



PJ ZEON Award for outstanding papers in *Polymer Journal* 2021

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The four winners of the 2021 PJ ZEON Award have been announced by the Society of Polymer Science Japan (SPSJ) as follows:

Yuuka Fukui (Keio University, Japan) for the contribution “*Preparation of Agarose Xerogel Nanoparticles by Solvent Evaporation from Water Nanodroplets*”, Vol. 53, No. 7, 2021.

Mikihiro Hayashi (Nagoya Institute of Technology, Japan) for the contribution “*Simple Preparation, Properties, and Functions of Vitrimer-like Polyacrylate Elastomers Using Trans-N-alkylation Bond Exchange*”, Vol. 53, No. 7, 2021.

Ryohei Ishige (Tokyo Institute of Technology, Japan) for the contribution “*Quantitative Analysis of Stereoscopic Molecular Orientations in Thermally Reactive and Heterogeneous Noncrystalline Thin Films via Variable-temperature Infrared pMAIRS and GI-XRD*”, Vol. 53, No. 5, 2021.

Ryohei Kakuchi (Gunma University, Japan) for the contribution “*Polymers of Lignin-sourced Components as a Facile Chemical Integrant for the Passerini Three-component Reaction*”, Vol. 53, No. 4, 2021.

Drs. Fukui, Hayashi, Ishige, and Kakuchi received their award certificates and medals. Each winner also received a cash prize of 300,000 JP yen and gave an invited talk based on their respective papers.

On behalf of the editors and editorial board members of *Polymer Journal*, I wish to congratulate Drs. Fukui, Hayashi, Ishige, and Kakuchi on this honor in recognition of their excellent papers [1–4]. I hope the award will provide encouragement to these young researchers for their bright future careers. Academic profiles of the winners can be found below this announcement.

The PJ ZEON Award started since 2005 as the successor of The PJ Paper Award, which started since 1992.

This PJ ZEON Award is open to all of the first author of papers published in *Polymer Journal* [5] who is under 38 years of age. We are looking forward to receiving your submissions papers and many applications for the 2022 PJ ZEON Award. Each year the SPSJ selects up to four most outstanding papers published by young authors in *Polymer Journal*, as recommended by the selection committee and board of directors of the SPSJ. Those who are interested should go to the SPSJ website (<https://main.spsj.or.jp/c5/pj/pj.htm>) for further information. Finally, we express our sincere appreciation to Zeon Corporation for their generous sponsorship of this award.

About the winners



Yuuka Fukui

Yuuka Fukui received Ph.D. degree from Keio University in 2012 under the supervision of Prof. Keiji Fujimoto. She was a JSPS research fellow (DC2) from 2010 to 2012. She joined the laboratory of Prof. Keiji Fujimoto at Keio university as a research associate in 2012 and was promoted to an assistant professor in 2017. Her research interests focus on the design and synthesis of polymeric materials (particles, membranes, porous structures) and organic-inorganic hybrid materials inspired from biological systems.

About the award article: The authors reported a new technique to prepare nanoparticles from biomass-derived polymers, which will be utilized as an eco-friendly alternative to synthetic particulate plastics. Nanosized agarose gel particles were produced via sol-to-gel transition of agarose

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inside water nanodroplets prepared by W/O miniemulsion method. Subsequently, the water evaporation was carried out to generate xerogel nanoparticles (AgarX). The morphologies and crystal structure of AgarX were controlled by changing the pressure and temperature during the water evaporation. The resultant AgarX possessed high crystallinity and exhibited a water dispersibility and a water resistance.



Mikihiro Hayashi

Mikihiro Hayashi received his Ph.D. degree from Nagoya University (Prof. Yushu Matsushita group) in 2015. During his doctor course, he had been selected as a JSPS research fellow (DC2) and experienced researches in ESPCI Paris-Tech (Prof. Ludwik Leibler) and in Shanghai Jiao Tong University (Prof. Xinyuan Zhu). He then re-joined Ludwik Leibler's group as a postdoc, and experienced another postdoc in Prof. Masatoshi Tokita in Tokyo institute of technology. In 2017, he became an assistant professor in Prof. Akinori Takasu group (Nagoya institute of technology), and currently manages his own laboratory as a PI. His research interest is the design of functional cross-linked materials.

About the award article: the authors reported a preparation vitrimer-like elastomers with dynamic bond-exchangeable cross-links. A poly(ethyl acrylate)-based copolymer bearing random pyridine groups was synthesized, which was cross-linked by quaternization reaction with dibromo cross-linkers. In this system, the bond exchange was operated via trans-N-alkylation of the quaternized pyridine groups, showing useful sustainable functions, such as reprocessability, recyclability, and dissolution ability in some selective solvents.



Ryohei Ishige

Ryohei Ishige received his Ph.D. from Tokyo Institute of Technology in 2011 under the supervision of Prof. Junji Watanabe. He joined Prof. Atsushi Takahara's laboratory at

Kyushu University (2011–2013) and Prof. Yoshinobu Tsujii's laboratory at Kyoto University (2013–2014). From 2014, he joined Prof. Shinji Ando's laboratory at Tokyo Institute of Technology as an assistant professor and was promoted to an associate professor in 2021. His research interests are liquid-crystalline aromatic polymers and those structure-property relationships.

About the award article: the authors developed a novel analytical technique integrating spectroscopies (infrared pMAIRS, and spectroscopic ellipsometry) and scattering methods (GI-WAXS), applied to the process where thin film polyimide, PI, is generated from linear poly(amic ester), PAE, precursors whose backbone consists of para-linkage. They revealed that PAE-based thin PI films form heterogeneous structure composed of non-oriented amorphous region and oriented ordered region which includes anisotropic nanopores causing structural birefringence. This method enables comprehensive evaluation of the evolution in complex hierarchical structures following chemical reactions for every noncrystalline thin film polymers.



Ryohei Kakuchi

Ryohei Kakuchi received his Ph.D. degree from the Hokkaido University in 2009 with a JSPS (Japan Society for Promotion of Science) research fellowship. After the Ph.D., he has made postdoctoral works in Germany from 2009 to 2014 and joined Kanazawa University as a research assistant professor in 2014. Based on the Leading Initiative for Excellent Young Researchers program, he was then appointed as an assistant professor (PI) at Gunma University in 2017. His research interests are the novel polymer synthesis based on unique organic transformation reactions including multicomponent reactions.

About the award article: The authors proposed a new synthetic strategy to utilize wood-biomass sourced compounds in a green fashion. To achieve sustainable material chemistry, the intrinsic reactivity of lignin-derived poly(methacrylated vanillin) (PMV) was spotlighted because many multicomponent reactions employ aldehydes as a reactant. First, the Passerini three-component reaction (Passerini-3CR) of the PMV was revealed to proceed with >90% aldehyde conversions. Taking advantage of this high reactivity of the PMV, its immobilized cellulose fabric, a wood-biomass sourced organic hybrid, was revealed to accept the surface Passerini-3CR with amino acid

derivatives, thereby demonstrating a fully bio-based material fabrication.

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