

## **Polymer Hot Information on the Latest Week's Articles (January in 2021)**

**On January 4, 2021**

### **Reviews**

#### **Advances in sustainable thermosetting resins: From renewable feedstock to high performance and recyclability**

Jingkai Liu, Shuaipeng Wang, Yunyan Peng, Jin Zhu, Weiwei Zhao, Xiaoqing Liu\*

*Progress in Polymer Science*, Volume 113, February 2021, 101353

<https://doi.org/10.1016/j.progpolymsci.2020.101353>

・再生可能原料を用いた熱硬化性樹脂の設計、ベンゾオキサジン/エポキシ/不飽和ポリエステルなど

#### **Green chemistry design in polymers derived from lignin: review and perspective**

James Sternberg, Olivia Sequerth, Srikanth Pilla,

*Progress in Polymer Science*, Volume 113, February 2021, 101344

<https://doi.org/10.1016/j.progpolymsci.2020.101344>

・リグニンベースモノマー他原料誘導、エポキシ/フェノール樹脂/ポリウレタン/ポリエステル合成

#### **Poly(glutamic acid): Production, composites, and medical applications of the next-generation biopolymer**

Sung-Bin Park, Moon-Hee Sung, Hiroshi Uyama, Dong Keun Han

*Progress in Polymer Science*, Volume 113, February 2021, 101341

<https://doi.org/10.1016/j.progpolymsci.2020.101341>

・医用材料向けポリグルタル酸合成とコンポジット化、ハイドロゲル/ナノファイバー/モノリスなど

#### **Onsager principle in polymer dynamics**

Masao Doi

*Progress in Polymer Science*, Volume 112, January 2021, 101339

<https://doi.org/10.1016/j.progpolymsci.2020.101339>

・平衡系近傍の非平衡系熱力学、オンサガーのエネルギー散逸原理について詳細に解説

#### **Non-Universal Features in Uniaxially Extensional Rheology of Linear Polymer Melts and Concentrated Solutions: A Review**

Yumi Matsumiya, Hiroshi Watanabe

*Progress in Polymer Science*, Volume 112, January 2021, 101325

<https://doi.org/10.1016/j.progpolymsci.2020.101325>

・ポリマー溶融体の粘弾性・緩和挙動の最新の実験結果と新しいモデルを関連研究含めて詳しく解説

#### **Reversible-deactivation radical polymerization (Controlled/living radical polymerization): From discovery to materials design and applications**

Nathaniel Corrigan, Kenward Jung, Graeme Moad\*, Craig J. Hawker\*, Krzysztof Matyjaszewski\*, Cyrille Boyer\*

*Progress in Polymer Science*, Volume 111, December 2020, 101311

<https://doi.org/10.1016/j.progpolymsci.2020.101311>

・海外の豪華メンバーが勢揃いして最近のリビングラジカル重合関連の全体像をごくコンパクトに解説

#### **Design of materials with supramolecular polymers**

Tristan D. Clemons, Samuel I. Stupp

*Progress in Polymer Science*, Volume 111, December 2020, 101310

<https://doi.org/10.1016/j.progpolymsci.2020.101310>

・材料科学のドンの久々登場、超分子集合体から生体・医用材料関連のごく一部だけかいつまんで紹介

#### **POSS hybrid hydrogels: A brief review of synthesis, properties and applications**

Siju Liu, Renqi Guo, Chuang Li, Cuifen Lu, Guichun Yang, Feiyi Wang, Junqi Nie, Chao Ma, Meng Gao

*European Polymer Journal*, Volume 143, 15 January 2021, 110180, Available online 3 December 2020

<https://doi.org/10.1016/j.eurpolymj.2020.110180>

・POSSを導入したハイドロゲルの合成・機能・応用の総説、取り込み法と応用分野でそれぞれ分類

#### **Post-metallocene catalysts for the synthesis of ultrahigh molecular weight polyethylene: Recent advances**

Artem A. Antonov, Konstantin P. Bryliakov

*European Polymer Journal*, Volume 142, 5 January 2021, 110162, Available online 26 November 2020

<https://doi.org/10.1016/j.eurpolymj.2020.110162>

- ・エチレン重合用の有機金属触媒の総説、メタロセン触媒に代わる触媒設計の新しい方向性と現状

#### **Stimuli-responsive glycopolymers and their biological applications**

Farnaz Jafari, Gokhan Yilmaz, C. Remzi Becer\*

*European Polymer Journal*, Volume 142, 5 January 2021, 110147, Available online 14 November 2020

<https://doi.org/10.1016/j.eurpolymj.2020.1101477>

- ・多糖類と合成高分子を組み合わせた刺激応答性ポリマー、合成設計から構造・応用まで広範囲で解説

#### **Photoinitiators of polymerization with reduced environmental impact: Nature as an unlimited and renewable source of dyes**

Guillaume Noirbent\*, Frédéric Dumur\*

*European Polymer Journal*, Volume 142, 5 January 2021, 110109, Available online 05 November 2020

<https://doi.org/10.1016/j.eurpolymj.2020.110109>

- ・重合用光開始剤の天然色素に着目して環境負荷低減の観点から整理、1 電子移動、LRP とも密に関連

#### **Insertion copolymerization of functional olefins: Quo Vadis?**

Rajkumar S. Birajdar, Samir H. Chikkali

*European Polymer Journal*, Volume 143, 15 January 2021, 110183,

<https://doi.org/10.1016/j.eurpolymj.2020.110183>

- ・オレフィン重合触媒はどこに行くのか(Quo Vadis)?極性モノマー/エチレン共重合、ROMP、ADMET

#### **Riboflavin-mediated radical polymerization – Outlook for eco-friendly synthesis of functional materials**

I. Zaborniak, P. Chmielarz\*

*European Polymer Journal*, Volume 142, 5 January 2021, 110152, Available online 19 November 2020

<https://doi.org/10.1016/j.eurpolymj.2020.110152>

- ・リボフラビンの電子移動・酸化還元を利用したラジカル重合だけで総説成立に驚き、LRP とも関連

#### **Polymerization of Cyclopropenes: Taming the Strain for the Synthesis of Controlled and Sequence-Regulated Polymers**

Benjamin R. Elling, Jessica K. Su, and Yan Xia\*

*Accounts of Chemical Research*, Articles ASAP (Article), Publication Date (Web): December 28, 2020

<https://dx.doi.org/10.1021/acs.accounts.0c00638>

- ・シクロプロペンモノマーの開環メタセシス重合の新展開、新しいモノマー群から新規ポリマーを合成

#### **Materials and Society: Functional Chemicals and Materials in Banknote and Security Paper**

Haihua Wang\* and Liyu Sun

*Accounts of Materials Research*, Articles ASAP (Viewpoint), Publication Date (Web): December 22, 2020

<https://dx.doi.org/10.1021/accountsmr.0c00071>

- ・紙幣や重要機密書類の将来像、絵空事ではない現実的なセルロース/合成繊維/インク関連の材料

#### **Advanced Materials with Special Wettability toward Intelligent Oily Wastewater Remediation**

Weiwei Zheng, Jianying Huang,\* Shuhui Li, Mingzheng Ge, Lin Teng,\* Zhong Chen, and Yuekun Lai\*

*ACS Applied Materials & Interfaces*, Articles ASAP (Review), Publication Date (Web): December 31, 2020

<https://dx.doi.org/10.1021/acsami.0c18794>

- ・油を含んだ廃水処理のための材料表面ぬれ性制御を活用した水/油分離膜、光分解触後に選択透過分離

#### **Hydrogels in Emerging Technologies for Type 1 Diabetes**

Stephanie Fuchs, Alexander U. Ernst, Long-Hai Wang, Kaavian Shariati, Xi Wang, Qingsheng Liu,\* and Minglin Ma\*

*Chemical Reviews*, Articles ASAP (Review), Publication Date (Web): December 28, 2020

<https://dx.doi.org/10.1021/acs.chemrev.0c01062>

- ・1 型糖尿病(Type 1 Diabetes)に関連するハイドロゲルの技術進展の切り口だけで膨大な量の研究成果

#### **Chemo-physical Strategies to Advance the in Vivo Functionality of Targeted Nanomedicine: The Next Generation**

Junjie Li and Kazunori Kataoka\*

*Journal of the American Chemical Society*, Articles ASAP (Perspective), Publication Date (Web): December 28, 2020

<https://dx.doi.org/10.1021/jacs.0c09029>

- ・ナノメディシン第一人者による最新動向、概念実証指向の複雑系よりメカニズム証明の重要性を主張

## Polymer Synthesis

### Theoretical and Experimental Study of Monofunctional Vinyl Cyclopropanes Bearing Hydrogen Bond Enabling Side Chains

Sören Schumacher, Sanwardhini Pantawane, Stephan Gekle, and Seema Agarwal\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 2, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02490>

・ビニルシクロプロパンモノマー合成/重合、側鎖に水素結合可能な4種類-XC(=O)X'-基導入して機能化

### Postmodification of Polymer Networks via the Freezing-Induced Generation of Radicals

Sota Kato, Daisuke Aoki, and Hideyuki Otsuka\*

*ACS Applied Polymer Materials*, Articles ASAP (Letter), Publication Date (Web): December 31, 2020

<https://dx.doi.org/10.1021/acsapm.0c01195>

・ラジカル解離可能なTASNを用いて溶媒凍結メカノケミカルによるラジカル発生、蛍光/ESRで追跡

## Polymer Materials

### Rediscovering Silicones: The Anomalous Water Permeability of “Hydrophobic” PDMS Suggests Nanostructure and Applications in Water Purification and Anti-Icing

Pei Bian,\* Yan Wang, and Thomas J. McCarthy\*

*Macromol. Rapid Commun.* 2020, 2000682, First published: 28 December 2020

<https://doi.org/10.1002/marc.202000682>

・水浄化や凍結防止などへの応用を想定して撥水性PDMS薄膜中の水のナノ構造透過を機構提案して解明

### Scratch-Healing Surface-Attached Coatings from Metallo-Supramolecular Polymer

Conetworks Clément Mugemana,\* Anouk Martin, Patrick Grysan, Reiner Dieden, David Ruch, and Philippe Dubois

*Macromol. Chem. Phys.* 2020, 2000331, First published: 28 December 2020

<https://doi.org/10.1002/macp.202000331>

・側鎖ピリジル基への亜鉛配位を利用した自己修復コーティング材料、PDMSとの共ネットワーク構造

### Phosphate-based covalent adaptable networks with recyclability and flame retardancy from bioresources

Yanlin Liu, Binbo Wang, Songqi Ma, Xiwei Xu, Jianfan Qiu, Qiong Li, Sheng Wang, Na Lu, Jiale Ye, Jin Zhu

*European Polymer Journal*, Volume 144, 5 February 2021, 110236, Available online 22 December 2020

<https://doi.org/10.1016/j.eurpolymj.2020.110236>

・リン酸を導入して難燃性を付与したリサイクル可能なエポキシ系、一部のみでバイオ由来原料を活用

### Ultra-low dielectric properties of porous polyimide thin films fabricated by using the two kinds of templates with different particle sizes

Yumi Kourakata, Tsunenobu Onodera, Hitoshi Kasai, Hiroshi Jinnai, Hidetoshi Oikawa

*Polymer*, Volume 212, 6 January 2021, 123115, Available online 6 October 2020

<https://doi.org/10.1016/j.polymer.2020.123115>

・テンプレートのシリカ微粒子(成膜後除去)サイズで多孔ポリイミド薄膜の空隙制御で低誘電特性制御

### Solvent-Free Fabrication of Robust Superhydrophobic Powder Coatings

Jinbao Huang, Marshall Yang, Hui Zhang,\* and Jesse Zhu

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): December 31, 2020

<https://dx.doi.org/10.1021/acsami.0c16582>

・PTFE粒子/ポリエステル/架橋剤の混合粉体吹きつけ熱処理で超撥水表面コーティング、溶媒フリー系

### Multifunctional Thermoplastic Polyurea Based on the Synergy of Dynamic Disulfide Bonds and Hydrogen Bond Cross-Links

Zhen Xiang, Chengzhen Chu, Hui Xie, Tao Xiang,\* and Shaobing Zhou\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): December 31, 2020

<https://dx.doi.org/10.1021/acsami.0c18396>

・動的ジスルフィド結合と水素結合を架橋に組み込んだ熱塑性ポリウレアの自己修復/リサイクルなど

### 3D-Printed Multi-Stimuli-Responsive Mobile Micromachines

Yun-Woo Lee, Hakan Ceylan, Immihan Ceren Yasa, Ugur Kilic, and Metin Sitti\*

*ACS Applied Materials & Interfaces*, Articles ASAP (Forum Article), Publication Date (Web): December 30, 2020

<https://dx.doi.org/10.1021/acsami.0c18221>

- ・ 温度/pH 応答性 PNIPAM ハイドロゲルでスクリーンを 3D プリンティングしてマイクロマシンに応用

### **Toward Robust, Tough, Self-Healable Supramolecular Elastomers for Potential Application in Flexible Substrates**

Jianfeng Fan, Jiarong Huang, Zhou Gong, Liming Cao, and Yukun Chen\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): December 29, 2020

<https://dx.doi.org/10.1021/acsami.0c15552>

- ・ PDMS に水素結合と金属配位架橋を組み込んで機械強度・耐衝撃性のよいウェアラブル電子材料基板

### **Effects of N-Substituents on the Solution Behavior of Poly(sulfobetaine methacrylate)s in Water: Upper and Lower Critical Solution Temperature Transitions**

Evan M. Lewoczko, Ning Wang, Claire E. Lundberg, Michael T. Kelly, Ethan W. Kent, Tao Wu, Ming-Li Chen, Jian-Hua Wang, and Bin Zhao\*

*ACS Applied Polymer Materials*, Articles ASAP (Article), Publication Date (Web): December 29, 2020

<https://doi.org/10.1021/acsapm.0c01191>

- ・ スルフォバタインメタクリレートポリマーの UCST/ULST 挙動、N-置換基構造によって敏感に挙動変化

### **Functionalized Polymersomes from a Polyisoprene-Activated Polyacrylamide Precursor**

Jay R. Werber, Colin Peterson, Nicholas J. Van Zee, and Marc A. Hillmyer\*

*Langmuir*, Articles ASAP (Article), Publication Date (Web): December 28, 2020

<https://dx.doi.org/10.1021/acs.langmuir.0c03157>

- ・ RAFT 重合でイソプレンと N-BOC アクリルアミドのブロックポリマー合成、高分子反応で変換/機能化

### **Polymer Structure & Physics**

#### **Physical origin of glass formation from multicomponent systems**

Yuan-Chao Hu and Hajime Tanaka\*

*Science Advances*, 11 Dec 2020: Vol. 6, no. 50, eabd2928

DOI: 10.1126/sciadv.abd2928

- ・ ガラス形成に関する基礎的な論文、結晶化核形成・結晶成長理論とシミュレーションに関する最新版

#### **Effect of Solvent Quality on the Phase Behavior of Polyelectrolyte Complexes**

Lu Li, Artem M. Rumyantsev, Samanvaya Srivastava, Siqi Meng, Juan J. de Pablo, and Matthew V. Tirrell\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): December 29, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c01000>

- ・ 高分子電解質と溶媒の相互作用と相分離の関係を以前から検討継続、結果は複雑で結論はまだ先か？

#### **Phase Behavior of Diblock Copolymer–Homopolymer Ternary Blends with a Compositionally Asymmetric Diblock Copolymer**

Bo Zhang, Shuyi Xie, Timothy P. Lodge, and Frank S. Bates\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): December 29, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c01745>

- ・ 水添 PS/PE/両者の非対称型ブロックポリマーからなる 3 成分系の相構造を解析、定石かつ王道の論文

#### **Water governs the mechanical properties of poly(vinyl alcohol)**

Lujuan Li, Xiaodong Xu, Lei Liu, Pingan Song, Qianqian Cao, Zhiguang Xu, Zhengping Fang, Hao Wang

*Polymer*, Volume 213, 20 January 2021, 123330, Available online 16 December 2020

<https://doi.org/10.1016/j.polymer.2020.123330>

- ・ PVA のマクロスコピックな機械特性やミクロスコピックな分子運動/緩和に及ぼす水の影響、T<sub>g</sub> 変化

#### **Quantifying the contributions of energy storage in a thermoset shape memory polymer with high stress recovery: A molecular dynamics study**

Collin D. Wick, Andrew J. Peters, Guoqiang Li

*Polymer*, Volume 213, 20 January 2021, 123319, Available online 15 December 2020

<https://doi.org/10.1016/j.polymer.2020.123319>

- ・ ジアミン硬化エポキシ系の架橋構造と機械特性・歪みエネルギー貯蔵/形状記憶との関連を議論

#### **Intrinsic chain stiffness in flexible linear polymers under extreme confinement**

Jinseong Kim, Jun Mo Kim, Chunggi Baig

*Polymer*, Volume 213, 20 January 2021, 123308, Available online 9 December 2020

<https://doi.org/10.1016/j.polymer.2020.123308>

- ・界面や束縛を受けた状況でのポリマー鎖の広がりや挙動を散乱実験とモデリングの結果から議論

#### **Effect of microstructure on chain flexibility and glass transition temperature of polybenzofulvene**

Huiqun Wang, Weiyu Wang, Wei Lu, Masashi Osa, Nam-Goo Kang, Kunlun Hong, Jimmy Mays

*Polymer*, Volume 212, 6 January 2021, 123276, Available online 30 November 2020

<https://doi.org/10.1016/j.polymer.2020.123276>

- ・溶液論専門の Jimmy Mays がポリベンゾフルバレンのポリマー鎖屈曲性(SEC で評価)と T<sub>g</sub> 相関を解析

#### **Molecular dynamics study of the shock response of polyurea**

M. Manav, M. Ortiz

*Polymer*, Volume 212, 6 January 2021, 123109, Available online 9 October 2020

<https://doi.org/10.1016/j.polymer.2020.123109>

- ・ポリウレタンのハード・ソフトセグメント相分離ドメインに及ぼす衝撃応答実測とシミュレーション

#### **High-strength and fibrous capsule-resistant zwitterionic elastomers**

Dianyu Dong et al

*Science Advances* 01 Jan 2021: Vol. 7, no. 1, eabc5442

DOI: 10.1126/sciadv.abc5442

- ・2種類の双性イオンポリマーハイドロゲル(ZEN hydrogel と命名)を使って高強度化した生体適合材料

#### **Adhesion & Interfaces**

##### **Mechanism of strengthening and toughening of a nanostructured styrene-butadiene based block copolymer by oligostyrene-modified montmorillonites**

Martin Ganß, Ulrike Staudinger, Bhabani K. Satapathy, Andreas Leuteritz, Roland Weidisch

*Polymer*, Volume 213, 20 January 2021, 123328, Available online 16 December 2020

<https://doi.org/10.1016/j.polymer.2020.123328>

- ・層状シリケートをオリゴスチレンで修飾し SB ブロックポリマーのミクロ構造が変化させて高強度化

##### **Organic monolayers disrupt plastic flow in metals**

Tatsuya Sugihara, Anirudh Udupa, Koushik Viswanathan, Jason M. Davis, Srinivasan Chandrasekar

*Science Advances* 16 Dec 2020: Vol. 6, no. 51, eabc8900, DOI: 10.1126/sciadv.abc8900

- ・金属表面に吸着した長鎖有機化合物の単分子膜が金属の機械特性を変化させて塑性変形挙動を抑制

##### **Highly Stretchable and Transparent Optical Adhesive Films Using Hierarchically Structured Rigid-Flexible Dual-Stiffness Nanoparticles**

Yoongook Park, Hoyun Byun, and Jun Hyup Lee\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): December 31, 2020

<https://dx.doi.org/10.1021/acsami.0c18488>

- ・堅いシリカコアと柔軟なポリマーシェルからなる二重構造微粒子を使用した高伸張透明粘着フィルム

##### **Do Interfacial Layers in Thin Films Act as an Independent Layer within Thin Films?**

Sherif Madkour, Marcel Gawek, Andreas Hertwig, and Andreas Schönhals\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): December 29, 2020

<https://dx.doi.org/10.1021/acs.macromol.0c02149>

- ・界面層中のポリマー分子は薄膜のバルク層のポリマー分子とどのように区別されるかを解析して議論

#### **Bio-based & Biomedical Polymers**

##### **Optically Transparent Bamboo with High Strength and Low Thermal Conductivity**

Xuan Wang, Shuya Shan, Sheldon Q. Shi,\* Yaoli Zhang,\* Liping Cai, and Lee M. Smith

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): December 30, 2020

<https://dx.doi.org/10.1021/acsami.0c21245>

- ・竹をアルカリ処理後にポリマー複合化して高強度/低熱伝導/透明材料を作製、全体性能はそれなりに

##### **Novel Biobased Self-Healing Ionomers Derived from Itaconic Acid Derivates**

Josefine Meurer, Julian Hniopek, Jan Dahlke, Michael Schmitt, Jürgen Popp, Stefan Zechel, and Martin D. Hager\*

*Macromol. Rapid Commun.* 2020, 2000636, First published: 28 December 2020

<https://doi.org/10.1002/marc.202000636>

- ・バイオ由来原料のイタコン酸ジエチルとイタコン酸モノメチルランダム共重合体で自己修復材料合成

### **Chemically recyclable bio-based polyester composed of bifuran and glycerol acetal**

Senri Hayashi, Yuya Tachibana, Naoto Tabata, Ken-ichi Kasuya

European Polymer Journal, Available online 28 December 2020, 110242

<https://doi.org/10.1016/j.eurpolymj.2020.110242>

- ・フランとグリセリンからバイオベースポリエステルを新規合成、ケミカルリサイクルを想定した合成

### **General Chemistry & Others**

#### **Visualizing subcellular rearrangements in intact beta cells using soft x-ray tomography**

Kate L. White et al.,

*Science Advances* 09 Dec 2020: Vol. 6, no. 50, eabc8262, DOI: 10.1126/sciadv.abc8262

- ・3次元X線CTの生体関連分野での応用例のひとつ、X線イメージングは様々な分野でホットな話題に

**On January 11, 2021**

### **Reviews**

#### **Conductive Hydrogel- and Organohydrogel-Based Stretchable Sensors**

Zixuan Wu, Xing Yang, and Jin Wu\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 6, 2021

<https://dx.doi.org/10.1021/acsami.0c21841>

- ・ヒドロゲル/オルガノヒドロゲル伸縮性センサーの安定性向上、特性評価、動作原理、センサー性能

#### **Dynamic Covalent Polymer Networks: A Molecular Platform for Designing Functions beyond Chemical Recycling and Self-Healing**

Ning Zheng, Yang Xu, Qian Zhao, and Tao Xie\*

*Chemical Reviews*, Articles ASAP (Review), Publication Date (Web): January 4, 2021

<https://dx.doi.org/10.1021/acs.chemrev.0c00938>

- ・動的共有結合ネットワークのリサイクル・自己修復・形状変化・その他の応用について網羅した総説

#### **Photo-induced radical thiol-ene chemistry: a versatile toolbox for peptide-based drug design**

Marzieh Ahangarpour, Iman Kaviani, Paul W. R. Harris\* and Margaret A. Brimble\*

*Chem. Soc. Rev.*, 2021, Advance Article, The article was first published on 06 Jan 2021

<https://doi.org/10.1039/DOCS00354A>

- ・光開始チオールエン反応、ペプチド関連の総説だが、イントロや前半部分で反応の歴史や基本に言及

#### **Stereochemical language in supramolecular polymer chemistry: How we can do better**

Anja R. A. Palmans, E. W. Meijer, Scott E. Denmark

*J. Polym. Sci.*, Version of Record online: 04 January 2021

<https://doi.org/10.1002/pol.20200814>

- ・超分子集合体(超分子ポリマー)のキラル増幅に関する短いコメント、改めて Mark Green 功績を再評価

#### **Synthetic Biodegradable Polymers with Chain End Modification: Polylactide, Poly(butylene succinate), and Poly(hydroxyalkanoate)**

Nalinthip Chanthaset and Hiroharu Ajiro

*Chemistry Letters* (Highlight Review), in press, Advance Publication on the web December 26, 2020

<https://doi.org/10.1246/cl.200859>

- ・PLA/PBS/PHA/PHBの生分解性ポリエステル末端構造化学修飾して機能化、ステレオコンプレックスも

#### **Designing disorder into crystalline materials**

Arkadiy Simonov & Andrew L. Goodwin

*Nature Reviews Chemistry*, volume 4, pages657–673(2020), Review Article, Published: 28 October 2020

- ・結晶性材料の無秩序構造-物性相関を有機物、超分子集合体、酸化物、金属有機構造体に適用して議論

### **Polymer Synthesis**

#### **Fast and Reversible Cross-Linking Reactions of Thermoresponsive Polymers Based on Dynamic Dialkylaminodisulfide Exchange**

Shimon Kataoka, Ayuko Tsuruoka, Daisuke Aoki, and Hideyuki Otsuka\*

ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): January 8, 2021

<https://dx.doi.org/10.1021/acsapm.0c01205>

・ BITEMPS のラジカル解離平衡を利用したポリメタクリル酸ヘキシルの動的架橋構造制御、低 T<sub>g</sub> が重要

### Dual-Polymeric Resin Based on Poly(methyl vinyl ether-alt-maleic anhydride) and PAMAM Dendrimer as a Versatile Supramolecular Adsorbent

Mateusz Pawlaczyk\* and Grzegorz Schroeder

ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): January 6, 2021

<https://dx.doi.org/10.1021/acsapm.0c01254>

・ ビニルエーテル無水マレイン酸交互共重合体/PAMAM デンドリマー複合ポリマー吸着材料、DDS に応用

### Reactivity Ratios and Surface Properties of Confined and Bulk ATRP Copolymerization of Butyl Methacrylate and 2-Hydroxyethyl Acrylate

Laia Leon-Boigues, Catalina von Bilderling, Lía Pietrasanta, Omar Azzaroni, Carmen Mijangos,\* and Juan M. Giusti\*

ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): January 4, 2021

<https://dx.doi.org/10.1021/acsapm.0c00910>

・ AAO ナノ細孔中で BA/HEA を ATRP バルク共重合するとモノマー反応性比が大幅変化、表面特性も評価

### Thermal Properties and Self-Assembly Behaviors of Triblock Copolymers Consisting of PEG Segment and Acrylamide-Based Block Bearing Alkyl Side Chains Prepared by RAFT Method

Athmen Zenati,\* Ismail Kada, and Gherici-Kaddour Zaouia

Macromolecules, Articles ASAP (Article), Publication Date (Web): January 5, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02229>

・ RAFT 重合で PEG とポリ N-ドデシルフェニル AA の ABA 型ブロックポリマー合成・自己組織化構造解析

### RAFT Emulsion Polymerization for (Multi)block Copolymer Synthesis: Overcoming the Constraints of Monomer Order

Murtaza Khan, Thiago R. Guimaraes, Kenneth Choong, Graeme Moad, Sebastien Perrier, and Per B. Zetterlund\*

Macromolecules, Articles ASAP (Article), Publication Date (Web): January 5, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02415>

・ 乳化系 RAFT 重合によるペンタブロックポリマー合成、溶液では制御不可のシークエンスも制御可能に

### Effects of Network Structures on the Tensile Toughness of CopperCatalyzed Azide-Alkyne Cycloaddition (CuAAC)-Based Photopolymers

Han Byul Song, Nancy Sowan, Austin Baranek, Jasmine Sinha, Wayne D. Cook, and Christopher N. Bowman\*

Macromolecules, Articles ASAP (Article), Publication Date (Web): January 4, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02455>

・ 光開始アジド-アルキンクリック重合でネットワークポリマーを合成、規則的な架橋構造と物性の相関

### A covalent organic framework as a photocatalyst for atom transfer radical polymerization under white light irradiation

Zhen Lu, Xiaoling Fu, Hongjie Yang, Yulai Zhao, Longqiang Xiao\* and Linxi Hou

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

<https://doi.org/10.1039/D0PY01545H>

・ イミンベースの COF を触媒に用いて光制御型の ATRP でポリマー合成、分子性触媒との差別化は今後？

### Multifunctionality in Polymer Networks by Dynamic of Coordination Bonds

Pengfei Zhang, Andraž Rešetič, Marc Behl, Andreas Lendlein

Macromol. Chem. Phys., Version of Record online: 04 January 2021

<https://doi.org/10.1002/macp.202000394>

・ トリフェニルホスフィンを側鎖に組み込んだ BA ポリマーをロジウム錯体で動的架橋、欲張り多機能化

### Synthesis of Polysiloxanes with Functional Groups by Using Organometallic Carboxylate Catalysts

Ryosuke Matsuno, Takamasa Ito, Shigeaki Takamatsu, and Atsushi Takahara

Chemistry Letters, in press, Advance Publication on the web January 9, 2021

<https://doi.org/10.1246/cl.200862>

・ 側鎖修飾型のポリシロキサン合成、触媒の使い分けで直鎖ポリマーと金属配位架橋ポリマーを合成

## Polymer Materials

### Bioinspired 3D Printable, Self-Healable, and Stretchable Hydrogels with Multiple Conductivities for Skin-like Wearable Strain Sensors

Jingjiang Wei, Jingjing Xie, Pengchao Zhang, Zhaoyong Zou, Hang Ping, Weimin Wang, Hao Xie, James Zhijian Shen, Liwen Lei,\* and Zhengyi Fu\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 7, 2021

<https://dx.doi.org/10.1021/acsami.0c19512>

・アルギン酸 Na/ポリアクリル酸/CNT を用いてウェアラブルな伸縮性センサーを 3D プリンターで作製

### Reversible Thermochromic Photonic Coatings with a Protective Topcoat

Weixin Zhang, Albert P. H. J. Schenning, Augustinus J. J. Kragt, Guofu Zhou,\* and Laurens T. de Haan\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 6, 2021

<https://dx.doi.org/10.1021/acsami.0c19236>

・ポリシロキサン側鎖にコレステリック液晶を導入してサーモクロミックな構造色を示すトップコート

### Photochemically and Photothermally Controllable Liquid Crystalline Network and Soft Walkers

Chen Shen, Ruochen Lan, Rui Huang, Zhongping Zhang, Jinying Bao, Lanying Zhang, and Huai Yang\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 6, 2021

<https://dx.doi.org/10.1021/acsami.0c20628>

・アゾベンゼン異性化による UV と光熱変換による NIR 応答を組み合わせた選択照射で尺取り虫歩行制御

### Direct Ink Writing of Hierarchically Porous Cellulose/Alginate Monolithic Hydrogel as a Highly Effective Adsorbent for Environmental Applications

Jun Yuan, Chenqi Yi, Haoqing Jiang, Feng Liu,\* and Gary J. Cheng\*

*ACS Applied Polymer Materials*, Articles ASAP (Article), Publication Date (Web): January 7, 2021

<https://dx.doi.org/10.1021/acsapm.0c01002>

・インクジェットで印刷可能なセルロース/アルギン酸多孔(モノリス)ヒドロゲルのモデル化合物吸脱着

### UV-Resistant Trifluoropropyl-Substituted Open-Cage Silsesquioxane-Pendant Polysiloxanes

Lina Li, Hiroaki Imoto, Arifumi Okada, Kenji Kanaori, and Kensuke Naka\*

*ACS Applied Polymer Materials*, Articles ASAP (Article), Publication Date (Web): January 6, 2021

<https://dx.doi.org/10.1021/acsapm.0c01236>

・部分的に構造を乱した POSS を CF<sub>3</sub> 化して PDMS 側鎖と架橋構造に導入、リンカー構造工夫で UV 耐性

### Dual-Cationic Poly(ionic liquid)s Carrying 1,2,4-Triazolium and Imidazolium Moieties: Synthesis and Formation of a Single Component Porous Membrane

Wei Cao, Liangxiao Tan, Hong Wang, and Jiayin Yuan\*

*ACS Macro Lett.* 2021, 10, 161-166 (Letter), Publication Date (Web): January 8, 2021

<https://dx.doi.org/10.1021/acsmacrolett.0c00784>

・イオン液体ポリマーの DMSO 溶液キャストで作製したフィルムを水中で膨潤相分離/乾燥後多孔化

### Macromolecular Additives to Turn a Thermoplastic Elastomer into a Self-Healing Material

Leo Simonin, Guillaume Falco, Sandrine Pensec, Florent Dalmas, Jean-Marc Chenal, Francois Ganachaud, Alba Marcellan, Laurent Chazeau,\* and Laurent Bouteiller\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 8, 2021

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 8, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02352>

・熱可塑性プラスチックにハードセグメントの凝集を抑制する効果ポリマーを添加して自己修復機能化

## Polymer Structure & Physics

### Enhanced Dynamics of PMMA Brushes Induced by the Chain Ends of a Flexible Polymer Chain

Ziyu Wang, Dandan Sun, Xin Wang, Yuhui Yang, Yun Li, Biao Zuo, Jianhua Huang,\* and Xinping Wang\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 8, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02481>

・PMMA ポリマーブラシに低 T<sub>g</sub> ポリマーをグラフトすると PMMA の T<sub>g</sub> がその長さの種類に応じて低下

### Differences in Intermolecular Interactions and Flexibility between Poly(ethylene terephthalate) and Poly(butylene terephthalate) Studied by Far-Infrared/Terahertz and Low-Frequency Raman Spectroscopy

Yumiko Yamamoto, Hiromichi Hoshina, and Harumi Sato\*



*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 7, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02049>

・ PET と PBT の固体中の分子運動をラマンとテラヘルツ遠赤外分光によって以前から継続して精密に解析

### **pH-Dependent Structure of Block Copolymer Micelles Featuring a Polyampholyte Corona: A Combined Experimental and Theoretical Approach**

Jonas Eichhorn, Yulia D. Gordievskaya, Elena Yu. Kramarenko,\* Alexei R. Khokhlov,\* and Felix H. Schacher\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 7, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02344>

・ PSt-block-P(AA-co-bpyEA)の水中での凝集構造の pH 依存性を TEM や DLS 実験結果と理論両面から解析

### **Crystallization-Driven Self-Assembly of a Block Copolymer with Amphiphilic Pendant Groups**

Shaofei Song, Hang Zhou, Matthew Puzhitsky, Yefeng Zhang, Garion Hicks, Yijie Lu, Ian Manners, and Mitchell A. Winnik\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 6, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02521>

・ RAFT 重合と末端クリック反応でコア部と両親媒性側鎖ブラシポリマーブロックを合成、凝集構造制御

### **Visualization of chemical bonding in a silica-filled rubber nanocomposite using STEM-EELS**

Yohei K. Sato, Yasufumi Kuwauchi, Wakana Miyoshi & Hiroshi Jinnai

*Scientific Reports*, volume 10, Article number: 21558 (2020) Published: 09 December 2020

<https://doi.org/10.1038/s41598-020-78393-0>

・ シリカとゴム間化学結合を可視化するため電子顕微鏡 STEM-EELS で原子レベルでの結合状態を分析  
プレスリリース(2021-01-09) <http://www.tohoku.ac.jp/japanese/2021/01/press20210108-02-sca.html>

## **Adhesion & Interfaces**

### **A Modular Strategy for Functional Pressure Sensitive Adhesives**

Kyueui Lee, Brylee David B. Tiu, Valentin Martchenko, Kristene Mai, Goun Lee, Matthias Gerst, and Phillip B. Messersmith\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 6, 2021

<https://dx.doi.org/10.1021/acsami.0c19405>

・ アクリレートと GMA の共重合体の側鎖エポキシ基とチオールとの反応で側鎖に官能基導入した PSA の例

### **A heat-melt adhesive-assisted transferable electrode films**

Yuki Maruyama, Kuniaki Nagamine, Shigeyuki Iwasa, Atsushi Miyabo & Shizuo Tokito\*

*Scientific Reports*, volume 11, Article number: 36 (2021), Published: 08 January 2021

<https://doi.org/10.1038/s41598-020-79504-7>

・ 湾曲したデバイスにも対応できるホットメルト型で接着が可能な転写可能な形の電子フィルムを開発

### **R-curve behavior of adhesively bonded composite joints with highly toughened epoxy adhesive under mixed mode conditions**

Yousuke Kouno, Makoto Imanaka, Ryutaro Hino, Masaki Omiya, Fusahito Yoshida

*International Journal of Adhesion and Adhesives*, in Press, Available online 12 November 2020

<https://doi.org/10.1016/j.ijadhadh.2020.102762>

・ 機械系分野からのアプローチの接着材料力学・破壊機構研究の典型的な論文、スタイルの違いに着目

### **Experimental investigation of the effects of adhesive thickness on the fracture behavior of structural acrylic adhesive joints under various loading rates**

Yu Sekiguchi, Chiaki Sato

*International Journal of Adhesion and Adhesives*, Volume 105, March 2021, 102782

<https://doi.org/10.1016/j.ijadhadh.2020.102782>

・ これも機械系の破壊力学に関する基礎的/典型的な論文、破壊エネルギーG で議論していることに着目

## **Bio-based & Biomedical Polymers**

### **Cholate Conjugated Polymeric Amphiphiles as Efficient Artificial Ionophores**

Subhasish Sahoo, Jawad ur Rehman, Muhammad Raza Shah, Priyadarsi De,\* and Paolo Tecilla\*

*ACS Applied Polymer Materials*, Articles ASAP (Letter), Publication Date (Web): January 4, 2021

<https://dx.doi.org/10.1021/acsapm.0c01182>

- ・側鎖にコレステリル導入した PEG メタクリレートの両親媒性ポリマーリポソームのイオン透過特性

#### **Cellulose Nanocrystals: Accelerator and Reinforcing Filler for Epoxy Vitrimization**

Liang Yue,\* Mehrad Amirkhosravi, Kai Ke, Thomas G. Gray, and Ica Manas-Zloczower\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 7, 2021

<https://dx.doi.org/10.1021/acsami.0c19350>

- ・ヒドロキシ基供給源としてセルロースナノ結晶使用、メカノケミカルによるコンポジットのガラス化

#### **Methoxy-Functionalized Glycerol-Based Aliphatic Polycarbonate: Organocatalytic Synthesis, Blood Compatibility, and Hydrolytic Property**

Valentina Montagna, Junko Takahashi, Meng-Yu Tsai, Takayuki Ota, Nicolas Zivic, Seigou Kawaguchi,

Takashi Kato, Masaru Tanaka, Haritz Sardon, and Kazuki Fukushima\*

*ACS Biomaterials Science & Engineering*, Articles ASAP, Publication Date (Web): January 5, 2021

<https://dx.doi.org/10.1021/acsbiomaterials.0c01460>

**On January 18, 2021**

#### **Reviews**

##### **Macromolecular Optical Sensor Arrays**

Linda Mitchell, Elizabeth J. New, and Clare S. Mahon\*

*ACS Applied Polymer Materials*, Articles ASAP (Review), Publication Date (Web): January 11, 2021

<https://dx.doi.org/10.1021/acsapm.0c01003>

- ・2種類以上の同時センシングが可能なポリマー系システムで高性能光学センサーアレイ開発の現状解説

#### **Attractive Soft Matter: Association Kinetics, Dynamics, and Pathway Complexity in Electrostatically Coassembled Micelles**

Christian C. M. Sproncken, J. Rodrigo Magana, and Ilja K. Voets\*

*ACS Macro Letters* (Viewpoint), Publication Date (Web): January 11, 2021

*ACS Macro Lett.* 2021, 10, 167–179

<https://pubs.acs.org/doi/pdf/10.1021/acsmacrolett.0c00787>

- ・静電相互作用で凝集しているミセル会合の速度論・ダイナミクスの両方が関わる複雑な構造形成過程

#### **Production and Polymerization of Biobased Acrylates and Analogs**

Hugo Fouilloux and Christophe M. Thomas\*

*Macromol. Rapid Commun.* 2021, 2000530, Version of Record online:12 January 2021

<https://doi.org/10.1002/marc.202000530>

- ・トウモロコシ/木材/植物油由来の原料のみを組みあせてアクリル誘導体に変換してさらにポリマー化

#### **Polymer Synthesis**

##### **Synthesis of a Bottlebrush Polymer Gel with a Uniform and Controlled Network Structure**

Shintaro Nakagawa\* and Naoko Yoshie\*

*ACS Macro Lett.* 2021, 10, 186–191, Publication Date (Web): January 12, 2021

DOI: [10.1021/acsmacrolett.0c00791](https://doi.org/10.1021/acsmacrolett.0c00791)

- ・ボトルブラシ星形(4本)ポリマー末端官能化・クリックで規則的ネットワーク形成、PEGゲル欠点解消

#### **Novel Eco-Efficient Process for Methyl Methacrylate Production**

Mihai Daniel Moraru, Costin Sorin Bildea, and Anton A. Kiss\*

*Industrial & Engineering Chemistry Research*, Articles ASAP, Publication Date (Web): January 13, 2021

<https://dx.doi.org/10.1021/acs.iecr.0c04273>

- ・PMMAではなくMMAモノマー合成プロセスの一般論文、現在もモノマー合成法改良の余地ありに驚き

#### **Time-Resolved Small-Angle X-ray Scattering Studies during Aqueous Emulsion Polymerization**

Adam Czajka\* and Steven P. Armes\*

*Journal of the American Chemical Society*, Publication Date (Web): January 14, 2021

<https://dx.doi.org/10.1021/jacs.0c11183>

- ・著者らの新しい方向性の研究展開、ものづくりだけでなく乳化重合系解析の基礎に新しい切り口展開

#### **Versatile Synthetic Platform for Polymer Membrane Libraries Using Functional Networks**

Joshua D. Moon, Rahul Sujanani, Zhishuai Geng, Benny D. Freeman, Rachel A. Segalman,\* and Craig J. Hawker\*  
*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 13, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02414>

・PEG ジアクリレートポリマーネットワークに導入したペンタフルオロフェニルエステルをアミンと反応

### Synthesis of vinyl iodide chain-end polymers *via* organocatalyzed chain-end transformation

Jun Jie Chang, Houwen Matthew Pan and Atsushi Goto\*

*Chem. Commun.*, 2021, Advance Article, The article was first published on 14 Jan 2021

<https://doi.org/10.1039/DOCC07987A>

・制御ラジカル重合で合成したポリマー末端 I をアルキンと反応して 1 段階で末端不飽和ポリマーに変換

### Fine control of the molecular weight and polymer dispersity via a latent monomeric retarder

Rui Jia, Yanyan Tu, Mejia Glauber, Zhihao Huang, Sunting Xuan,\* Weidong Zhang, Nianchen Zhou, Xiaohong Li, Zhengbiao Zhang\* and Xiulin Zhu

*Polym. Chem.*, 2021, Advance Article, The article was first published on 07 Jan 2021

<https://doi.org/10.1039/D0PY01569E>

・2-ブロモマレイミド(潜在的重合抑制剤?)を用いて MMA の RAFT 重合の分子量と分子量分布を制御?

## Polymer Materials

### An Extremely Stretchable and Self-Healable Supramolecular Polymer Network

Huan Zhang, Shijia Yang, Zhusheng Yang, Dong Wang, Juanjuan Han, Cuihua Li, Caizhen Zhu, Jian Xu, and Ning Zhao\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 12, 2021

<https://dx.doi.org/10.1021/acsami.0c19560>

・動的結合/水素結合/金属配位利用の高伸長/自己修復 PPG ポリマーネットワーク作製、よくある手法か

### Development of an Ultrastretchable Double-Network Hydrogel for Flexible Strain Sensors

Huijun Li, Han Zheng, Yu Jun Tan, Shu Beng Tor, and Kun Zhou\*

*ACS Applied Materials & Interfaces*, Articles ASAP (Forum Article), Publication Date (Web): January 11, 2021

<https://dx.doi.org/10.1021/acsami.0c19104>

・PAA/アガロースの DN ヒドロゲルの応用研究で 3000%以上伸びるゲルを作製、繰り返し SS 曲線に注目

### Reversing Poisson's Ratio of Biomass Foam to Be Negative to Achieve Super Mechanical Properties via Viscoelastic Compression

Yi He, Dong Li, Na Zhou, Lin Gan,\* and Jin Huang\*

*ACS Applied Polymer Materials*, Articles ASAP (Letter), Publication Date (Web): January 12, 2021

<https://dx.doi.org/10.1021/acsapm.0c01232>

・PBS 発泡体ポアソン比(変形の異方性)を負に設計して高強度材料を作製、圧縮弾性率が 3.6 倍まで増大

## Polymer Physics & Polymer Structure

### Caustic-Stable, Controlled-Pore Glass-Ceramics

David J. Greene, Dermot Daly, James J. Doyle, and Aran Rafferty\*

*Crystal Growth & Design*, Articles ASAP (Article), Publication Date (Web): January 12, 2021

<https://dx.doi.org/10.1021/acs.cgd.0c01083>

・アモルファスシリカガラスとポーラス結晶性シリカを結晶化・相分離の制御によって材料物性を制御

### Self-Assembly and Phase Transformation of Block Copolymer Nanostructures in Ionic Liquid-Cured Epoxy

Deborah Y. Liu and Daniel V. Krogstad\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 12, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02214>

・エポキシとブロックポリマーをイオン液体硬化剤と反応させて SAXS で相構造解析し 3 成分系相図完成

### Lyotropic Morphology Transition of Double Zwitterionic Diblock Copolymer Aqueous Solutions

Masaya Takahashi, Akane Shimizu, Shin-ichi Yusa, Yuji Higaki

*Macromol. Chem. Phys.* 2021, 2000377, Version of Record online:15 January 2021

<https://doi.org/10.1002/macp.202000377>

・双生イオンポリマー間のブロックポリマー(両親水性ポリマーと呼ばれる)の相分離構造を系統的に解析

## Building Bridges by Blending: Morphology and Mechanical Properties of Binary Tapered Diblock/Multiblock Copolymer Blends

Marvin Steube, Martina Plank, Markus Gallei, Holger Frey, George Floudas  
*Macromol. Chem. Phys.* 2021, 2000373, Version of Record online:15 January 2021  
<https://doi.org/10.1002/macp.202000373>

- ・ PS/PIP ブロックコポリマーとテーパーマルチブロックコポリマーの 2 成分ブレンド系の相分離構造解析

## Adhesion & Interfaces

### Scaling Behavior of Fracture Properties of Tough Adhesive Hydrogels

Xiang Ni, Zhen Yang, and Jianyu Li\*  
*ACS Macro Lett.* 2021, 10, 180–185, Publication Date (Web): January 12, 2021,  
<https://pubs.acs.org/doi/10.1021/acsmacrolett.0c00854>

- ・ 接着性ハイドロゲルの破壊メカニズムと膨潤挙動を系統的に解析して凝集と接着エネルギー詳細解析

### Adaptation of a Styrene–Acrylic Acid Copolymer Surface to Water

Xiaomei Li, Simon Silge, Alexander Saal, Gunnar Kircher, Kaloian Koynov, Rüdiger Berger,\* and Hans-Jürgen Butt  
*Langmuir*, Articles ASAP (Article), Publication Date (Web): January 13, 2021  
<https://dx.doi.org/10.1021/acs.langmuir.0c03226>

- ・ St に AA を少量含むランダムコポリマー上の水の動的(前進/後退)接触角から鎖の配向も含めて議論

## Crystal Engineering & Liquid Crystal

### Nanoporous Films with Photoswitchable Absorption Kinetics Based on Polymerizable Columnar Discotic Liquid Crystals

Jody A. M. Lugger, Patricia P. Marín San Roman, Camiel C. E. Kroonen, and Rint P. Sijbesma\*  
*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 12, 2021  
<https://dx.doi.org/10.1021/acsmami.0c19180>

- ・ ディスコチックカラムナー液晶のカラム外側の末端ビニル基を重合し構造固定、1次元細孔が選択吸着

### Can We Identify the Salt–Cocrystal Continuum State Using XPS?

Srinu Tothadi, Tabrez Rafique Shaikh, Sharad Gupta, Rambabu Dandela, Chathakudath P. Vinod, and Ashwini K. Nangia\*  
*Crystal Growth & Design*, Articles ASAP (Article), Publication Date (Web): 14 January 2021  
<https://dx.doi.org/10.1021/acs.cgd.0c00661>

- ・ 電荷分離している塩結晶としていない共結晶を単結晶構造解析以外で分析できるか？昔からある問題

## Bio-based and Biomedical Polymers

### Trans-limonene dioxide, a promising bio-based epoxy monomer

Louis Schutz, Forouzan Kazemi, Elby Mackenzie, Jean-Yves Bergeron, Eric Gagnon, Jerome P. Claveri  
*J. Polym. Sci.*, Version of Record online:12 January 2021  
<https://doi.org/10.1002/pol.20200822>

- ・ バイオベースモノマーにリモネンの不飽和基をエポキシ化したトランスリモネンジエポキシドを利用

## On January 25, 2021

### Reviews

#### Automated Experimentation Powers Data Science in Chemistry

Published as part of the Accounts of Chemical Research special issue “Data Science Meets Chemistry” 特集号注目  
Yao Shi, Paloma L. Prieto, Tara Zepel, Shad Grunert, and Jason E. Hein\*  
*Accounts of Chemical Research*, Articles ASAP (Article), Publication Date (Web): January 20, 2021  
<https://dx.doi.org/10.1021/acs.accounts.0c00736>

- ・ データサイエンスがものづくりを含めた Chemistry の形を大きく変えることが現実であることを痛感

#### Geared Toward Applications: A Perspective on Functional Sequence-Controlled Polymers

Cangjie Yang, Kevin B. Wu, Yu Deng, Jingsong Yuan, and Jia Niu\*  
*ACS Macro Lett.* 2021, 10, 243–257 (Viewpoint), Publication Date (Web): January 22, 2021  
<https://dx.doi.org/10.1021/acsmacrolett.0c00855>

- ・ シークエンス制御の具体的な意義を明確に示す総説、概念的な材料設計とは違って現実的応用を指向

### Natural Biopolymer-Based Biocompatible Conductors for Stretchable Bioelectronics

Chunya Wang, Tomoyuki Yokota, and Takao Someya\*

*Chemical Reviews*, Articles ASAP (Review), Publication Date (Web): January 18, 2021

<https://dx.doi.org/10.1021/acs.chemrev.0c00897>

- ・バイオポリマーで生体適合型のバイオエレクトロニクス、以前のストレッチャブルを超越する展開へ

### Diversity of Synthetic Approaches to Functionalized Perfluoropolyalkylether Polymers

Celine Bonneaud, Jon Howell, Roberta Bongiovanni, Christine Joly-Duhamel, and Chadron M. Friesen\*

*Macromolecules*, Articles ASAP (Perspective), Publication Date (Web): January 16, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c01599>

- ・パーフルオロアルキルを含むポリマーの様々な反応系を利用して合成する経路に関して情報を集約

### 3D printing of functional microrobots

Jinhua Li and Martin Pumera\*

*Chem. Soc. Rev.*, 2021, Advance Article, The article was first published on 20 Jan 2021

<https://doi.org/10.1039/DOCS01062F>

- ・3D プリンティングの基礎・材料・手法・応用まで幅広く解説、後半では材料の特徴を活かした手法も

### Advances in applied supramolecular technologies

George T. Williams, Cally J. E. Haynes,\* Mohamed Fares, Claudia Caltagirone,\* Jennifer R. Hiscock \* and Philip A. Gal\*

*Chem. Soc. Rev.*, 2021, Advance Article, The article was first published on 13 Jan 2021

<https://doi.org/10.1039/DOCS00948B>

- ・超分子系の最近の話題からピックアップ、高分子を利用した系・超分子ポリマー系も含めて動向紹介

### Amphiphilic well-defined degradable star block copolymers by combination of ring-opening polymerization and atom transfer radical polymerization: Synthesis and application as drug delivery carriers

Andreia S. R. Oliveira, Patrícia V. Mendonça, Sérgio Simões, Arménio C. Serra, Jorge F. J. Coelho

*J. Polym. Sci.*, in press, Version of Record online: 18 January 2021

<https://doi.org/10.1002/pol.20200802>

- ・ROMP と ATRP で分解性 PCL スターポリマー(スターブロック・ミクトアーム)合成、DDS キャリアに応用

### Polymer Synthesis

#### Systematic Modulation and Structure–Property Relationships in Photopolymerizable Thermoplastics

Kimberly K. Childress, Marvin D. Alim, Sudheendran Mavila, Vikina Martinez, Yifu Ding, Christopher N. Bowman, and Jeffrey W. Stansbury\*

*ACS Applied Polymer Materials*, Articles ASAP (Article), Publication Date (Web): January 21, 2021

<https://dx.doi.org/10.1021/acsapm.0c01393>

- ・DAT とアルキル鎖長が異なるアルカンジチオール(光重合誘起結晶化)を利用して材料物性チューニング

#### Biobased Thermoplastic Elastomer Based on an SMS Triblock Copolymer Prepared via RAFT Polymerization in Aqueous Medium

Uddhab Kalita, Sarthik Samanta, Sovan Lal Banerjee, Narayan C. Das, and Nikhil K. Singha\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 22, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02169>

- ・RAFT 重合で St/ミルセン ABA 型トリブロックポリマー(バイオベース熱可塑性エラストマー)を水中合成

#### Control of Particle Size in the Self-Assembly of Amphiphilic Statistical Copolymers

Thomas J. Neal, Andrew J. Parnell, Stephen M. King, Deborah L. Beattie, Martin W. Murray, Neal S. J. Williams, Simon N. Emmett, Steven P. Armes, Sebastian G. Spain,\* and Oleksandr O. Mykhaylyk\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 22, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02341>

- ・MMA/DMAEMA/メタクリル酸エステルから両親媒性ポリマー合成、粒子サイズ制御、RAFT 重合も活用

#### Synthesis of Highly Transparent Diblock Copolymer Vesicles via RAFT Dispersion Polymerization of 2,2,2-Trifluoroethyl Methacrylate in n-Alkanes

Csilla György, Matthew J. Derry, Erik J. Cornel, and Steven P. Armes\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 22, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02646>

・ PISA による RAFT 分散重合でフッ素系ポリマーの高透明ジブロックコポリマーベシクル分散系を合成

### **PhotoATRP-Induced Self-Assembly (PhotoATRP-PISA) Enables Simplified Synthesis of Responsive Polymer Nanoparticles in One Pot**

Ali Shahrokhinia, Randall A. Scanga, Priyanka Biswas, and James F. Reuther\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 21, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02106>

・ 光 ATRP-PISA によるナノ微粒子のワンポット合成、後架橋や pH 応答酸化還元機能を予め組み込み設計

### **Arresting Elevated-Temperature Creep and Achieving Full CrossLink Density Recovery in Reprocessable Polymer Networks and Network Composites via Nitroxide-Mediated Dynamic Chemistry**

Lingqiao Li, Xi Chen, Kailong Jin, Mohammed Bin Rusayyis, and John M. Torkelson\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 15, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c01691>

・ ニトロキシド架橋系ネットワークポリマーの物性解析と動的架橋条件に対する可逆応答性などを評価

### **Nonionic UCST–LCST Diblock Copolymers with Tunable Thermoresponsiveness Synthesized via PhotoRAFT Polymerization**

Jingcong Xu and Volker Abetz\*

*Macromol. Rapid Commun.*, Version of Record online:15 January 2021

<https://doi.org/10.1002/marc.202000648>

・ 光 RAFT 重合で LCST-LCST 温度応答性非イオン性ジブロックコポリマー合成、温度でコアシェル逆転

### **Polymer Degradation**

#### **Degradation of Polydienes Induced by Alkylolithium: Characterization and Reaction Mechanism**

Jian Tang, Tinghao Xie, Yuka Yuan, Jing Hua,\* Tao Zhuang, Yi Luo, and Jieting Geng

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 21, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c01934>

・ アルキルリチウムでジエンポリマー(PB,PIP)を化学的に分解、これまでありそうでなかった研究切り口

### **Polymer Materials**

#### **Flexible, Robust, and Durable Aramid Fiber/CNT Composite Paper as a Multifunctional Sensor for Wearable Applications**

Lin Wang, Meiyun Zhang,\* Bin Yang,\* Xueyao Ding, Jiaojun Tan, Shunxi Song, and Jingyi Nie

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 23, 2021

<https://dx.doi.org/10.1021/acsami.0c18161>

・ CNT/ポリ m-フェニレンイソフタルアミドファイバー複合材料でウェアラブルセンサー、プロセス中心

#### **Aggregation-Induced Emission-Active Fluorescent Polymer: Multi Targeted Sensor and ROS Scavenger**

Herong Qin, Jianbing Huang,\* Hui Liang, and Jiang Lu\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 22, 2021

<https://dx.doi.org/10.1021/acsami.0c22698>

・ エン・チオール付加重合でサリチルアルデヒドアジンの AIE 利用した ROS 活性ポリマー(可溶性)合成

#### **Hydrogen Bond Association to Prepare Flame Retardant Polyvinyl Alcohol Film with High Performance**

Wang Xie, Qiuru Bao, Yuan Liu,\* Hui Wen, and Qi Wang

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 19, 2021

<https://dx.doi.org/10.1021/acsami.0c19093>

・ エチレンジアミンとリン酸トリエチルから生成する他官能性の含 PN 架橋剤で PVA を簡単に難燃化達成

#### **Molecular Recognition of Fluorescent Probe Molecules with a Pseudopolyrotaxane Nanosheet**

Shuntaro Uenuma,\* Rina Maeda, Hideaki Yokoyama, and Kohzo Ito\*

*ACS Macro Lett.* 2021, 10, 237–242, Publication Date (Web): January 19, 2021

<https://dx.doi.org/10.1021/acsmacrolett.0c00660>

・ CD ロタキサンポリマーを垂直にナノシート状に集積化して分子認識の新局面、ImPACT から次の展開へ

#### **Frame-Guided Synthesis of Polymeric Colloidal Discs**

Na Qu, Zhang Luo, Shuping Zhao, and Bing Liu\*

*Journal of the American Chemical Society*, Articles ASAP (Article), Publication Date (Web): January 20, 2021

<https://dx.doi.org/10.1021/jacs.0c08627>

・異方性ポリマーコロイド形成用 frame-guided 法を新提案、シリカ/ポリマーコア/シェル形成溶媒蒸発

### **Highly Stretchable, Ultratough, and Strong Polyesters with Improved Postcrystallization Optical Property Enabled by Dynamic Multiple Hydrogen Bonds**

huai Sun, Yijiao Xue, Xiaodong Xu, Liping Ding, Zhen Jiang, Linghui Meng,\* Pingan Song,\* and Yongping Bai\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 22, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02628>

・多点分子間水素結合 + 結晶化を利用して高伸長・強靱性・高強度ポリエステルを合成、光学特性評価

### **Emulsion-templated flexible epoxy foams**

Patrick Steindl, Helena Decker, Bernhard Retzl, Qixiang Jiang, Angelika Menner, Alexander Bismarck

*Polymer*, Volume 215, 12 February 2021, 123380

<https://doi.org/10.1016/j.polymer.2021.123380>

・エマルション系で発泡型(多孔)エポキシを合成、圧縮歪 70%、圧縮弾性率 0.3MPa、ヒステリシス評価

### **Polymer Physics & Structure**

#### **Nanoscratch-Directed Self-Assembly of Block Copolymer Thin Films**

Dong Hyup Kim, Ahram Suh, Geonhyeong Park, Dong Ki Yoon,\* and So Youn Kim\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 20, 2021

<https://dx.doi.org/10.1021/acsami.0c19665>

・ナノレベルのスクラッチで BCP を自己組織化して規則パターン形成、デバイス応用には課題が多い?

#### **Effect of pH on the Dynamics and Structure of Thermoresponsive Telechelic Polyelectrolyte Networks: Impact on Hydrogel Injectability**

Maria Malvina Soledad Lencina, Chia-Hsin Ko, Florian A. Jung, Ralf Schweins, Maria Rikkou-Kalourkoti, Costas S.

Patrickios, Christine M. Papadakis,\* and Constantinos Tsitsilianis\*

*ACS Applied Polymer Materials*, Articles ASAP (Article), Publication Date (Web): January 20, 2021

<https://dx.doi.org/10.1021/acsapm.0c01159>

・親水性と疎水性のブロックを含む両親媒性電解質ポリマーの pH 応答によりハイドロゲルの注射性改善

#### **Engineering Segregated Structures in a Cross-Linked Elastomeric Network Enabled by Dynamic Cross-Link Reshuffling**

Qingyi Huang, Zhenghai Tang,\* Dong Wang, Siwu Wu, and Baochun Guo\*

*ACS Macro Lett.* 2021, 10, 231–236, Publication Date (Web): January 22, 2021

<https://dx.doi.org/10.1021/acsmacrolett.0c00852>

・ボロン酸架橋の高 TgSBR を粉砕顆粒化、CNT 表面コーティング、ホットプレスで特徴的な構造と物性

#### **Probing the Structural Dynamics of the Coil–Globule Transition of Thermosensitive Nanocomposite Hydrogels**

Renata L. Sala,\* Tiago Venancio, and Emerson R. Camargo\*

*Langmuir*, Articles ASAP (Article), Publication Date (Web): January 22, 2021

<https://dx.doi.org/10.1021/acs.langmuir.0c03079>

・温度応答性ナノコンポジットハイドロゲルの LCST 相転移挙動を UV 分光と NMR 緩和時間測定で解析

#### **Plateau Moduli of Several Single-Chain Slip-Link and Slip-Spring Models**

Takashi Uneyama\* and Yuichi Masubuchi

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 23, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c01790>

・ポリマー鎖のからみあいの 1 本鎖 slip-link and slip-spring モデルを検証、理論と数式だらけの論文

#### **Poly(sulfobetaine) versus Poly(N-isopropylmethacrylamide): Co-Nonsolvency-Type Behavior of Thin Films in a Water/Methanol Atmosphere**

Lucas P. Kreuzer, Christoph Lindenmeir, Christina Geiger, Tobias Widmann, Viet Hildebrand, AndréLaschewsky,

Christine M. Papadakis, and Peter Müller-Buschbaum\*

*Macromolecules*, Articles ASAP (Article), Publication Date (Web): January 19, 2021

<https://dx.doi.org/10.1021/acs.macromol.0c02281>

- ・ポリスルホベタインと PNIPMAM の水/メタノールに対する膨潤収縮過程を反射スペクトルにより解析

### Adhesion & Interfaces

#### Coalescence of Droplets in a Microwell Driven by Surface Acoustic Waves

A. Sudeepthi, A. Nath, L. Y. Yeo, and A. K. Sen\*

*Langmuir*, Articles ASAP (Article), Publication Date (Web): January 21, 2021

<https://dx.doi.org/10.1021/acs.langmuir.0c03292>

- ・弾性表面波(物体表面に集中して伝播する振動)によって液滴間の合体が進行するプロセスを精密に解析

#### Synthesis and Properties of Cationic Gradient Brush Copolymers Carrying PEO Side Chains and Catechol Moieties

Medeina Steponaviciute,\* Vaidas Klimkevicius, and Ricardas Makuska

*Macromol. Chem. Phys.*, Version of Record online:18 January 2021

<https://doi.org/10.1002/macp.202000364>

- ・RAFT 重合でグラジエントポリマーを合成、後反応でカチオンと PEG 鎖を含むポリマーブラシへと変換

### Crystal Engineering & Liquid Crystal

#### Textured Microcapsules through Crystallization

Samuel R. Wilson-Whitford, Ross W. Jagers, Brooke W. Longbottom, Matt K. Donald, Guy J. Clarkson, and Stefan A. F. Bon\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 22, 2021

<https://dx.doi.org/10.1021/acsami.0c22378>

- ・高揮発性/低揮発性溶媒を含むエマルジョン液滴内で相分離・有機物針状結晶化を經由してカプセル化

#### Micellar Lyotropic Nematic Gels

Sonja Dieterich, Friedrich Stemmler, Natalie Preisig, Frank Giesselmann

*Adv. Mater.*, Version of Record online:18 January 2021

<https://doi.org/10.1002/adma.202007340>

- ・ネマチック液晶相に低分子ゲル化剤添加でネマチックゲルを作製、機械的安定性向上、構造物性評価

### Bio-based & Biomedical Polymers

#### Composited Gels from Nature Growing Scaffold: Synthesis,

Properties, and Application

Yi Meng, Fuyu Song, Hang Chen, Yi Cheng, Jie Lu, and Haisong Wang\*

*ACS Applied Materials & Interfaces*, Articles ASAP, Publication Date (Web): January 21, 2021

<https://dx.doi.org/10.1021/acsami.0c18504>

- ・トウモロコシの茎の髄を利用、Fe<sup>2+</sup>イオンによる動的架橋で高弾性ゲル、圧縮に強い空洞構造組み込み