

Polymer Hot Information on the Latest Week's Articles (December in 2020)

On December 7, 2020

Reviews

100th Anniversary of Macromolecular Science Viewpoint: Degradable Polymers from Radical Ring-Opening Polymerization: Latest Advances, New Directions, and Ongoing Challenges

Theo Pesenti and Julien Nicolas

ACS Macro Lett. 2020, 9, 1812-1835, Articles ASAP (Viewpoint), Publication Date (Web): December 2, 2020

<https://doi.org/10.1021/acsmacrolett.0c00676>

・主鎖に分解可能官能基を導入できるラジカル開環重合に再注目、DOT/マレイミド交互共重合にも言及

100th Anniversary of Macromolecular Science Viewpoint: Reexamining Single-Chain Nanoparticles

Ruiwen Chen* and Erik B. Berda*

ACS Macro Lett. 2020, 9, 1836-1843, Articles ASAP (Viewpoint), Publication Date (Web): December 4, 2020

<https://doi.org/10.1021/acsmacrolett.0c00774>

・分子内のみで架橋・凝集させるための分子設計がポイント、合成法は様々、最近 10 年で急激に進歩

Chemistry of Chitosan Aerogels: Three-Dimensional Pore Control for Tailored Applications

Satoru Takeshita,* Shanyu Zhao, Wim J. Malfait, and Matthias M. Koebel

Angew. Chem. Int. Ed. 2020, 59, 2-26, Version of Record online: 30 November 2020

<https://doi.org/10.1002/anie.202003053>

・キトサンを利用したエアロゲルの超臨界 CO₂/アルコールによる多孔構造制御と医用材料他への応用

Bio-Inspired Silica Films Combining Block Copolymers Self-Assembly and Soft Chemistry: Paving the Way toward Artificial Exoskeleton of Seawater Diatoms

Sandra Alvarez, Pierre Marcasuzaa,* and Laurent Billon*

Macromol. Rapid Commun. 2020, 2000582, Version of Record online: 04 December 2020

<https://doi.org/10.1002/marc.202000582>

・ブロック共重合体の自己組織化とバイオミメティクスを利用して規則正しい構造の多孔シリカを合成

Progress in the Free and Controlled Radical Homo- and Co-Polymerization of Itaconic Acid Derivatives: Toward Functional Polymers with Controlled Molar Mass Distribution and Architecture

Lea Sollka and Karen Lienkamp*

Macromol. Rapid Commun. 2020, 2000546, Version of Record online: 03 December 2020

<https://doi.org/10.1002/marc.202000546>

・イタコン酸誘導体のラジカル重合/共重合の総説、最近国内でもイタコン酸関連プロジェクト急増中

Nanocellulose: Recent Fundamental Advances and Emerging Biological and Biomimicking Applications

Katja Heise, Eero Kontturi,* Yagut Allahverdiyeva, Tekla Tammelin, Markus B. Linder, Nonappa,* and Olli Ikkala*

Adv. Mater. 2020, 2004349, Version of Record online: 02 December 2020

<https://doi.org/10.1002/adma.202004349>

・ナノセルロースの応用開発は一段落の状況にあるが、研究は拡大中、基礎とバイオ関連応用の総説

Polymer Synthesis

Sequence-Defined Dithiocarbamate Oligomers via a Scalable, Support-free, Iterative Strategy

Pandurangan Nanjan, Anna Jose, Liya Thurakkal, and Mintu Porel*

Macromolecules, Articles ASAP (Article), Publication Date (Web): December 1, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c00412>

・ポリマーの精密シークエンス制御、この戦略もかなり普及して既に市民権を獲得か

Two-Step Divergent Synthesis of Monodisperse and Ultra-Long Bottlebrush Polymers from an Easily Purifiable ROMP Monomer

Yoshihiro Yamauchi,* Noriko Nishizawa Horimoto, Kuniyo Yamada, Yoshitaka Matsushita, Masayuki Takeuchi, and Yasuhiro Ishida*

Angew. Chem. Int. Ed., Version of Record online: 30 November 2020

<https://doi.org/10.1002/anie.202009759>

・ROMP と ATRP を組みあわせて 2 段階の重合でボトルブラシポリマーを合成

Degradable Poly(2-oxazoline) Analogues from Partially Oxidized Poly(ethylene imine)

Natalie E. Göppert, Maximilian Kleinstaubler, Christine Weber, and Ulrich S. Schubert*

Macromolecules, Articles ASAP (Article), Publication Date (Web): December 4, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c02143>

- ・カチオン開環重合ポリマーをポリエチレンイミン変換後に二段階で分解性ポリマー合成、工程多い？

Controls and Effects of Monomer Junctions and Sequences in Curable and Degradable Polyarylate Containing Acrylate Moieties

Yasuhiro Kohsaka* and Koki Nagai

Macromol. Rapid Commun. 2020, 2000570, Version of Record online:02 December 2020

<https://doi.org/10.1002/marc.202000570>

- ・ α -クロロメチルアクリル酸誘導体の著者グループの新しい展開、アニオン重合/ビニル重合からの展開

Aromatic dialdehyde-based bisbenzoxazines: The influence of relative position of oxazine rings

Romain Tavernier, Lerys Granado, Gabriel Foyer, Ghislain David, Sylvain Caillol*

Polymer, In Press, Corrected Proof, Available online 30 November 2020

<https://doi.org/10.1016/j.polymer.2020.123270>

- ・ベンズオキサジンモノマー設計、オキサジン環位置で物性に影響するが、架橋構造はよくわからない

Computation-Assisted Investigation of Polymer Kinetics: Mechanism of the Hybridization of Cobalt-Mediated Radical Polymerization and Atom Transfer Radical Polymerization

Fu-Sheng Wang, Ya-Wen Tsai, Meng-Qin Xie, and Chi-How Peng*

Macromolecules, Articles ASAP (Article), Publication Date (Web): December 2, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c02255>

- ・Co 錯体/Vac の CMRP と Cu 触媒/MMA の ATRP を組み合わせてブロックポリマーをワンポット合成

Anthraquinone-Mediated Reduction of a Trithiocarbonate Chain Transfer Agent to Initiate Electrochemical Reversible Addition–Fragmentation Chain Transfer Polymerization

Lisa T. Strover,* Almar Postma, Michael D. Horne, and Graeme Moad*

Macromolecules, Articles ASAP (Article), Publication Date (Web): November 25, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c02392>

- ・電極と酸化還元を利用する電子移動で RAFT 重合の ON/OFF 制御、Moad(教科書発刊予定)も共著者に

Polymer Materials

Lotus-Root-Like Microchanneled Collagen Scaffold

Hanjun Hwangbo, WonJin Kim, and Geun Hyung Kim*

ACS Applied Materials & Interfaces, Articles ASAP (Forum Article), Publication Date (Web): December 2, 2020

<https://dx.doi.org/10.1021/acsami.0c14670>

- ・蓮の茎に見られる中空多孔構造をコラーゲン/PVA/PCL で人工的に再現、生体・医療関連材料に応用

Biomimetic Boroxine-Based Multifunctional Thermosets via One-Pot Synthesis

Xi Yang, Meiling Guo, Yuanpeng Wu,* Shishan Xue, Zhenyu Li, Hongwei Zhou,* Andrew T. Smith, and Luyi Sun*

ACS Applied Materials & Interfaces, Articles ASAP, Publication Date (Web): December 2, 2020

<https://dx.doi.org/10.1021/acsami.0c16736>

- ・一部にボロン酸構造の可逆的架橋含むネットワークポリマー、応答性・自己修復・接着など多機能化

4D Printable Tough and Thermoresponsive Hydrogels

Mutian Hua, Dong Wu, Shuwang Wu, Yanfei Ma, Yousif Alsaied, and Ximin He*

ACS Applied Materials & Interfaces, Articles ASAP (Forum Article), Publication Date (Web): December 2, 2020

<https://dx.doi.org/10.1021/acsami.0c17532>

- ・高韌性で熱応答性 4D プリンティング用ハイドロゲル、ポリマー構造 PVA/(PVA-MA)-g-PNIPAM

Muscle-Mimetic Synergistic Covalent and Supramolecular Polymers: Phototriggered Formation Leads to Mechanical Performance Boost

Zhaoming Zhang, Lin Cheng, Jun Zhao, Hao Zhang, Xinyang Zhao, Yuhang Liu, Ruixue Bai, Hui Pan, Wei Yu, and Xuzhou Yan*

Journal of the American Chemical Society, Articles ASAP (Article), Publication Date (Web): November 30, 2020

<https://dx.doi.org/10.1021/jacs.0c10918>

- ・筋肉のミオシン/アクチンの作用を模倣した共有結合ポリマーと超分子ポリマーのシナジーシステム

A Diarylacetonitrile as a Molecular Probe for the Detection of Polymeric Mechanoradicals in the Bulk State through a Radical Chain Transfer Mechanism

Takumi Yamamoto, Sota Kato, Daisuke Aoki, and Hideyuki Otsuka*
Angew. Chem. Int. Ed., Version of Record online: 01 December 2020
<https://doi.org/10.1002/anie.202013180>

- ・機械的応力集中で絡み合ったポリマーが主鎖切断し水素引抜きにより生成する低分子ラジカルが発光

Effect of Molecular Architecture and Composition on the Aggregation Pathways of POEGMA Random Copolymers in Water

Rafael Pires-Oliveira, Juntao Tang, Ana Maria Percebom, Cesar L. Petzhold, Kam C. Tam, and Watson Loh*
Langmuir, Articles ASAP (Article), Publication Date (Web): December 4, 2020
<https://dx.doi.org/10.1021/acs.langmuir.0c02538>

- ・長さの異なるオリゴエチレン側鎖をもつポリメタクリートランダム共重合体の LCST 挙動その他

Continuous High-Throughput Fabrication of Architected Micromaterials via In-Air Photopolymerization

Jieke Jiang, Gary Shea, Prasansha Rastogi, Tom Kamperman, Cornelis H. Venner, and Claas Willem Visser*
Adv. Mater. 2020, 2006336, Version of Record online: 04 December 2020
DOI: [10.1002/adma.202006336](https://doi.org/10.1002/adma.202006336)

- ・ノズルから出した液滴を空气中で瞬時に UV 重合してポリマー微粒子の新しい合成法、最近競争多し

Polymer Structure & Physics

Energetics and Mechanisms of poly(N-isopropylacrylamide) Phase Transitions in Water–Methanol Solutions

Valerij Y. Grinberg,* Tatiana V. Burova, Natalia V. Grinberg, Alexander P. Moskalets, Alexander S. Dubovik, Irina G. Plashchina, and Alexei R. Khokhlov
Macromolecules, Articles ASAP (Article), Publication Date (Web): December 1, 2020
<https://dx.doi.org/10.1021/acs.macromol.0c02253>

- ・PNIPAM の水/メタノール混合溶媒中での相転移を DSC で精密解析、やはり水と有機溶媒は別物？

Spatial Heterogeneity Accompanying Gel Formation of Poly(N-isopropylacrylamide) Aqueous Solution at a Temperature below Cloud Point

Takuro Kogo, Atsuomi Shundo,* Chi Wang,* and Keiji Tanaka*
Macromolecules, Articles ASAP (Article), Publication Date (Web): November 25, 2020
<https://doi.org/10.1021/acs.macromol.0c02292>

- ・PNIPAM 水溶液の曇点以下の 50-100nm サイズ空間不均一性のゲル形成、レオロジー/軌跡解析

Adhesion & Interfaces

100 °C–Langmuir–Blodgett Method for Fabricating Highly Oriented, Ultrathin Films of Polymeric Semiconductors

Masato Ito, Yu Yamashita, Yukina Tsuneda, Taizo Mori, Jun Takeya, Shun Watanabe,* and Katsuhiko Ariga*
ACS Applied Materials & Interfaces, Articles ASAP, Publication Date (Web): December 2, 2020
<https://dx.doi.org/10.1021/acsami.0c18349>

- ・水代替でエチレングリコールを用いて難溶性電子材料から 100°C で高配向 LB 膜を作製

Contact-Angle Hysteresis and Contact-Line Friction on Slippery Liquid-like Surfaces

Hernan Barrio-Zhang, Elfego Ruiz-Gutierrez, Steven Armstrong, Glen McHale, Gary G. Wells, and Rodrigo Ledesma-Aguilar*
<https://dx.doi.org/10.1021/acs.langmuir.0c02668>

- ・水接触角に対するピン止め効果と動的摩擦の影響について実験結果を深く考察した基礎的な研究

Neutron Reflectivity on the Mobile Surface and Immobile Interfacial Layers in the Poly(vinyl acetate) Adsorption Layer on a Si Substrate with Deuterated Toluene Vapor-Induced Swelling

Tsukasa Miyazaki,* Keisuke Shimokita, Katsuhiko Yamamoto, Hiroyuki Aoki, Norifumi L. Yamada, and Noboru Miyata
Langmuir, Articles ASAP (Article), Publication Date (Web): December 1, 2020
<https://dx.doi.org/10.1021/acs.langmuir.0c03025>

- ・中性子反射率を使って Si 表面への PVAc の吸着挙動を解析、PVAc をなぜ用いているのかに興味あり

Crystal Engineering & Liquid Crystal

Phototriggered Guest Release from a Nonporous Organic Crystal: Remarkable Single-Crystal-to-Single-Crystal Transformation of a Binary Cocrystal Solvate to a Ternary Cocrystal

Shweta P. Yelgaonkar, Gonzalo Campillo-Alvarado, and Leonard R. MacGillivray

Journal of the American Chemical Society, Articles ASAP (Article), Publication Date (Web): November 25, 2020

<https://dx.doi.org/10.1021/jacs.0c09732>

- ・ [2+2]光環化を組み込んだゲスト分子放出を伴う単結晶-単結晶プロセスの結晶相転移

On December 14, 2020

Reviews

Supramolecularly Engineered J-Aggregates Based on Perylene Bisimide Dyes

Markus Hecht and Frank Würthner*

Accounts of Chemical Research, Articles ASAP (Article), Publication Date (Web): December 8, 2020

<https://dx.doi.org/10.1021/acs.accounts.0c00590>

- ・ 典型的な J 凝集体であるピレンビスイミドの会合様式や結晶構造と吸収・発光挙動の関係は有用情報

Direct formation of nano-objects via in situ self-assembly of conjugated polymers

Gregory I. Peterson,* Sanghee Yang and Tae-Lim Choi

Polym. Chem., 2020, Advance Article, The article was first published on 09 Dec 2020

<https://doi.org/10.1039/D0PY01389G>

- ・ 共役ポリマーの分子間相互作用で会合・凝集させてナノ集合体を形成、分子レベルでの構造体を中心

Poly(ϵ -lysine) and its derivatives via ring-opening polymerization of biorenewable cyclic lysine

Maosheng Li and Youhua Tao

Polym. Chem., 2020, Advance Article, The article was first published on 20 Nov 2020

<https://doi.org/10.1039/D0PY01387K>

- ・ 天然由来原料 ϵ リシンから環状モノマーに誘導してアニオン開環重合によって 2 種類ポリアミド合成

Design Principles of Interfacial Dynamic Bonds in Self-Healing Materials: What are the Parameters?

Mohammad Abdul Sattar* and Archita Patnaik*

Chemistry Am Asian Journal, Minireview, First published: 02 November 2020

<https://doi.org/10.1002/asia.202001157>

- ・ 動的共有結合系と非動的共有結合系の自己修復材料全体を分類して鳥瞰的解説、ミニでないレビュー

Synthesis, structure, and function of internally functionalized dendrimers

Ryan J. Smith, Christopher Gorman, Stefano Menegatti

Journal of Polymer Science, Version of Record online:10 December 2020

<https://doi.org/10.1002/polb.20200771>

- ・ デンドリマー内部の分子構造の設計、デンドリマー内部の官能基修飾による機能発現に絞った総説

Polymer Synthesis

Formation of Colloidal Superstructures of Disc-like Particles Utilizing Hydrogen Bonding Interactions between Steric Stabilizers

Mana Fujii, Junichi Tsukiji, Takanori Nakano, Taro Omura, Toyoko Suzuki, and Hideto Minami*

Macromolecules, Articles ASAP (Article), Publication Date (Web): December 8, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c02015>

- ・ 分散重合で作製した高分子微粒子の PVP-PAA 間水素結合を利用して集合体の構造制御

Green preparation of high-quality and low-cost graphene from discarded polyethylene plastic bags

Jian Gu, *ab Aimin Pang, ab Xiang Guo, ab Lei Li, ab Danchun Huangab and Fengyu Li

Chem. Commun., 2020, Advance Article, The article was first published on 25 Nov 2020

<https://doi.org/10.1039/D0CC06999J>

- ・ PE から脱水素炭素化してグラフェンに、使い捨て PE から低コストで高品質のグラフェンを合成

“Living” Polymer Dispersity Quantification for Nitroxide-Mediated Polymerization Systems by Mimicking a Monodispersed Polymer Blending Strategy

Tian-Tian Wang, Yi-Yang Wu, Zheng-Hong Luo, and Yin-Ning Zhou*

Macromolecules, Articles ASAP (Article), Publication Date (Web): December 7, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c02029>

・ NMP の分子量分布についての統計処理のモデルを提案、整合性がよくわからないので妥当性は？

Polymer Materials

Fused Filament Fabrication 4D Printing of a Highly Extensible, Self Healing, Shape Memory Elastomer Based on Thermoplastic Polymer Blends

Bangan Peng, Yunchong Yang, Tianxiong Ju, and Kevin A. Cavicchi*

ACS Applied Materials & Interfaces, Articles ASAP (Forum Article), Publication Date (Web): December 10, 2020

<https://dx.doi.org/10.1021/acsami.0c18618>

・ 半結晶性ポリマー(PCL)と熱可塑性エラストマー(PSt-b-EB ゴム-b-PSt, SEBS)で 4D プリンティング

Cooling-Triggered Release from Mesoporous Poly(N-isopropylacrylamide) Microgels at Physiological Conditions

Anna S. Vikulina,* Natalia A. Feoktistova, Nadezhda G. Balabushevich, Regine von Klitzing, and Dmitry Volodkin

ACS Applied Materials & Interfaces, Articles ASAP, Publication Date (Web): December 8, 2020

<https://dx.doi.org/10.1021/acsami.0c15370>

・ 多孔 PNIPAM の高温収縮時に薬物取り込み、低温膨張時の放出、ありがちな材料設計？

Additive Manufactured Carbon Nanotube/Epoxy Nanocomposites for Heavy-Duty Applications

Qixiang Jiang,* Haiguang Zhang, Dmitrii Rusakov, Neptun Yousefi, and Alexander Bismarck*

ACS Applied Polymer Materials, Articles ASAP (Letter), Publication Date (Web): December 8, 2020

<https://dx.doi.org/10.1021/acsapm.0c01011>

・ 3D プリンター成型には熱可塑性ポリマーを使用、エポキシ/CNT 熱硬化系複合材料に展開が新規？

Combining Alumina Particles with Three-Dimensional Alumina Foam for High Thermally Conductive Epoxy Composites

Hao Wang, Linhong Li, Xianzhe Wei, Xiao Hou, Maohua Li, Xinfeng Wu,* Yong Li,* Cheng-Te Lin, Nan Jiang, and Jinhong Yu*

ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): December 7, 2020

<https://dx.doi.org/10.1021/acsapm.0c01055>

・ エポキシ/アルミナ複合材(発泡と材料微粉末を併用)で高熱伝導材料、同時に熱膨張係数も低減化

Balancing Optical Property and Enhancing Stability for High Refractive Index Polythiourethane with Assistance of Cubic Thiol-Functionalized Silsesquioxanes

Yuanyu Chen, Zongyi Qin,* Guofeng Tang, Lijun Wei, Houlin Du, and Weiping Du*

ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): December 4, 2020

<https://dx.doi.org/10.1021/acsapm.0c00917>

・ チオール修飾 POSS+ポリチオウレタン材料設計、耐熱・機械・光学特性バランスはよいが特徴なし

Synthesis of Poly(Methyl Methacrylate)-Based Polyrotaxane via Reversible Addition-Fragmentation Chain Transfer Polymerization

Yu-Cheng Wang, Rina Maeda, Gergely Kali, Hideaki Yokoyama, Gerhard Wenz, and Kohzo Ito*

ACS Macro Lett. 2020, 9, 1853–1857, Publication Date (Web): December 7, 2020

<https://dx.doi.org/10.1021/acsmacrolett.0c00648>

・ シクロデキストリン(CD)ポリロタキサンを CD に包接した MMA の RAFT 重合で合成、著者 G 新展開？

[2 + 2] Photocycloaddition-Mediated Intra- and Intermolecular Cross-Linking of Thermoresponsive Dendronized Polymethacrylates

Di Wu, Kun Liu, Liangxuan Ren, Li Zhu, Jiatao Yan,* Wen Li, Xiacong Zhang, and Afang Zhang*

Macromolecules, Articles ASAP (Article), Publication Date (Web): December 7, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c02298>

・ 温度応答性の側鎖デンドロンポリマーで桂皮酸単位の分子内・分子間 [2+2]光二量化を制御

Polymer Physics & Structure

Decoupling Role of Film Thickness and Interfacial Effect on Polymer Thin Film Dynamics

Quanyin Xu, Ningtao Zhu, Huasong Fang, Xinping Wang, Rodney D. Priestley, and Biao Zuo*

ACS Macro Lett. 2021, 10, 1–8, Publication Date (Web): December 7, 2020

<https://doi.org/10.1021/acsmacrolett.0c00760>

・ PMMA 薄膜の T_g と熱膨張係数の膜厚依存性のデータを基に自由体積に着目して界面効果の議論展開

A combined differential scanning calorimetry-dynamic mechanical thermal analysis approach for the estimation of constrained phases in thermoplastic polymer nanocomposites

Behzad H. Soudmand, Karim Shelesh-Nezhad, Yaghob Salimi

JOURNAL OF APPLIED POLYMER SCIENCE, **137**, 41, e49260, First published: 23 March 2020

<https://doi.org/10.1002/app.49260>

- ・複数の測定法を組みあわせて物性評価したの論文でも材料面で評価すれば価値はぐっとアップする？

Water dynamics and self-assembly of single-chain nanoparticles in concentrated solutions

Beatriz Robles-Hernández, Eurne González, José A. Pomposo, Juan Colmenero and Ángel Alegría

Soft Matter, 2020, 16, 9738-9745, The article was first published on 30 Sep 2020

<https://doi.org/10.1039/D0SM01447H>

- ・水中での単分子ポリマーナノ粒子の会合状態について誘電緩和法で水のダイナミクスから解析

Adhesion & Interfaces

Capillary condensation under atomic-scale confinement

Qian Yang, P. Z. Sun, L. Fumagalli, Y. V. Stebunov, S. J. Haigh, Z. W. Zhou, I. V. Grigorieva, F. C. Wang & A. K. Geim

Nature, 588, 250 (2020) (10 December 2020), Published online: 9 December 2020

<https://doi.org/10.1038/s41586-020-2978-1>

- ・古典的な毛管凝縮理論(ケルビン方程式)が予想外に原子スケールの毛管現象に適用できることを発見

Bi-based & Biomedical Polymers

Achieving Ultrasmall Prussian Blue Nanoparticles as HighPerformance Biomedical Agents with Multifunctions

Zhiguo Qin, Bo Chen, Yu Mao, Chu Shi, Yan Li, Xiao Huang,* Fang Yang,* and Ning Gu*

ACS Applied Materials & Interfaces, Articles ASAP, Publication Date (Web): December 9, 2020

<https://dx.doi.org/10.1021/acscami.0c18357>

- ・MRIなどのバイオ応用志向の超微細なプルシアンブルー(鉄錯体顔料)ナノ粒子(5nm以下)の合成

On December 21, 2020

Reviews

The Optoelectronic Nose

Zheng Li* and Kenneth S. Suslick*

Accounts of Chemical Research, Articles ASAP (Article)

Publication Date (Web): December 17, 2020

<https://dx.doi.org/10.1021/acs.accounts.0c00671>

- ・においセンシングの最先端がわかる研究の概要まとめ、感知と数値化を到達、におい再生にも期待

Exploring Structures and Dynamics of Molecular Assemblies: Ultrafast Time-Resolved Electron Diffraction Measurements

Masaki Hada,* Yuta Nishina,* and Takashi Kato*

Accounts of Chemical Research, Articles ASAP (Article)

Publication Date (Web): December 15, 2020

<https://dx.doi.org/10.1021/acs.accounts.0c00576>

- ・昔の液晶研究時代と比べると大きく分野を拡大展開、年々専門領域の広がりは増している

Living Materials for Life Healthcare

Luoran Shang,* Changmin Shao, Junjie Chi, and Yuanjin Zhao*

Accounts of Materials Research, Articles ASAP (Article)

Publication Date (Web): December 11, 2020

<https://dx.doi.org/10.1021/accountsmr.0c00084>

- ・ヘルスケア関連での機能材料作製プロセス設計の基本的な考え方と実際のものづくりがよくわかる

Design and Application of Conjugated Polymer Nanomaterials for Detection and Inactivation of Pathogenic Microbes

Zelin Li, Wen Lu, Shaochuan Jia, Huanxiang Yuan,* and Li-Hua Gao

ACS Applied Bio Materials, Articles ASAP (Review)

Publication Date (Web): December 18, 2020

<https://dx.doi.org/10.1021/acsubm.0c01395>

・ポリチオフェン、ポリフルオレン他共役ポリマーをナノ微粒子化、病原性微生物検出/不活化に活用

Near-Infrared Light Brightens Bacterial Disinfection: Recent Progress and Perspectives

Qinyu Han, Jun Wei Lau, Thang Cong Do, Zhijun Zhang,* and Bengang Xing*

ACS Applied Bio Materials, Articles ASAP (Review)

Publication Date (Web): December 14, 2020

<https://dx.doi.org/10.1021/acsubm.0c01341>

・抗菌材料への近赤外の活用、ポリマー微粒子/一重項酸素も関連、抗ウイルスではない抗菌も大事

3D Printing of Biocompatible Shape-Memory Double Network Hydrogels

Jiehao Chen, Jiahe Huang, and Yuhang Hu*

ACS Applied Materials & Interfaces, Articles ASAP (Forum Article)

Publication Date (Web): December 18, 2020

<https://dx.doi.org/10.1021/acssami.0c17622>

・生体適合形状記憶材料にポリアクリルアミド/ゼラチン DN ゲルを 1 ポッド法 3 D プリンターで作製

4D Printing Elastic Composites for Strain-Tailored Multistable Shape Morphing

Heng Deng, Chi Zhang, Kianoosh Sattari, Yun Ling, Jheng-Wun Su, Zheng Yan, and Jian Lin*

ACS Applied Materials & Interfaces, Articles ASAP (Forum Article)

Publication Date (Web): December 16, 2020

<https://dx.doi.org/10.1021/acssami.0c17618>

・止まらない 4 D プリンティンググラッシュ、ソフトロボットとあわせて長期的な研究領域になるか？

Probing and Tuning the Permeability of Polymersomes

Alisha J. Miller, Amanda K. Pearce, Jeffrey C. Foster,* and Rachel K. O'Reilly*

ACS Central Science, Articles ASAP (Outlook)

Publication Date (Web): December 18, 2020

<https://dx.doi.org/10.1021/acscentsci.0c01196>

・ポリソームなど集合体の物質取り込み/放出の制御は重要で機構別に解説、基本的事項理解にも有用

100th Anniversary of Macromolecular Science Viewpoint: Redefining Sustainable Polymers

Danielle E. Fagnani, Jessica L. Tami, Graeme Copley, Mackenzie N. Clemons, Yutan D. Y. L. Getzler,* and Anne J. McNeil*

ACS Macro Letters, 2021, 10, 41–53, Articles ASAP (Viewpoint), Publication Date (Web): December 17, 2020

<https://doi.org/10.1021/acsmacrolett.0c00789>

・今後どのようなポリマーをつくり、どう使っていけばよいのかに誰もが本気で考えるべき時代に入

Pickering Emulsifiers Based on Block Copolymer Nanoparticles Prepared by Polymerization-Induced Self-Assembly

Saul J. Hunter and Steven P. Armes*

Langmuir, Articles ASAP (Invited Feature Article), Publication Date (Web): December 16, 2020

<https://dx.doi.org/10.1021/acs.langmuir.0c02595>

・ピッカリングエマルション用ブロックポリマー自己集合

Multicomponent Polymerization for π -Conjugated Polymers

Ki-Young Yoon and Guangbin Dong*

Macromol. Rapid Commun. 2020, 2000646, Version of Record online:16 December 2020

<https://doi.org/10.1002/marc.202000646>

・様々な構造の共役ポリマーの 3 種類以上の原料からワンポット合成、反応詳細と触媒選択中心に解説

Multicomponent Polymerizations Involving Green Monomers

Jia Wang, Anjun Qin,* and Ben Zhong Tang*

Macromol. Rapid Commun. 2020, 2000547, Version of Record online:13 December 2020

<https://doi.org/10.1002/marc.202000547>

・Multicomponent Polymerization 特集？共役ポリマー系、O₂, CO₂ をグリーンモノマー利用

Becoming Sustainable, The New Frontier in Soft Robotics

Florian Hartmann, Melanie Baumgartner, and Martin Kaltenbrunner*
Adv. Mater. 2020, 2004413, Version of Record online:18 December 2020
<https://doi.org/10.1002/adma.202004413>

・キーワードは、サステイナブル/グリーン/ソフトロボット/エレクトリックスキン/生分解など

Optoelectronic processes in covalent organic frameworks

Niklas Keller and Thomas Bein

Chem. Soc. Rev., 2021, Advance Article, The article was first published on 17 Dec 2020

<https://doi.org/10.1039/D0CS00793E>

・トーマス・バインも COF に参入、ゼオライト/層状化合物は得意分野で以前に有機固相反応や重合も

WATER TREATMENT: Hydrogen-bond filtration

Gabriella Graziano

Nature Reviews Chemistry, volume 4, page 636(2020), Published: 10 November 2020

<https://doi.org/10.1038/s41570-020-00237-2>

・Angew. Chem. Int. Ed. 掲載の論文をピックアップ紹介、カラムナー液晶構造を制御して動的機能発現

On December 28, 2020

Reviews

Chemically Modified Biopolymers for the Formation of Biomedical Hydrogels

Victoria G. Muir and Jason A. Burdick*

Chemical Reviews, Articles ASAP (Review), Publication Date (Web): December 23, 2020

<https://dx.doi.org/10.1021/acs.chemrev.0c00923>

・バイオメディカル用のハイドロゲルを共有結合架橋、動的共有結合架橋、物理架橋に分類して解説

Biodegradable Materials for Sustainable Health Monitoring Devices

Ensieh S. Hosseini, Saoirse Dervin, Priyanka Ganguly, and Ravinder Dahiya*

ACS Applied Bio Materials, Articles ASAP (Review), Publication Date (Web): December 23, 2020

<https://dx.doi.org/10.1021/acsabm.0c01139>

・無限に広がる可能性と用途、キーワードの洪水状態？健康管理デバイスでの生分解性の必然性は？

Cucurbituril-Based Biomacromolecular Assemblies

Yao-Hua Liu, Ying-Ming Zhang,* Hua-Jiang Yu, and Yu Liu*

Angew. Chem. Int. Ed. 2020, 59, 2–13, Version of Record online:23 December 2020

<https://doi.org/10.1002/anie.202009797>

・ククルビットウリルの物質取り込み/相互作用を利用したバイオ高分子との複合化/機能材料設計

Polymer Synthesis

Lewis Pair Radical Polymerization “On-Water”

Kazumasa Mori, Atsushi Shimizu, Mayo Horibe, Momoko Takei, Naoki Awano, Shin-ichi Matsuoka,* and Masato Suzuki

Macromolecules, Articles ASAP (Article), Publication Date (Web): December 23, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c01969>

・ルイス酸(モノマー相に溶解)とルイス塩基(水相に溶解)から相界面でラジカル発生、新しい重合

Nanostructures, Thermoresponsiveness, and Assembly Mechanism of Hydrogel Microspheres during Aqueous Free-Radical Precipitation Polymerization

Yuichiro Nishizawa, Haruka Minato, Takumi Inui, Takayuki Uchihashi,* and Daisuke Suzuki*

Langmuir, Articles ASAP (Article), Publication Date (Web): December 23, 2020

<https://dx.doi.org/10.1021/acs.langmuir.0c02654>

・水中での分散重合による機能性ナノ微粒子合成、微粒子の凝集制御から構造制御、さらに機能制御に

Phosphonium Tetraphenylborate: A Photocatalyst for Visible-Light-Induced, Nucleophile-Initiated Thiol-Michael Addition Photopolymerization

Xinpeng Zhang, Xiance Wang, Shunsuke Chatani, and Christopher N. Bowman*

ACS Macro Lett. 2021, 10, 84–89, Publication Date (Web): December 18, 2020

<https://doi.org/10.1021/acsmacrolett.0c00809>

- ・ PETMP を含む多官能チオールのチオール・エン反応を可視光で開始して規則正しいネットワーク形成

Synthesis and Properties of α -1,3-Glucan with Branched and Linear Mixed Ester Side Chains

Yuya Fukata, Satoshi Kimura, and Tadahisa Iwata*

ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): December 17, 2020

<https://dx.doi.org/10.1021/acsapm.0c01180>

- ・ 今後の主流になるであろうバイオベースポリマーの設計方法の代表例、高分子合成の概念が変わる

Stereocontrolled radical polymerization of acrylamides by ligand accelerated catalysis

Beomsu Park, Yuji Imamura, Shigeru Yamago

Polymer Journal, Published: 14 December 2020

<https://doi.org/10.1038/s41428-020-00444-0>

- ・ ラジカル重合の立体制御が半歩前進、アクリルアミドの重合は徳島大でも展開中、今後の動向を注視

How does the single unit monomer insertion technique promote kinetic analysis of activation and initiation in photo-RAFT processes?

Lei Zhang, Ruizhe Liu, Zixuan Huang and Jiangtao Xu

Polym. Chem., 2021, Advance Article, The article was first published on 08 Dec 2020

<https://doi.org/10.1039/D0PY01413C>

- ・ 光開始(解離)RAFT 重合系を速度論の観点から解析、計算化学結果と合わせて議論を展開、結論は？

Polymer Degradation

Rapid Synthesis of Chemically Recyclable Polycarbonates from Renewable Feedstocks

Derek J. Saxon, Ethan A. Gormong, Vijay M. Shah, and Theresa M. Reineke*

ACS Macro Lett. 2021, 10, 98–103, Publication Date (Web): December 22, 2020

<https://doi.org/10.1021/acsmacrolett.0c00747>

- ・ 再生可能資源のバイオ由来の多官能アルコールから環状カーボネート経由でポリカーボネート合成

Polymer Materials

Intrinsically Porous Polydiacetylene from a Functionalized BowlShaped Hexaphenoxycyclotriphosphazene Derivative

M. Nazir Tahir,* Masoud Harati, Audithya Nyayachavadi, Mehdi Rezapour, S. Holger Eichhorn,* and Simon Rondeau-Gagne*

ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): December 15, 2020

<https://dx.doi.org/10.1021/acsapm.0c01027>

- ・ 環状トリホスファゼンの外側に6つジアセチレン導入、らせんカラム状にスタッキングして固相重合

Helix-Sense-Selective Encapsulation of Helical Poly(lactic acid)s within a Helical Cavity of Syndiotactic Poly(methyl methacrylate) with Helicity Memory

Tomoyuki Ikai, Satoshi Kawabata, Fumihiko Mamiya, Daisuke Taura, Naoki Ousaka, and Eiji Yashima*

Journal of the American Chemical Society, Articles ASAP (Article), Publication Date (Web): December 14, 2020

<https://dx.doi.org/10.1021/jacs.0c11204>

- ・ PLA と PMMA と C60 を巧みに利用、ネタ切れせずに数十年間レベルキープしていることが凄い

Light-Activated Stress Relaxation, Toughness Improvement, and Photoinduced Reversal of Physical Aging in Glassy Polymer Networks

Nancy Sowan, Han Byul Song, Lewis M. Cox, James R. Patton, Benjamin D. Fairbanks, Yifu Ding, and Christopher N. Bowman*

Adv. Mater. 2020, 2007221, Version of Record online:23 December 2020

<https://doi.org/10.1002/adma.202007221>

- ・ RAFT 基ラジカル交換反応 + 架橋ポリマーで応力集中緩和、高強度ガラス状ポリマー材料、温度が重要

Xolography for linear volumetric 3D printing

Martin Regehly, Yves Garmshausen, Marcus Reuter, Niklas F. König, Eric Israel, Damien P. Kelly, Chun-Yu Chou, Klaas Koch, Baraa Asfari & Stefan Hecht

Nature **588**, 620–624 (2020). (24/31 December 2020), Published online: 23 December 2020

<https://doi.org/10.1038/s41586-020-3029-7>

News&View, Cameron Darkes-Burkey & Robert F. Shepherd, *Nature* **588**, 594-595 (2020),

<https://doi.org/10.1038/d41586-020-03543-3>

・共焦点ピンポイント重合で作った2次元構造形成を繰り返して高精度の3次元構造体を数秒で作製

Polymer Structure & Physics

A generalized tube model of rubber elasticity

Ehsan Darabi * and Mikhail Itskov

Soft Matter, 2021, Advance Article, The article was first published on 10 Dec 2020

<https://doi.org/10.1039/D0SM02055A>

・レオロジーの専門分野でもまだ結論と統一理論が出ていない架橋（分岐）ポリマーの管モデル適用

Adhesion & Interfaces

Fabrication and Characterization of Porous Poly(dimethylsiloxane) (PDMS) Adhesives

Vinay Mohania, Tushar D. Deshpande, Yogesh R. G. Singh, Sandip Patil, Rahul Mangal,* and Ashutosh Sharma*

ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): December 23, 2020

<https://dx.doi.org/10.1021/acsapm.0c00828>

・PDMS エマルジョンから多孔性で接着性のあるフィルム作製過程で水がポロゲンとして作用

Crystal Engineering & Liquid Crystal

Chemo- and Stereospecific Solid-State Thermal Dimerization of Sodium trans-2-Butenoate and γ -Ray-Induced Single-Crystal-to-Single-Crystal Dimerization of Hexaaquamagnesium trans-2- Butenoate Dihydrate: Both Give rel-(3S,4R)-1-Hexene-3,4- dicarboxylate but by Different Mechanisms. Stereospecific γ -RayInduced Trimerization of Sodium trans-2-Butenoate

Wen Shang, Roxana F. Schlam, Magali B. Hickey, Jingye Zhou, Kraig A. Wheeler, Graciela C. Diaz de Delgado, Chun-Hsing Chen, Barry B. Snider,* and Bruce M. Foxman*

Crystal Growth & Design, Articles ASAP (Article), Publication Date (Web): December 13, 2020

<https://dx.doi.org/10.1021/acs.cgd.0c01466>

・最近では珍しい長い長いタイトルの論文、著者は Bruce M. Foxman で長老健在

General Chemistry & Others

Structure and properties of densified silica glass: characterizing the order within disorder

Yohei Onodera, Shinji Kohara, Osami Sakata（その他多数著者あり）

NPG Asia Materials, volume 12, Article number: 85 (2020), Published: 23 December 2020

東工大プレス発表 <https://www.titech.ac.jp/news/2020/048400.html>

・国内外の多くの研究機関・著者多数、構造秩序のある高密度シリカガラスの合成と構造解析に成功