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

On November 2, 2020

Reviews

100th Anniversary of Macromolecular Science Viewpoint: The Past, Present, and Future of Stereocontrolled Vinyl Polymerization

Aaron J. Teator, Travis P. Varner, Phil C. Knutson, Cole C. Sorensen, and Frank A. Leibfarth*

ACS Macro Letters, 2020, 9, 1638−1654, Articles ASAP (Viewpoint), Publication Date (Web): October 28, 2020

・最近珍しくオーソドックスな内容とスタイルの総説、教科書的で勉強になる、総説の本来の姿かも

Multicolor Fluorescent Polymeric Hydrogels

Shuxin Wei+, Zhao Li+, Wei Lu,* Hao Liu, Jiawei Zhang, Tao Chen,* and Ben Zhong Tang*

Angew. Chem. Int. Ed. 2020, 59,

Version of Record online: 27 October 2020

https://doi.org/10.1002/anie.202007506

・クロモフォアを組み合わせた発光システムをポリマーゲル生体材料応用、発光色制御

Polymer Synthesis

Exploring Combinatorial Approaches to Polymer Diversification

Brian P. Jacobs and Johnathan N. Brantley*****

Macromolecules, Articles ASAP (Article), Publication Date (Web): October 27, 2020

https://dx.doi.org/10.1021/acs.macromol.0c01538

・ポリマー反応/側鎖構造変換を合理的に探究して効率アップ(コンビナトリアル)、合成の新手法

Hybrid Polymerization of Reversible Complexation Mediated Polymerization (RCMP) and Reversible Addition−Fragmentation Chain-Transfer (RAFT) Polymerization

Meng Huo, Gangsheng Tong,* Chongyin Zhang, and Xinyuan Zhu*

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

https://dx.doi.org/10.1021/acs.macromol.0c01872

・RCMP でマクロ RAFT 剤を介してポリマー鎖交換、RAFT 重合機構も進行、制御の組み合わせが新規

Polymer Materials

Design of higher valency in covalent organic frameworks

Cornelius Gropp, Tianqiong Ma, Nikita Hanikel, Omar M. Yaghi*

Science, 23 Oct 2020: Vol. 370, Issue 6515, eabd6406

DOI: 10.1126/science.abd6406

・Yaghi グループ COF 最新論文、論文の 1 割(29 報)は Nature か Science に出していて驚異的、大丈夫？

Independently Tuning Elastomer Softness and Firmness by Incorporating Side Chain Mixtures into Bottlebrush Network Strands

Andrew N. Keith, Charles Clair, Abdelaziz Lallam, Egor A. Bersenev, Dimitri A. Ivanov, Yuan Tian, Andrey V. Dobrynin,* and Sergei S. Sheiko*

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

https://dx.doi.org/10.1021/acs.macromol.0c01725

・ボトルブラシポリマー、直鎖/ブラシ/直鎖トリブロックネットワークで Softness/Firmness 制御

Energy Dissipation and Mechanoresponsive Color Evaluation of a Poly(n-hexyl Methacrylate) Soft Material Enhanced by a Mechanochromic Cross-Linker with Dynamic Covalent Bonds

Yuchen Mao, Yuto Kubota, Takashi Kurose, Akira Ishigami, Kota Seshimo, Daisuke Aoki, Hideyuki Otsuka, and Hiroshi Ito*

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

https://dx.doi.org/10.1021/acs.macromol.0c01770

・切れると光る動的共通結合架橋点を導入したポリメタクリル酸ヘキシルの機械物性/エネルギー散逸

Supramolecular and Physically Double-Cross-Linked Network Strategy toward Strong and Tough Elastic Fibers

Zhikai Li, Jiabin Wang, Xiaohong Li, Ying Wang, Li-Juan Fan, Shuguang Yang, Mingyu Guo, Xiaopeng Li, and Yingfeng Tu*

ACS Macro Letters, Articles ASAP (Letter), Publication Date (Web): October 28, 2020

ACS Macro Lett. 2020, 9, 1655−1661
・強度とタフネスの両立、4 成分(ABCD)ブロックコポリマーを用いた架橋体に犠牲的破壊機構組み込み

Polymer Physics

Configurational Statistics of Poly(cyclohexene carbonate)
Naofumi Yoshida, Daisuke Aoki, and Yuji Sasanuma*
Macromolecules, Articles ASAP (Article), Publication Date (Web): October 29, 2020
https://dx.doi.org/10.1021/acs.macromol.0c02063
・オーソドックスな手法によるポリマー構造の基礎研究、最近 *Macromolecules* らしさが戻ってきた?

High-Resolution Comonomer Sequencing of Blocky Brominated Syndiotactic Polystyrene Copolymers Using ^{13}C NMR Spectroscopy and Computer Simulations
Kristen F. Noble, Diego Troya, Samantha J. Talley, Jan Ilavsky, and Robert B. Moore*
Macromolecules, Articles ASAP (Article), Publication Date (Web): October 27, 2020
・NMR (^{13}C)でシークエンス解析、ランダム配列とブロック配列の違いが歴然、ローレンツ分布で解析

How Does Monomer Structure Affect the Interfacial Dynamics of Supported Ultrathin Polymer Films?
Amber N. Storey, Wengang Zhang,* Jack F. Douglas,* and Francis W. Starr*
Macromolecules, Articles ASAP (Article), Publication Date (Web): October 26, 2020
https://dx.doi.org/10.1021/acs.macromol.0c01413
・超薄膜フィルムのポリマー物性を PMMA と PEO で評価、ガラス転移の緩和現象をバルク物性と比較

Universality in Spatio-Temporal High-Mobility Domains Across the Glass Transition from Bulk Polymers to Single Chains
Lorena Alzate-Vargas, Nicolas Onofrio, and Alejandro Strachan
Macromolecules, Articles ASAP (Article), Publication Date (Web): October 23, 2020
https://dx.doi.org/10.1021/acs.macromol.0c00853
・液体とガラス状ポリマーでドメインの時空間ダイナミクスをシミュレーション、理解は難かしそう

Local Glass Transition Temperature Tg(z) Within Polystyrene Is Strongly Impacted by the Modulus of the Neighboring PDMS Domain
Yannic J. Gagnon and Connie B. Roth*
ACS Macro Lett. 2020, 9, 1625−1631
・PDMS に隣接した(界面から 10-50 nm の距離にある)PS の Tg 評価、65-90 nm 以上でバルクと同様に

Crystal Engineering & Liquid Crystal

Ion Selectivity of Water Molecules in Subnanoporous Liquid-Crystalline Water-Treatment Membranes: A Structural Study of Hydrogen Bonding
Ryusuke Watanabe, Takeshi Sakamoto, Kosuke Yamazoe, Jun Miyawaki, Takashi Kato,* and Yoshihisa Harada*
Angew. Chem. Int. Ed. 2020, 59, Version of Record online: 19 October 2020
https://doi.org/10.1002/anie.202008148
・カラムナー液晶、以前からジエンの重合を組み込んで構造安定化

On November 9, 2020

Reviews

Light-Triggered Click Chemistry
Gangam Srikanth Kumar and Qing Lin*
Chemical Reviews, Articles ASAP (Review), Publication Date (Web): October 26, 2020
https://dx.doi.org/10.1021/acs.chemrev.0c00799
・クリックケミストリー光制御、ポリマーに応用可能？光重合制御から高分子反応光制御への可能性

Antiviral Polymers: Past Approaches and Future Possibilities
Rachel H. Bianculli, Jonathan D. Mase, and Michael D. Schulz*
Macromolecules, Articles ASAP (Perspective), Publication Date (Web):November 2, 2020
https://dx.doi.org/10.1021/acs.macromol.0c01273
・抗ウイルスポリマー、糖鎖/デンドリマーなど、カルボン酸置換スチルベン交互ポリマーも高活性

100th Anniversary of Macromolecular Science Viewpoint: The Role of Hydrophobicity in Polymer Phenomena
Jeffrey C. Foster,* Irem Akar, Marcus C. Grocott, Amanda K. Pearce, Robert T. Mathers,* and Rachel K. O'Reilly*
ACS Macro Letters, 2020, 9, 1700−1707, Articles ASAP (Viewpoint), Publication Date (Web):November 4, 2020
doi/pdf/10.1021/acsmacrolett.0c00645
・ポリマーの疎水性効果をHildebrand/Hansenの溶解性パラメーターに基づいて整理、新しい展開？

Cucurbituril-Oriented Nanoplatforms in Biomedical Applications
Guowang Cheng, Jingshan Luo, Yao Liu, Xiaojia Chen, Zhenfeng Wu,* and Tongkai Chen*
ACS Applied Bio Materials, Articles ASAP (Review), Publication Date (Web): November 3, 2020
https://dx.doi.org/10.1021/acsabm.0c01061
・グルコールウリルの環状オリゴマー(ククルビットウリル)のバイオメディカル分野への応用

Amphiphilic polymer co-networks: 32 years old and growing stronger – a perspective
Costas S Patrickiosa* and Krzysztof Matyjaszewskib*
Polymer International, in press, Accepted article published: 5 October 2020
DOI 10.1002/pi.6138
・DN ゲルより前から co-network の概念はある、両親媒性ポリマーの組み合わせをコンパクトに解説

DNA Origami Meets Polymers: A Powerful Tool for the Design of Defined Nanostructures
Nadine Hannewald, Pia Winterwerber, Stefan Zechel, David Y. W. Ng, Martin D. Hager, Tanja Weil, and Ulrich S. Schubert*
Angewandte Chemie International Edition, First published: 10 July 2020
https://doi.org/10.1002/anie.202005907
・DNA 折り紙系のナノ材料総説、パズル要素の強い折り紙の概念も実用材料に利用できる段階まで進展

Intercalation and flexibility chemistries of soft layered materials
Yuya Oaki
Chem. Commun., 2020, 56, 13069
https://doi.org/10.1039/D0CC05931E
・有機系 2D 材料のインターカレーション PDA 中心の総説

Polymer Synthesis
Efficient Preparation of Branched Block Copolymer Assemblies byPhotoinitiated RAFT Self-Condensing Vinyl DispersionPolymerization
Dongdong Liu, Ying Chen, Li Zhang, and Jianbo Tan*
Macromolecules, Articles ASAP (Article), Publication Date (Web): November 4, 2020
https://dx.doi.org/10.1021/acs.macromol.0c02008
・RAFT で分岐のあるブロックポリマーを合成、環境に応じてベシクル、ブラシ状など集合状態が変化

A Simplified Predictive Tool for Design and Analysis of SET-LRP Reactions with Mechanistic Insight
Kevin Gunter, Mirco Sorci, and Georges Belfort*
ACS Appl. Polym. Mater. 2020, Publication Date: October 28, 2020
https://dx.doi.org/10.1021/acsapm.0c00796
・SET-LRP の反応解析手法の提案、妥当性と一般性はよくわからない

Polymer Materials
Topology-Specific Injectable Sticky Hydrogels
Vahdati, Guylaine Ducouret, Costantino Creton,*and Dominique Hourdet*
Macromolecules, Articles ASAP (Article), Publication Date (Web): November 4, 2020
https://dx.doi.org/10.1021/acs.macromol.0c01826
・ヒドロゲルの主鎖とグラフト鎖を入れかえて(PNIPAM-g-PDMA、PDMA-g-PNIPAM)て粘着特性比較

Hydrogen Bonding-Derived Healable Polyacrylate Elastomers via On-demand Copolymerization of n-Butyl Acrylate and tert-Butyl Acrylate
Wenyan Wang, Zongxu Liu, Zijian Guo, Junliang Zhang, Chunmei Li, Shuai Qiu, Xingfeng Lei,* and Qiuyu Zhang*
ACS Applied Materials & Interfaces, Articles ASAP, Publication Date (Web): October 29, 2020
https://dx.doi.org/10.1021/acsami.0c13837
・nBA/tBA 共重合体を加水分解 nBA/AA 共重合体に変換するだけで機能創出、自己修復性、凝集発光も

Polyzwitterions as a Versatile Building Block of Tough Hydrogels: From Polyelectrolyte Complex Gels to Double-Network Gels
Haiyan Yin, Daniel R. King,* Tao Lin Sun, Yoshiyuki Saruwatari, Tasuku Nakajima, Takayuki Kurokawa, and Jian Ping Gong*
ACS Appl. Mater. Interfaces 2020, 12, 44, 50068–50076, Publication Date: October 21, 2020
https://doi.org/10.1021/acsami.0c15269
・双生イオのンポリマーを組み込み、PAMPS も使用、強度への電荷の作用も議論

Highly Sensitive Pressure and Strain Sensors Based on Stretchable and Recoverable Ion-Conductive Physically Cross-Linked Double Network Hydrogels
Linjie Zhou, Zhenwu Wang, Changsong Wu, Yang Cong,* Rui Zhang, and Jun Fu*
ACS Applied Materials & Interfaces, Articles ASAP, Publication Date (Web): November 4, 2020
https://dx.doi.org/10.1021/acsami.0c15108
・DN ヒドロゲルの応用、強度は当然になっていてさらに機能プラス、高感度化は達成できているか？

Bioinspired Hydrogel–Polymer Hybrids with a Tough and Antifatigue Interface via One-Step Polymerization
Xing-Chao Li, De-Zhao Hao, Wan-Jun Hao,* Xing-Lin Guo,* and Lei Jiang
ACS Applied Materials & Interfaces, Articles ASAP, Publication Date (Web): October 28, 2020
https://dx.doi.org/10.1021/acsami.0c14728
・ヒドロゲルと鎖状ポリマーのハイブリッドをワンポット重合で合成、高靭性、強度発現

Highly Compressible Polymer Composite Foams with Thermal Heating-Boosted Electromagnetic Wave Absorption Abilities
Biao Zhao, Xiping Li, Shuiping Zeng, Ruoming Wang, Lei Wang, Renchao Che,* Rui Zhang, and Chul B. Park*
ACS Applied Materials & Interfaces, Articles ASAP, Publication Date (Web): October 29, 2020
https://dx.doi.org/10.1021/acsami.0c13081
・電磁波吸収用のポリマー複合材料、熱可塑性ポリウレタン/CNT 発泡材料

Rationale Design of pH-Responsive Core–Shell Nanoparticles: Polyoxometalate-Mediated Structural Reorganization
Yanting Gao, Jingjing Xu, Changhe Zhang, Hariprasad Venugopal, Sarah S. Kermaniyan, Georgina Such,* and Chris Ritchie*
ACS Applied Nano Materials, Articles ASAP (Article), Publication Date (Web): November 2, 2020
https://dx.doi.org/10.1021/acsanm.0c02365
・ブロックポリマーとランダムポリマーのそれぞれ pH 応答型集合体、

Surface Oxidation of Polymer 3D Porous Structures Using Chlorine Dioxide Radical Gas
Kohei Kikkawa, Yu-I Hsu,* Xinnan Cui, Shunsuke Mizuno, Taka-Aki Asoh, and Hiroshi Uyama*
ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): November 5, 2020
https://dx.doi.org/10.1021/acsapm.0c00840
・ポリオレフィンモノリス内部を気相光酸化、高効率触媒

Gas-Generating Polymer Particles: Reducing the Decomposition Temperature of Poly(tert-Butyl Methacrylate) Side Chains Using an Encapsulated Acid Catalyst Approach
Ibrahim Eryazici,* Matthew C. D. Carter, Wesley Sattler, Jian Yang, Scott Wills, Francois J. Huby, Irina Peshenko, and Patricia Ansems-Bancroft
ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): November 2, 2020
https://dx.doi.org/10.1021/acsapm.0c00929
・共重合でポリマー中に組み込んだ酸発生剤を利用してポリメタクリル酸 t-ブチルからの発泡、

Highly Cross-Linked and Stable Shape-Memory Polyurethanes Containing a Planar Ring Chain Extender
Qing Luo, Jing Chen,* Pitchaimari Gnanasekar, Xiaozhen Ma, Dongdong Qin, Haining Na, Jin Zhu, and Ning Yan*
ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): November 2, 2020
https://dx.doi.org/10.1021/acsapm.0c00990
・ポリカプロラクトンをベースにして生体利用を意図した架橋型の形状記憶ポリマー材料開発

Elastic Aerogel with Tunable Wettability for Self-Cleaning Electronic Skin

Wencan Ma, Zhong Ma, Yifeng Cai, Ruichun Du, Zhicheng Xu, Kefeng Xie, Weizhi Li, Wenbing Hu, Lijia Pan, Qiuhong Zhang,* and Xudong Jia*
ACS Materials Lett. 2020, 2, 1575-1582, Publication Date: October 28, 2020
https://doi.org/10.1021/acsmaterialslett.0c00464
・軽量弾性 PDMS ベースのエアロゲル材料、人工皮膚を目指した高機能材料、組成や架橋構造を設計

Polymer Structure & Physics

Glassy and Polymer Dynamics of Elastomers by ^{1}H Field-Cycling NMR Relaxometry: Effects of Cross-Linking
Francesca Martini, Elisa Carignani, Francesca Nardelli, Elena Rossi, Silvia Borsacchi, Mattia Cettolin,Antonio Susanna, Marco Geppi,*and Lucia Calucci*
Macromolecules, Articles ASAP (Article), Publication Date (Web): November 5, 2020
https://dx.doi.org/10.1021/acs.macromol.0c01439
・エラストマー(IR, BR, SBR)の架橋がガラス転移に及ぼす影響をNMRによる緩和時間測定から議論

Crazing Mechanism and Physical Aging of Poly(lactide) Toughened with Poly(ethylene oxide)-block-poly(butylene oxide) Diblock Copolymers
Charles J. McCutcheon,Boran Zhao,Kailong Jin, Frank S. Bates,* and Christopher J. Ellison*
Macromolecules, Articles ASAP (Article), Publication Date (Web): November 3, 2020
https://dx.doi.org/10.1021/acs.macromol.0c01759
・ブロックポリマー添加でポリ乳酸を強靭化、引張試験、クラック発生進展の機構、降伏点後の結晶化

Spiral Honeycomb Microstructured Bacterial Cellulose for Increased Strength and Toughness
Kui Yu, Srikkanth Balasubramanian, Helda Pahlavani, Mohammad J. Mirzaali, Amir A. Zadpoor, and Marie-Eve Aubin-Tam*
ACS Applied Materials & Interfaces, Articles ASAP, Publication Date (Web): October 28, 2020
https://dx.doi.org/10.1021/acsami.0c15886
・バクテリアセルロースを用いて高強度強靭材料、スパイラルなハニカム構造が強度発現の鍵に

Adhesion & Interfaces

Effect of Stabilizing Particle Size on the Structure and Properties of Liquid Marbles
Yuta Asaumi, Marcel Rey, Keigo Oyama, Nicolas Vogel, Tomoyasu Hirai, Yoshinobu Nakamura,and Syuji Fujii*
Langmuir, Articles ASAP (Article), Publication Date (Web): October 28, 2020
https://dx.doi.org/10.1021/acs.langmuir.0c02265
・リキッドマーブル、粒子径大で外殻単層に、写真とアピール力に圧倒される

Polymer Chains of a Large Persistence Length in a Polymer Brush Require a Lower Force to Be Compressed Than Chains with a Short Persistence Length
JoséSaul Hernandez-Fragoso, Salomon de Jesus Alas, and Armando Gama Goicochea*
ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): October 29, 2020
https://dx.doi.org/10.1021/acsapm.0c00858
・表面ポリマーブラシの鎖長と分布でポリマーコンホメーション(伸び方)の違い、理論からアプローチ

Crystal Engineering & Liquid Crystal

Crystalline Molecular Materials: From Structure to Function
Published as part of a Crystal Growth and Design virtual special issue on Crystalline Molecular Materials: From Structure to Function
Crystal Growth & Design, Articles ASAP (Editorial), Publication Date (Web): October 28, 2020
https://dx.doi.org/10.1021/acs.cgd.0c01360
・既に掲載済みの最近の論文から表記テーマのものを集めてバーチャルな特集号、動向がつかみやすい

Bio-based & Biomedical Polymers

3D Biomimetic Tongue-Emulating Surfaces for Tribological Applications
Efren Andablo-Reyes, Michael Bryant, Anne Neville, Paul Hyde, Rik Sarkar, Mathew Francis, and Anwesha Sarkar*
ACS Appl. Mater. Interfaces 2020, 12, 44, 49371–49385, Publication Date: October 26, 2020
https://dx.doi.org/10.1021/acsami.0c12925
・口腔内の舌の摩擦に関係する論文、模倣材料で評価、

Recyclable, Repairable, and Reshapable (3R) Thermoset Materials with Shape Memory Properties from Bio-

Based Epoxidized Vegetable Oils
Chiara Di Mauro, Samuel Malburet, Alain Graillot, and Alice Mija*
ACS Applied Bio Materials, Articles ASAP (Article), Publication Date (Web): November 2, 2020
https://dx.doi.org/10.1021/acsabm.0c01199
・植物油を原料とするバイオベースエポキシ材料で 3R 対応の熱硬化性の形状記憶樹脂を作製

General Chemistry & Others
Synthesis and Properties of 1,2,3-Triethoxypropane: A Glycerol Derived Green Solvent Candidate
Shuai Qian, Xiaoyang Liu, Vladimir N. Emel'yanenko, Patryk Sikorski, Irshad Kammakakam, Brian S. Flowers, Tristin A. Jones, C. Heath Turner, Sergey P. Verevkin,* and Jason E. Bara*
Industrial & Engineering Chemistry Research, Articles ASAP, Publication Date (Web): October 28, 2020
https://dx.doi.org/10.1021/acs.iecr.0c03789
・グリセリン誘導体の合成に関する論文、グリセリンのトリエーテル化合物の新しい合成経路

On November 16, 2020
Reviews
Toward Sustainable 3D Printing
Hortense Le Ferrand*
Acc. Mater. Res., Publication Date: November 10, 2020
https://dx.doi.org/10.1021/accountsmr.0c00062
・3Dプリンティングも最近動きあり、方向性示したコメント風の文章、総説でもアカウンツでもない？

Tumor-Targeted Nanomedicine for Immunotherapy
Published as part of the Accounts of Chemical Research special issue "Chemistry in Cancer Immunotheranostics".
Horacio Cabral, Hiroaki Kinoh, and Kazunori Kataoka*
Acc. Chem. Res., Publication Date: November 8, 2020
https://dx.doi.org/10.1021/acs.accounts.0c00518
・現在も川崎でプロジェクト研究継続中、ナノメディシン王道の最新総説、材料と戦略はかなり複雑化

100th Anniversary of Macromolecular Science Viewpoint: Soft Materials for Microbial Bioelectronics
Chia-Ping Tseng, Jonathan J. Silberg*, George N. Bennett*, and Rafael Verduzco*
ACS Macro Lett. 2020, 9, 1590–1603, Publication Date: November 5, 2020
https://doi.org/10.1021/acsmacrolett.0c00573
・バイオエレクトロニクスを意識したソフトマター、多種多様で全体像を捕まえるのは難しい

Recent Progress in Artificial Muscles for Interactive Soft Robotics
Jiangxin Wang,* Dace Gao, and Pooi See Lee*
Adv. Mater. 2020, 2003088
DOI: 10.1002/adma.202003088
・ソフトロボティクスを志向した人工筋肉に関する総説、材料関係は中国が強いがロボット関連も？

3D Printing Materials for Soft Robotics
Ela Sachyani Keneth, Alexander Kamyshny, Massimo Totaro, Lucia Beccai, and Shlomo Magdassi*
Adv. Mater., First published: 09 November 2020
https://doi.org/10.1002/adma.202003387
・ソフトロボティクス用の3Dプリンティング材料、こちらはイスラエル/イタリアのチームの総説

HASEL Artificial Muscles for a New Generation of Lifelike Robots—Recent Progress and Future Opportunities
Philipp Rothemund, Nicholas Kellaris, Shane K. Mitchell, Eric Acome, and Christoph Keplinger*
Adv. Mater., First published: 09 November 2020
https://doi.org/10.1002/adma.202003375
・上記と競合する分野、コロラドチームの総説、この分野は日本の高分子関係の学会ではまだ少数派？

Nanomaterials-Based Surface Protein Imprinted Polymers:Synthesis and Medical Applications
Mingfei Pan, Liping Hong, Xiaoqian Xie, Kaixin Liu, Jingying Yang, and Shuo Wang*
Macromol. Chem. Phys., First published: 29 October 2020
https://doi.org/10.1002/macp.202000222

・分子インプリンティング法でナノ微粒子を高機能化、医用材料、自己集積薄膜/クラスター

Synthesis methods of organic two-dimensional materials
Na Zhang, Taisheng Wang
J. Polym. Sci., First published: 02 November 2020
https://doi.org/10.1002/pol.20200584
・2D 有機ポリマー総説、情報過多で飽き気味の印象があるが、先端研究として次のステージに移行中？

The Role of Machine Learning in the Understanding and Design of Materials
Seyed Mohamad Moosavi, Kevin Maik Jablonka, and Berend Smit*
J. Am. Chem. Soc., Publication Date: November 10, 2020
https://doi.org/10.1021/jacs.0c09105
・材料設計のための機械学習の在り方に関する総説、マテリアルインフォマティクス、自動合成なども

Solute–Solvent Interactions in Modern Physical Organic Chemistry: Supramolecular Polymers as a Muse
Mathijs F. J. Mabesoone, Anja R. A. Palmans, and E. W. Meijer*
J. Am. Chem. Soc., Publication Date:November 11, 2020
https://doi.org/10.1021/jacs.0c09293
・Meijer 超分子ポリマー/分子集積体の構造設計に関する総説、研究アプローチに新視点、超分子も進化

Anisotropic Dynamics and Mechanics of Macromolecular Crystals Containing Lattice-Patterned Polymer Networks
Kenneth Han, Jake B. Bailey, Ling Zhang, and F. Akif Tezcan*
J. Am. Chem. Soc. 2020, 142, 45, 19402–19410, Publication Date: October 30, 2020
https://doi.org/10.1021/jacs.0c10065
・表面修飾した微粒子を異方的に集積させて構造体を形成/構造固定することで通常と異なる機能を発現

Nanoscale Ion Regulation in Wood-Based Structures and Their Device Applications
Chaoji Chen and Liangbing Hu*
Adv. Mater., First published: 27 October 2020
https://doi.org/10.1002/adma.202002890
・木材由来材料をエレクトロニクスデバイスに応用、セルロースナノファイバー以外の材料が最近脚光

Engineering hydrogels by soaking: from mechanical strengthening to environmental adaptation
Xiaohu Zhou, Chun Li, Lifei Zhu and Xuechang Zhou
Chem. Commun., 2020, 56, 13731-13747
https://doi.org/10.1039/D0CC05130F
・含浸法でハイドロゲル強度化、ハイドロゲル関連でも総説のラッシュが続いている(かなり前から？)

Internal catalysis for dynamic covalent chemistry applications and polymer science
Filip Van Lijsebetten, Joshua O. Holloway, Johan M. Winne and Filip E. Du Prez
Chem. Soc. Rev., Advance Article, First published 28 Oct 2020
https://doi.org/10.1039/D0CS00452A
・動的共有結合の交換反応を促進する触媒作用機能団をポリマー中にあらかじめ組み込んで高効率化

Cavitand and Molecular Cage-Based Porous Organic Polymers
Arkaprabha Giri,* Aniket Sahoo, Tapas Kumar Dutta, and Abhijit Patra*
ACS Omega 2020, 5, 44, 28413–28424, Publication Date: October 30, 2020
https://doi.org/10.1021/acsomega.0c04248
・分子レベルの細孔や空隙を含むユニットと COF などの多孔ポリマーを組わせた材料

Polymer Synthesis
Initiation and Termination in Styrene Free-Radical Polymerization Initiated by Redox Initiation
Hongfei Han, Jianhan Li, Wenyan Huang, Qimin Jiang,* Li Jiang, Xiaoqiang Xue, Hongjun Yang, and Bibiao Jiang
Macromol. Chem. Phys., First published: 19 October 2020
https://doi.org/10.1002/macp.202000277
・レドックス系開始剤で St のラジカル重合、新規性は低いがポリマー構造はしっかり解析

The iterative synthesis of discrete dimethylsiloxane oligomers: A practical guide
Brigitte A. G. Lamers, Bas F. M. de Waal, E. W. Meijer
J. Polym. Sci., First published: 06 November 2020
https://doi.org/10.1002/pol.20200649
・DMS ポリマー合成の Meijer の論文、いつもの華麗な超分子研究とは違う雰囲気の地味な現実世界

Synthesis of high-molecular-weight benzoxazines from various combinations of bisphenols and diamines via Mannich condensation and properties of their thermosets
Yuta Murai, Taichi Uemura, Yujie Chen, Takehiro Kawauchi, Tsutomu Takeichi
https://doi.org/10.1038/s41428-020-00438-y
・鎖状ベンズオキサジンオリゴマー(Mw=1000-2200)合成解析とその熱硬化物の耐熱性/機械特性

Polymer Materials

Unraveling the nanomechanical properties of surface-grafted conjugated polymer brushes with ladder-like architecture
Monika Słowikowska, Karol Wolski, Artur J. Wójcik, Daniel Wesner, Holger Schönherr, and Szczepan Zapotoczn
Polym. Chem., Advance Article, First published 20 Oct 2020
https://doi.org/10.1039/D0PY01422B
・表面グラフトブラシポリマー後重合によるラダーポリマー合成、伸び切りポリマー鎖の機械特性評価

An all-natural bioinspired structural material for plastic replacement
Qing-Fang Guan, Huai-Bin Yang, Zi-Meng Han, Zhang-Chi Ling & Shu-Hong Yu
Nature Communications volume 11, Article number: 5401 (2020), Published: 03 November 2020
https://doi.org/10.1038/s41467-020-19174-1
・石油ベースのプラスチックをすべて天然由来材料に換えて、高強度/高靭性/高硬度/低熱膨張を達成

Design of Self-Cross-Linkable Poly(n-butyl acrylate)-copoly[*N*-(hydroxymethyl)acrylamide] Amphiphilic Copolymers toward Elastic and Self-Healing Properties
Livy Laysandra, Ching-Heng Chuang, Saburo Kobayashi, Ai-Nhan Au-Duong, Yu-Hsuan Cheng, Yen-Ting Li, Maina Moses Mburu, Takuya Isono, Toshifumi Satoh,* and Yu-Cheng Chiu
ACS Appl. Polym. Mater., Publication Date: November 6, 2020
https://doi.org/10.1021/acsapm.0c00760
・弾性/自己修復性を示す両親媒性ポリマーをアクリル酸と OH 基を含むアクリルアミド共重合体で設計

Melt-Moldable Copolymethacrylate/Titania Thermoreversible Polymer Networks with Shape Memory
Shuta Hara, Miho Tomono, Kazuki Fukumoto, Minami Kubodera, Naoki Kato, Takehiro Kaneko, Takeshi Toyama, Shigeru Shimizu, and Hiroki Ikake*
ACS Appl. Polym. Mater., Publication Date: November 11, 2020
https://doi.org/10.1021/acsapm.0c00967
・MMA/メタクリル酸ランダム共重合体とチタニアの複合材料で成形可能で記憶形状型の材料を合成

Healable, Recyclable, and Mechanically Tough Polyurethane Elastomers with Exceptional Damage Tolerance
Xiaohan Wang, Shengnan Zhan, Zhongyuan Lu, Jian Li, Xiao Yang, Yongna Qiao, Yongfeng Men, and Junqi Sun*
Adv. Mater., First published: 11 November 2020
https://doi.org/10.1002/adma.202005759
・外力に強い修復/再利用可能な強靭ポリウレタンエラストマー、ウレタンゴムはもともと強靭では？

Polymer Structure & Physics

Effect of Nanoconfinement on Polymer Chain Dynamics
Shuang Jin and Gregory B. McKenna*
Macromolecules, Publication Date: November 11, 2020
https://doi.org/10.1021/acs.macromol.0c00365
・運動性の制約を受けたポリマーの Tg に関する論文、ナノ孔閉じ込めポリマーの物性、粘性＆絡み合い

Glassy and Polymer Dynamics of Elastomers by ^{1}H Field-Cycling NMR Relaxometry: Effects of Cross-Linking
Francesca Martini, Elisa Carignani, Francesca Nardelli, Elena Rossi, Silvia Borsacchi, Mattia Cettolin, Antonio Susanna, Marco Geppi*, and Lucia Calucci*
Macromolecules 2020, Publication Date: November 5, 2020

https://doi.org/10.1021/acs.macromol.0c01439
・エラストマーポリマーのガラス状態での分子ダイナミクス、NMR 緩和時間解析、架橋の影響を議論

Glass transition and fragility of nanosized polymeric fibers and spheres predicted from a surface-controlled model
Tatsuki Nakane, Yuya Tsuzuki, Takashi Sasaki
Polymer Journal, Published: 16 October 2020
https://doi.org/10.1038/s41428-020-00431-5
・Tg とフラジリティーに関して SCC モデルとの関連から再評価・議論

The role of β relaxations in controlling compressive properties in hyperbranched polymer-modified epoxy networks
Larry Q. Reyes, Samuel R. Swan, Houlei Gan, Seyed Mohsen Seraji, Jane Zhang, Russell J. Varley
Polymer Journal, Published: 28 October 2020
https://doi.org/10.1038/s41428-020-00433-3
・ハイパーブランチ脂肪族ポリエステル添加したエポキシ樹脂 β 緩和解析/機械特性から圧縮強度議論

Adhesion & Interfaces

Antisoiling Performance of Lotus Leaf and Other Leaves after Prolonged Outdoor Exposure
Chenxi Zhu, Xinyu Yu, Jian Lv, Jing Zhang, Jintao Yang, Na Hao, and Jie Feng
ACS Appl. Mater. Interfaces 2020, Publication Date: November 11, 2020
https://doi.org/10.1021/acsami.0c13477
・ロータス効果による防汚について様々な表面凹凸構造を研究対象に横風の影響を含めた珍しい解析例

Robust and recoverable dual cross-linking networks in pressure-sensitive adhesives
Eun Seon Kim, Da Bin Song, Kyoung Hwan Choi, Jae Heung Lee, Dong Hack Suh, Woo Jin Choi
J. Polym. Sci., First published: 28 October 2020
https://doi.org/10.1002/pol.20200628
・架橋構造を 2 種類組みあわせて設計した粘着剤(PSA)、材料のレオロジー特性評価

Crystal Engineering & Liquid Crystal

Protonation-Triggered Supramolecular Gel from Macrocyclic Diacetylene: Gelation Behavior, Topochemical Polymerization, and Colorimetric Response
Geon Shin, Mohammed Iqbal Khazi, and Jong-Man Kim*
Langmuir 2020, Publication Date: November 11, 2020
https://doi.org/10.1021/acs.langmuir.0c02469
・大環状のビスジアセチレン化合物、固体にするとカラム状の集合体(結晶構造)を形成して重合進行

Single-Crystal-to-Single-Crystal [2 + 2] Photocycloaddition Reaction in a Photosalient One-Dimensional Coordination Polymer of Pb(II)
Bibhuti Bhusan Rath and Jagadese J. Vittal*
J. Am. Chem. Soc. 2020, Publication Date: November 11, 2020
https://doi.org/10.1021/jacs.0c09577
・SCSC[2+2]光固相反応、結晶の大変形挙動も追跡、数年前にはマクロに変形する結晶がブームに

Photocycloadditions in disparate chemical environments
David E. Marschner, Philipp W. Kamm, Hendrik Frisch, Andreas-Neil Unterreiner and Christopher Barner-Kowollik
Chem. Commun., 2020, 56, 14043-14046
https://doi.org/10.1039/D0CC03911J
・ポリマー関連ではない速報論文、ピレン誘導体の[2+2]光二量化反応、吸収変化

Bio-based & Biomedical Polymers

Biosynthetic self-healing materials for soft machines
Abdon Pena-Francesch, Huihun Jung, Melik C. Demirel and Metin Sitti
Nature Materials, VOL 19, 1230–1235, November 2020
https://doi.org/10.1038/s41563-020-0736-2
・イカにヒントを得た自己修復型のバイオ材料、ソフトロボティクスを意識した材料設計

A natural impact-resistant bicontinuous composite nanoparticle coating
Wei Huang, Mehdi Shishehbor, Nicolas Guarin-Zapata, Nathan D. Kirchhofer, Jason Li, Luz Cruz, Taifeng Wang, Sanjit Bhowmick, Douglas Stauffer, Praveena Manimunda, Krassimir N. Bozhilov, Roy Caldwell, Pablo Zavattieri and David Kisailus
Nature Materials, VOL 19, 1236–1243, November 2020
https://doi.org/10.1038/s41563-020-0768-7
・軽量/高強度/高靭性材料を合成するために生物のヒドロキシアパタイト系複合材料をヒントに設計

Thermochromic Hydrogel-Functionalized Textiles for Synchronous Visual Monitoring of On-Demand In Vitro Drug Release
Xinbo Gong, Chengyi Hou,* Qinghong Zhang, Yaogang Li,* and Hongzhi Wang*
ACS Appl. Mater. Interfaces, Publication Date: November 9, 2020
https://doi.org/10.1021/acsami.0c14665
・サーモクロミックなヒドロゲルを用いてウィルス検出と薬物放出をシンクロさせた材料

Hierarchical Toughening of a Biomimetic Bulk Cement Composite
Hao Pan, Wei She,* Wenqiang Zuo, Yang Zhou, Jiale Huang, Zhongwen Zhang, Zifan Geng, Yiming Yao, Wenhua Zhang, Li Zheng, Changwen Miao, and Jiaping Liu*
ACS Appl. Mater. Interfaces, Publication Date: November 10, 2020
https://doi.org/10.1021/acsami.0c15313
・生体を模倣した階層的な構造で強靭化、セメントとポリマーの複合材料(有機無機材料)

Hydrogel-Tissue Adhesion Using Blood Coagulation Induced by Silica Nanoparticle Coatings
Raphaël Michel,* Maïlie Roquart, Elodie Llusar, Fabrice Gaslain, Sophie Norvez, Jae Seon Baik, Gi-Ra Yi, Mathieu Manassero, and Laurent Corté*
ACS Appl. Bio Mater. 2020, Publication Date: November 10, 2020
https://doi.org/10.1021/acsabm.0c01158
・生体組織にハイドロゲルを固定化するための工夫としてゲル表面にシリカナノ微粒子をコーティング

Biocatalytic Hybrid Films Self-Assembled from Carbohydrate Block Copolymers and Polysaccharides for Enzyme Prodrug Therapy
Tomoki Nishimura,* Yusuke Nakamura, Naoya Kinoshita, Katsuhiro Yamamoto, Yoshihiro Sasaki, and Kazunari Akiyoshi*
ACS Appl. Bio Mater. 2020, Publication Date: November 6, 2020
https://doi.org/10.1021/acsabm.0c01174
・多糖と PPO のブロックコポリマーの自己集合薄膜を応用

On November 23, 2020

Reviews

Functional Isocyanide-Based Polymers
Zhengxu Cai,* Yue Ren, Xiaofang Li, Jianbing Shi, Bin Tong, and Yuping Dong*
Accounts of Chemical Research, Articles ASAP (Article), Publication Date (Web)**:** November 20, 2020
https://dx.doi.org/10.1021/acs.accounts.0c00514
・ポリイソシアニド(らせんポリマー)は70年代Nolteらが研究、新しい有機合成手法・重合触媒で発展

Nanobioconjugates: Weapons against Antibacterial Resistance
Puja Prasad and Shalini Gupta*
ACS Applied Bio Materials, Articles ASAP (Review). Publication Date (Web): November 20, 2020
https://dx.doi.org/10.1021/acsabm.0c01107
・抗生物質耐性に打ちバイオ医薬開発戦略を DDS・治療法・セラノスティクス(造語)の観点で解説

Hydrogel-Based Sensor Networks: Compositions, Properties, and Applications A Review
Xiaohang Sun, Sachin Agate, Khandoker Samaher Salem, Lucian Lucia, and Lokendra Pal*
*ACS Applied Bio Materials***,** Articles ASAP (Review); Publication Date (Web): November 17, 2020
https://dx.doi.org/10.1021/acsabm.0c01011
・化学的/物理的/生体的な外部刺激応答可能なウェアラブルセンサー用ハイドロゲル、生分解性も必要

Nitroxide-Mediated Polymerization: A Versatile Tool for the Engineering of Next Generation Materials
Halynne R. Lamontagne and Benoît H. Lessard*
ACS Applied Polymer Materials, Articles ASAP (Review); Publication Date (Web): November 16, 2020
https://dx.doi.org/10.1021/acsapm.0c00888
・NMP の基本的な反応設計、分子設計から機能/応用の一部までで控えめに総括

Chemical Protein Synthesis: Advances, Challenges, and Outlooks
Yi Tan, Hongxiang Wu, Tongyao Wei, and Xuechen Li*
JACS, Articles ASAP (Perspective), Publication Date (Web): November 19, 2020
https://dx.doi.org/10.1021/jacs.0c09664
・人工的なペプチド化学合成の最先端の話題を集約、対象はペプチド限定で化学向けの読みやすい総説

Polymer Synthesis
Phosphate Triester Dynamic Covalent Networks
Soumabrata Majumdar, Huiyi Zhang, Mohammad Soleimani, Rolf A. T. M. van Benthem, Johan P. A. Heuts,* and Rint P. Sijbesma*
ACS Macro Lett. 2020, 9, 1753−1758
https://dx.doi.org/10.1021/acsmacrolett.0c00636
・ホスフィン酸エステルとアルコールの交換反応を利用した新しい動的共有結合ネットワークポリマー

Tapered Multiblock Copolymers Based on Farnesene and Styrene: Impact of Biobased Polydiene Architectures on Material Properties
Christian Wahlen, Jan Blankenburg, Philipp von Tiedemann, Johannes Ewald, Paweł Sajkiewicz, Axel H. E. Müller,* George Floudas,* and Holger Frey*
Macromolecules, Articles ASAP (Article); Publication Date (Web): November 17, 2020
https://dx.doi.org/10.1021/acs.macromol.0c02118
・イソプレンとその関連ジエンモノマーをベースにしたマルチブロックポリマー

Degradable Silyl Ether−Containing Networks from Trifunctional Thiols and Acrylates
Caleb M. Bunton, Zahra M. Bassampour, Jennifer M. Boothby, Ashanti N. Smith, Joseph V. Rose, Daphne M. Nguyen, Taylor H. Ware, Karl G. Csaky, Alexander R. Lippert, Nicolay V. Tsarevsky, and David Y. Son*
Macromolecules, Articles ASAP (Article); Publication Date (Web): November 16, 2020
https://dx.doi.org/10.1021/acs.macromol.0c01967
・分解可能なシリルエーテル架橋点を含むポリアクリレート、使用している原料も反応もごく普通

Polyurethanes from Direct Organocatalytic Copolymerization of pTosyl Isocyanate with Epoxides Mingchen Jia, Nikos Hadjichristidis, Yves Gnanou,* and Xiaoshuang Feng*
Angew. Chem. Int. Ed. 2020, Version of Record online:17 November 2020
https://doi.org/10.1002/anie.202011902
・エポキシドとイソシアネートの共重合でポリウレタン合成、環状ポリマーが副生しないことが特徴

Dynamic covalent exchange in poly(thioether anhydrides)
Kelly R. Tillman, Rebecca Meacham, Anne N. Rolsma, Mikenzie Barankovich, Ana M. Witkowski, Patrick T. Mather,Tyler Graf, Devon A. Shipp
Polym. Chem., 2020, Advance Article, The article was first published on 09 Nov 2020
https://doi.org/10.1039/D0PY01267J
・エンチオール架橋物の酸無水物の動的共有結合(交換反応の平衡)の応用、無水物をチオ化すべき？

Enabling Oxygen–Sulfur Exchange Reaction to Produce Semicrystalline Copolymers from Carbon Disulfide and Ethylene Oxide
Jia-Liang Yang, Ying Wang, Xiao-Han Cao, Cheng-Jian Zhang, Zheng Chen, Xing-Hong Zhang
Macromol. Rapid Commun., Version of Record online:18 November 2020
https://doi.org/10.1002/marc.202000472
・こちらの論文では、酸無水物とトリチオカルボニル化合物の交換反応を活用、結晶化制御

Characterization of N-phenylmaleimideterminated poly(ethylene glycol)s and their application to a tetra-arm poly(ethylene glycol) gel
Rikito Takashima, Masashi Ohira, Hirogi Yokochi, Daisuke Aoki, Xiang Li, Hideyuki Otsuka

Soft Matter, 2020, Advance Article, The article was first published on 02 Nov 2020
https://doi.org/10.1039/D0SM01658F
・テトラ PEG ゲルの新規合成法、PEG とイソシアネート化 PhMI の反応後にマレイミド/チオールの DA

Magnetic double-network composite capable of large recoverable deformation
Xiangchao Feng, Zhuo Ma, Jonathan V. MacArthur, Wei Hong
Soft Matter, 2020, Advance Article, The article was first published on 02 Nov 2020
https://doi.org/10.1039/D0SM01613F
・DN ゲルにマグネットを埋め込んで大変形後にも形状回復を可能にするように工夫

Polymer Materials

Solvent Vapor Strengthened Polyimide Nanofiber-Based Aerogels with High Resilience and Controllable Porous Structure
Ying Shen, Lanlan Wang, Feng Liu, Huizhong Liu, Dawei Li,* Qingsheng Liu, and Bingyao Deng*
ACS Appl. Mater. Interfaces 2020, Publication Date: November 11, 2020
https://dx.doi.org/10.1021/acsami.0c15751
・階層的 3D ネットワーク・超低密度・多孔質のナノファイバーエアロゲル、形状回復性

Waterproof Phase Change Material with a Facilely Incorporated Cellulose Nanocrystal/Poly(N-isopropylacrylamide) Network for All Weather Outdoor Thermal Energy Storage
Ling Zhou, Xue-feng Tao, Li-sheng Tang, Ming-Bo Yang, and Wei Yang*
ACS Appl. Mater. Interfaces 2020, Publication Date: November 10, 2020
https://dx.doi.org/10.1021/acsami.0c16590
・相転移形状維持(体積変化がない)ゲルをセルロースナノ結晶と多孔 PNIPAM ネットワークで設計

Ion-Conducting Thermoresponsive Films Based on Polymer-Grafted Cellulose Nanocrystals
Ryo Kato, James H. Lettow, Shrayesh N. Patel,* and Stuart J. Rowan*
ACS Applied Materials & Interfaces, Articles ASAP; Publication Date (Web): November 17, 2020
https://dx.doi.org/10.1021/acsami.0c16059
・高強度/熱応答/イオン伝導ナノ複合フィルム、セルロースナノ結晶/ポリメタクリレートグラフト

Highly Stretchable, Self-Healable, and Adhesive Polyurethane Elastomers Based on Boronic Ester Bonds
Yue Yang, Fu-Sheng Du,* and Zi-Chen Li*
ACS Applied Polymer Materials, Articles ASAP (Article); Publication Date (Web): November 20, 2020
https://dx.doi.org/10.1021/acsapm.0c00941
・カテコールのボロン酸エステルをポリウレタンに組み込んで伸縮/自己修復/接着性に優れた材料

Porous Nanocomposites with Monolayer Nano-SiO_2 Coated Skeleton from Interfacial Nanoparticle-Anchored Cocontinuous Polymer Blends
Hengti Wang, Xuewen Zhao, Jichun You, and Yongjin Li*
ACS Applied Polymer Materials, Articles ASAP (Article); Publication Date (Web): November 19, 2020
https://dx.doi.org/10.1021/acsapm.0c01012
・多孔シリカナノ層共連続 PVDF/PLLA ブレンドで複合化、膨張収縮/強度/水接触角を評価

A Dual Approach in Direct Ink Writing of Thermally Cured Shape Memory Rubber Toughened Epoxy
Qiyi Chen, Thanyada Sukmanee, Lihan Rong, Matthew Yang, Jingbo Ren, Sanong Ekgasit, and Rigoberto Advincula*
ACS Applied Polymer Materials, Articles ASAP (Article); Publication Date (Web): November 18, 2020
https://dx.doi.org/10.1021/acsapm.0c00839
・3D プリンター用の熱硬化性樹脂開発、変性ポリブタジエンゴムで高靭性化したエポキシ材料

Untethered Actuation of Hybrid Hydrogel Gripper via Ultrasound
Hyegyo Son, Eunjeong Byun, Yeon Ju Yoon, JuHong Nam, Seung Hyun Song,* and ChangKyu Yoon*
ACS Macro Lett. 2020, 9, 1766−1772
https://dx.doi.org/10.1021/acsmacrolett.0c00702
・超音波照射 On/OFF で駆動するアクチュエーター用ハイドロゲル複合材料、ソフトロボット指向

Diels–Alder Polymer Networks with Temperature-Reversible Cross-Linking-Induced Emission
Yu Jiang* and Nikos Hadjichristidis*

Angew. Chem. Int. Ed. 2020, Version of Record online: 19 November 2020
https://doi.org/10.1002/anie.202013183
https://doi.org/10.1002/anie.202014504 (表紙)
・マレイミド/フラン DA ネットワーク、モノマー/発光中心/架橋構造既存の部品で発光制御、表紙

From 3D to 4D printing: a reactor for photochemical experiments using hybrid polyurethane acrylates for vat-based polymerization and surface functionalization
Anne Hansen, Melissa Renner, Axel G. Griesbeck, Thomas Busgenb
Chem. Commun., 2020, Advance Article, The article was first published on 13 Nov 2020
https://doi.org/10.1039/D0CC06512A
・4D プリンティングは機能を組み込んでおいて刺激や条件で形状変化する 3D プリンティングのこと

Polymer Structure & Physics
Dynamics of Water Absorption in Polymer Skin Adhesives
Daniel Hansen, Johannes Eiler, Kristoffer Hansen, and Esben Thormann*
ACS Applied Bio Materials, Articles ASAP (Article), Publication Date (Web): November 19, 2020
https://dx.doi.org/10.1021/acsabm.0c01089
・ポリマーへの水の浸透機構を解析、皮膚吸収用医薬品関連の粘着テープ開発に重要な基礎研究

Architecture Effects in Complex Spherical Assemblies of (AB)n-Type Block Copolymers
Stephanie M. Barbon, Jung-Ah Song, Duyu Chen, Cheng Zhang, Joshua Lequieu, Kris T. Delaney, Athina Anastasaki, Manon Rolland, Glenn H. Fredrickson, Morgan W. Bates,* Craig J. Hawker,* and Christopher M. Bates*
ACS Macro Lett. 2020, 9, 1745−1752
https://dx.doi.org/10.1021/acsmacrolett.0c00704
・Bates/Hawker/Bates によるスターブロックポリマーの相分離構造の精密制御、合成はシンプルな ATRP

Connecting the Stimuli-Responsive Rheology of Biopolymer Hydrogels to Underlying Hydrogen-Bonding Interactions
Giulia Giubertoni, Federica Burla, Huib J. Bakker,* and Gijsje H. Koenderink*
Macromolecules, Articles ASAP (Article); Publication Date (Web): November 18, 2020
https://dx.doi.org/10.1021/acs.macromol.0c01742
・バイオポリマー系のヒドロゲルに分子間水素結合を組み込んだときのレオロジー特性を詳細に解析

Adhesion & Interfaces
Bioinspired Tough Organohydrogel Dynamic Interfaces Enabled Subzero Temperature Antifrosting, Deicing, and Antiadhesion
Fan Chen, Ziyao Xu, Haifei Wang, Stephan Handschuh-Wang, Ben Wang, and Xuechang Zhou*
ACS Applied Materials & Interfaces, Articles ASAP; Publication Date (Web): November 20, 2020
https://dx.doi.org/10.1021/acsami.0c17163
・「氷の世界」には面白いことがまだまだ残されている、氷(水)表面/界面/接着関連の現象を解析

Passive Anti-Icing and Active Electrothermal Deicing System Based on an Ultraflexible Carbon Nanowire (CNW)/PDMS Biomimetic Nanocomposite with a Superhydrophobic Microcolumn Surface
Yongyang Sun, Xin Sui, Yubo Wang, Wenyan Liang,* and Fangxin Wang*
Langmuir, Articles ASAP (Article); Publication Date (Web): November 19, 2020
https://dx.doi.org/10.1021/acs.langmuir.0c01745
・これも氷関連のエアロスペースで重要なテーマ

Anomalously Large Assembly Formation of Polystyrene Nanoparticles by Optical Trapping at the Solution Surface
Chi-Lung Wu, Shun-Fa Wang, Tetsuhiro Kudo, Ken-ichi Yuyama,* Teruki Sugiyama, and Hiroshi Masuhara*
Langmuir, Articles ASAP (Article); Publication Date (Web): November 16, 2020
https://dx.doi.org/10.1021/acs.langmuir.0c02349
・現在台湾で研究中、マイクロサイズ PS 微粒子をレーザートラップして周りにナノ微粒子も構造形成

Preparation of Cellulose Particles with a Hollow Structure
Taro Omura, Toyoko Suzuki, and Hideto Minami*
Langmuir, Articles ASAP (Article), Publication Date (Web): November 13, 2020

https://dx.doi.org/10.1021/acs.langmuir.0c02646
・セルロースの中空微粒子合成、従来都は異なる材料を使用

Crystal Engineering & Liquid Crystal

Can molecular flexibility control crystallization? The case of para substituted benzoic acids
Sin Kim Tang, Roger J. Davey,* Pietro Sacchi and Aurora J. Cruz-Cabeza
Chem. Sci., 2021, Advance Article, The article was first published on 16 Nov 2020
https://doi.org/10.1039/D0SC05424K
・シンプルな構造で結晶中のスタッキング構造や結晶化プロセスを議論

Bio-based & Biomedical Polymers

Mussel-Inspired Adhesive Double-Network Hydrogel for Intraoral Ultrasound Imaging
Jiaqiang Yi, Kim-Cuong T. Nguyen, Wenda Wang, Wenshuai Yang, Mingfei Pan, Edmond Lou, Paul W. Major, Lawrence H. Le,* and Hongbo Zeng*
ACS Appl. Bio Mater. 2020, 3, 12, 8943−8952
https://dx.doi.org/10.1021/acsabm.0c01211
・口腔内診断用 PVA/ポリアクリルアミド/ポリドーパミンゲル、超音波分析法で 3D 画像解析

Engineering an Injectable Tough Tissue Adhesive through Nanocellulose Reinforcement
Akihiro Nishiguchi* and Tetsushi Taguchi*
ACS Applied Bio Materials, Articles ASAP (Article); Publication Date (Web): November 18, 2020
https://dx.doi.org/10.1021/acsabm.0c01317
・含ナノセルロース型高強度ヒドロゲル、インクジェット成形可能、生体適用材料を意図

In Vitro Bacterial Adhesion and Biofilm Formation on Fully Absorbable Poly-4-hydroxybutyrate and Nonabsorbable Polypropylene Pelvic Floor Implants
Kim W. J. Verhorstert, Zeliha Guler, Leonie de Boer, Martijn Riool, Jan-Paul W. R. Roovers, and Sebastian A. J. Zaat*
ACS Applied Materials & Interfaces, Articles ASAP; Publication Date (Web): November 19, 2020
https://dx.doi.org/10.1021/acsami.0c14668
・生分解性ポリマーと非分解性ポリマーの組み合わせ、バイオフィルム、インプラント、医療用材料

On November 30, 2020

Reviews

Toward the Copolymerization of Propylene with Polar Comonomers
Stephen L. J. Luckham and Kyoko Nozaki*
Accounts of Chemical Research, Articles ASAP (Article), Publication Date (Web): November 26, 2020
https://dx.doi.org/10.1021/acs.accounts.0c00628
・従来路線から一切ぶれずに着実に前進を続ける、触媒設計/材料設計の重点比率は再び上昇志向

Ischemia Reperfusion Injury: Opportunities for Nanoparticles
Xinlong Zang, Jingyi Zhou, Xiaoxu Zhang, Yantao Han, and Xuehong Chen*
https://dx.doi.org/10.1021/acsbiomaterials.0c01197
ACS Biomaterials Science & Engineering, Articles ASAP (Review), Publication Date (Web): November 24, 2020
・”虚血-再灌流障害”とナノ粒子(ポリマーミセル/ナノゲル/リキッドマーブルを含む)の関連性を解説

Longevity Expectations for Polymers in Medical Devices Demand New Approaches to Evaluating Their Biostability
K. A. Chaffin*
ACS Macro Lett. 2020, 9, 1793−1798 (Viewpoint) Publication Date (Web): November 23, 2020
・体内利用の医用デバイス用ポリマーの 10 年単位での長寿命化から問題提議、生分解性と別の切り口

Two Grapes Short of a Fruit Salad: Raspberry-, Strawberry-, and Seedpod-Like Organic Microspheres via Colloidal Nanotemplating
Kai Mundsinger, Christian W. Schmitt, Lukas Michalek, Moritz Susewind, Thorsten Hofe, Christopher Barner-Kowollik,* and Leonie Barner*
ACS Macro Letters, 2020, 9, 1785−1792, Articles ASAP (Letter), Publication Date (Web): November 23, 2020

・微粒子の表面形状制御、表題も Graphic もキャチーだが懲り過ぎで逆効果？

Functional Dyes in Polymeric 3D Printing: Applications and Perspectives
Matteo Gastaldi, Francesca Cardano, Marco Zanetti, Guido Viscardi, Claudia Barolo, Silvia Bordiga, Shlomo Magdassi, Andrea Fin,* and Ignazio Roppolo*
ACS Materials Letters, 2021, 3, 1−17, Articles ASAP (Review), Publication Date (Web): November 25, 2020
・目的にあわせて機能性色素とポリマーの種類を選択/組み合わせると何でも可能と感じさせる内容

Sustainable Photopolymers in 3D Printing: A Review on Biobased, Biodegradable, and Recyclable Alternatives
Vincent S. D. Voet,* Jarno Guit, and Katja Loos
Macromol. Rapid Commun. 2020, 2000475, First published: 18 November 2020
DOI: 10.1002/marc.202000475
・3D 用光硬化性樹脂をバイオベース、生分解、リサイクルの点から重点的にピックアップ解説した総説

Lignin-Based Polyurethane: Recent Advances and Future Perspectives
Xiaozhen Ma, Jing Chen,* Jin Zhu, and Ning Yan*
Macromol. Rapid Commun. 2020, 2000492, First published: 18 November 202
DOI: 10.1002/marc.202000492
・ここ 1 年の間にリグニンの有効利用の可能性はまだまだ大きいことを新ためて実感させる研究が急増

New (and Old) Monomers from Biorefineries to Make Polymer Chemistry More Sustainable
Majd Al-Naji, Helmut Schlaad, and Markus Antonietti*
Macromol. Rapid Commun. 2020, 2000485, First published: 18 November 2020
DOI: 10.1002/marc.202000485
・これも植物由来のバイオベースポリマーの原料に関する話題、糖関連もここで一から見直す必要あり

Synthesis and polymerization of bio-based acrylates: a review
Clémence Veith, Florian Diot-Néant, Stephen A. Miller * and Florent Allais *
Polym. Chem., 2020, Advance Article, The article was first published on 10 Nov 2020
https://doi.org/10.1039/D0PY01222J
・内容充実した必読の総説、 Ref. 123 も必見 http://polymerdatabase.com/

Polymer Synthesis

Copolymerize Conventional Vinyl Monomers to Degradable and Water-Soluble Copolymers with a Fluorescence Property
Hongjun Yang,* Jiadong Zhang, Yiye Song, Li Jiang, Qimin Jiang, Xiaoqiang Xue, Wenyan Huang,* and Bibiao Jiang
Macromol. Chem. Phys. 2020, 2000263, First published: 18 November 2020
DOI: 10.1002/macp.202000263
・アクリルアミドと HEA を水素引き抜き重合してポリエステル/アミド共重合体を合成、反応は古典的

Step-growth polymerisation of alkyl acrylates via concomitant oxa-Michael and transesterification reactions
Karin Ratzenböck, David Pahovnik and Christian Slugovc
Polym. Chem., 2020, Advance Article, The article was first published on 23 Nov 2020
https://doi.org/10.1039/D0PY01271H
・アクリル酸エステルとジオール間のオキサマイケル付加でポリエステル合成、タンデム(2 段連続)反応

Polymer Structure & Physics

Bond Reformation, Self-Recovery, and Toughness in HydrogenBonded Hydrogels
Farshad Oveissi,* Geoffrey M. Spinks,* and Sina Naficy*
ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): November 27, 2020
https://dx.doi.org/10.1021/acsapm.0c01009
・材料破壊の亀裂伸展部位での応力負荷に伴う分子鎖伸張による水素結合組み替えを機械特性から解析

Effect of network connectivity on the mechanical and transport properties of block copolymer gels
Lucas A. Rankin, Byeongdu Lee, Kenneth P. Mineart
Journal of Polymer Science, Version of Record online: 20 November 2020
https://doi.org/10.1002/pol.20200695
・ブロックポリマーで構成されたゲルネットワーク構造が機械特性にどのように影響するかを解析

Adhesion & Interfaces

Metallophobic Coatings to Enable Shape Reconfigurable Liquid Metal Inside 3D Printed Plastics
Jinwoo Ma, Vivek T. Bharambe, Karl A. Persson, Adam L. Bachmann, Ishan D. Joshipura,Jongbeom Kim, Kyu Hwan Oh, Jason F. Patrick, Jacob J. Adams, and Michael D. Dickey*
ACS Applied Materials & Interfaces, Articles ASAP (Forum Article), Publication Date (Web): November 25, 2020
https://dx.doi.org/10.1021/acsami.0c17283
・プラスチック表面を溶融シリカ処理し微細凹凸形成、液体合金をはじく設計、表題には 3D 本文に 4D

Tuning the Lignin-Caprolactone Copolymer for Coating Metal Surfaces
Marleny Caceres Najarro, * Miroslav Nikolic, Joseph Iruthayaraj, and Ib Johannsen
ACS Applied Polymer Materials, Articles ASAP (Article), Publication Date (Web): November 23, 2020
https://dx.doi.org/10.1021/acsapm.0c01026
・リグニンに ε-カプロラクトンをグラフト開環重合、鋼板表面を生分解性ポリエステルでコーティング

The effect of substrate wettability and modulus on gecko and gecko-inspired synthetic adhesion in variable temperature and humidity
Christopher T. Mitchell, Cem Balda Dayan, Dirk-M. Drotlef, Metin Sitti & Alyssa Y. Stark*
Scientific Reports, volume 10, Article number: 9748 (2020)
・Autumn 論文から 20 年経っても基本的研究が続いていたことと、今も話題のネタになることに驚き