kovitvadhi³, Akkarasiri Sangsawang⁴, Jeerawan Ketsing⁵, Chatree Faikhamta⁵, and Chakkapan Sapkaew¹

¹Department of Zoology, Faculty of Science, Kasetsart University; ²Department of Statistics, Faculty of Science, Kasetsart University; ³Department of Physiology, Faculty of Veterinary Medicine, Kasetsart University; ⁴Department of Aquaculture, Faculty of Fisheries, Kasetsart University; ⁵Department of Education, Faculty of Education, Kasetsart University, Thailand

Speaker 3: Solar energy materials for photovoltaic and photoelectrochemical applications and devices

*Franca Drexler, Sebastian Lebioda, and Bernhard Neumann**

Department of Physical Chemistry, Faculty of Natural Science and Engineering, University of Applied Science Merseburg, Germany

Speaker 4: Flow and fine: a new ventilation system integrating wireless technology to improve residences indoor conditions under new normal

*Joseph Khedari**

Sunsyr Company Limited, Thailand

Speaker 5: NMR characterization of conformational interconversions of Lys48-linked ubiquitin chains in solution

Methanee Hiranyakorn^{1,2,3}, Saeko Yanaka^{1,2,3,4}, Tadashi Satoh⁴, Thunchanok Wilasri^{2,3}, Benchawan Jityuti^{2,3}, Maho Yagi-Utsumi^{1,2,3,4}, and Koichi Kato^{1,2,3,4,}*

¹Department of Functional Molecular Science, School of Physical Science, The Graduate University for Advanced Studies (SOKENDAI), Japan; ²Institute for Molecular Science (IMS), National Institutes of Natural Sciences, Japan; ³Exploratory Research Center on Life and Living Systems (ExCELLS), National Institutes of Natural Sciences, Japan; ⁴Graduate School of Pharmaceutical Sciences, Nagoya City University, Japan

Speaker 6: Molecular dynamics simulation of disease-related biomolecules

Hisashi Okumura^{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