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# BioMACROMOLECULES

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## Reviews

3867

DOI: 10.1021/bm501084u

### Affinity-Based Drug Delivery Systems for Tissue Repair and Regeneration

Katarina Vucic and Molly S. Shoichet\*

#### Affinity-based controlled release

- Release tuned through:
  - Strength of the affinity interaction ( $K_a$ )
  - Concentration of binding ligand
  - Rate of dissociation ( $k_{off}$ ) of the complex
  - Hydrogel size and geometry



## Articles

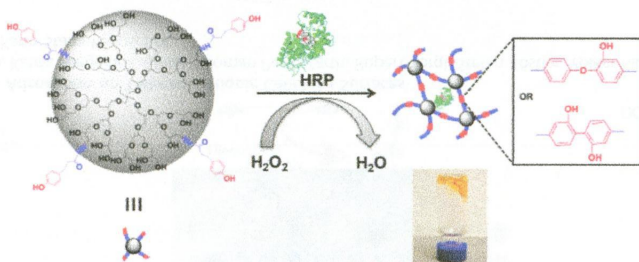
3881

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DOI: 10.1021/bm500705x

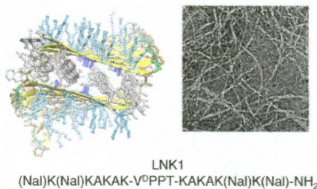
### Enzymatically Cross-Linked Hyperbranched Polyglycerol Hydrogels as Scaffolds for Living Cells

Changzhu Wu, Christine Strehmel, Katharina Achazi, Leonardo Chiappisi, Jens Dervedde, Marga C. Lensen, Michael Gradzielski, Marion B. Ansorge-Schumacher, and Rainer Haag\*



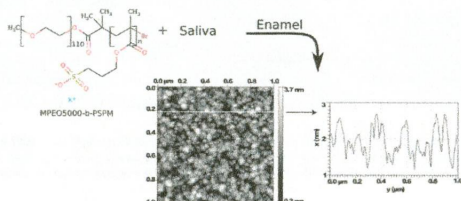
### Engineering Complementary Hydrophobic Interactions to Control $\beta$ -Hairpin Peptide Self-Assembly, Network Branching, and Hydrogel Properties

Sameer Sathaye, Huixi Zhang, Cem Sonmez, Joel P. Schneider, Christopher M. MacDermid, Christopher D. Von Bargaen, Jeffery G. Saven, and Darrin J. Pochan\*



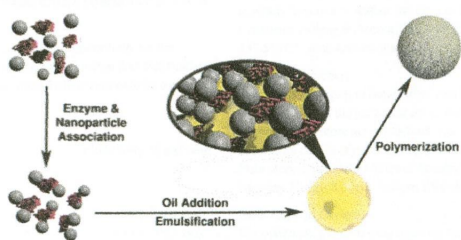
### Poly(ethylene oxide)-*b*-poly(3-sulfopropyl methacrylate) Block Copolymers for Calcium Phosphate Mineralization and Biofilm Inhibition

Tobias Mai, Ekaterina Rakhmatullina,\* Katrin Bleek, Susanne Boye, Jiayin Yuan, Antje Völkel, Marlies Gräwert, Zeinab Cheaib, Sigrun Eick, Christina Günter, Albena Lederer, Adrian Lussi, and Andreas Taubert\*



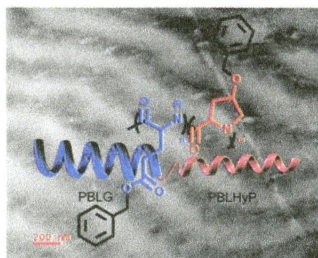
### Immobilization and Stabilization of Lipase (CaLB) through Hierarchical Interfacial Assembly

Joey N. Talbert, Li-Sheng Wang, Bradley Duncan, Youngdo Jeong, Stephanie M. Amler, Vincent M. Rotello,\* and Julie M. Goddard\*



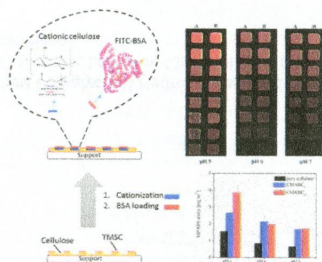
### Extended Self-Assembled Long Periodicity and Zig-Zag Domains from Helix–Helix Diblock Copolymer Poly( $\gamma$ -benzyl-L-glutamate)-*block*-poly(*O*-benzyl-L-hydroxyproline)

Manos Gkikas,<sup>\*</sup> Johannes S. Haataja, Jani Seitsonen, Janne Ruokolainen, Olli Ikkala, Hermis Iatrou,<sup>\*</sup> and Nikolay Houbenov<sup>\*</sup>



### Triggering Protein Adsorption on Tailored Cationic Cellulose Surfaces

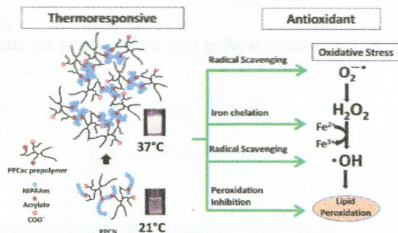
Tamilselvan Mohan, Katrin Niegelhell, Cíntia Salomão Pinto Zarth, Rupert Kargl, Stefan Köstler, Volker Ribitsch, Thomas Heinze, Stefan Spirk,<sup>\*</sup> and Karin Stana-Kleinschek



### A Thermoresponsive Biodegradable Polymer with Intrinsic Antioxidant Properties

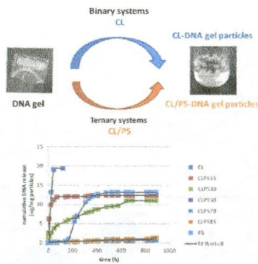
Jian Yang, Robert van Lith, Kevin Baler, Ryan A. Hoshi, and Guillermo A. Ameer<sup>\*</sup>

#### Poly(polyethyleneglycol citrate-co-N-isopropylacrylamide)



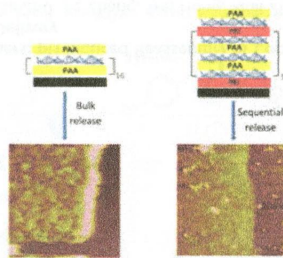
### Sustainable DNA Release from Chitosan/Protein Based-DNA Gel Particles

M. Carmen Morán,\* Andrea F. Jorge, and M. Pilar Vinardell



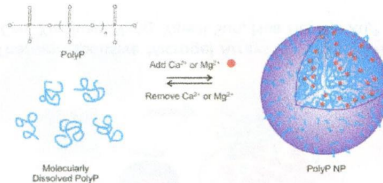
### Layer-by-Layer Films with Bioreducible and Nonbioreducible Polycations for Sequential DNA Release

Yi Zou, Lingxiao Xie, Sean Carroll, Maria Muniz, Heather Gibson, Wei-Zen Wei, Haipeng Liu, and Guangzhao Mao\*



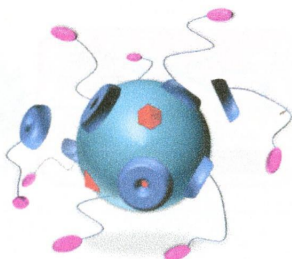
### Size-Controlled Synthesis of Granular Polyphosphate Nanoparticles at Physiologic Salt Concentrations for Blood Clotting

Alexander J. Donovan, Joseph Kalkowski, Stephanie A. Smith, James H. Morrissey, and Ying Liu\*



**Supramolecular Glycodendrimer-Based Hybrid Drugs**

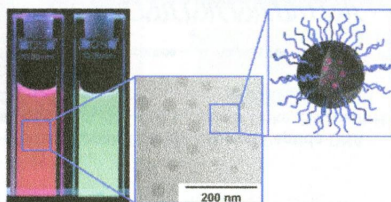
Marco Paolino,\* Hartmut Komber, Laura Mennuni, Gianfranco Caselli, Dietmar Appelhans, Brigitte Voit, and Andrea Cappelli

3994 **S**

DOI: 10.1021/bm501058n

**Luminescent Nanoparticles with Lanthanide-Containing Poly(ethylene glycol)–Poly( $\epsilon$ -caprolactone) Block Copolymers**

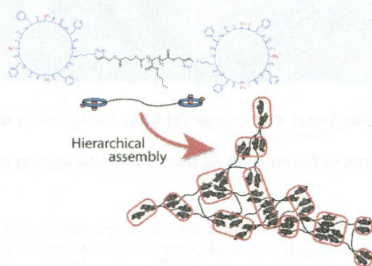
David C. Thévenaz, Christophe A. Monnier, Sandor Balog, and Gina L. Fiore\*

4002 **S**

DOI: 10.1021/bm501062d

**Hierarchical Assembly of Branched Supramolecular Polymers from (Cyclic Peptide)–Polymer Conjugates**

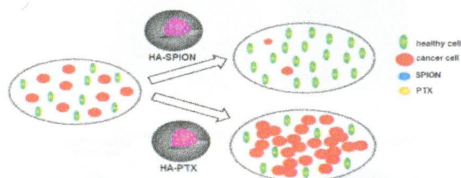
Ming Liang Koh, Katrina A. Jolliffe,\* and Sébastien Perrier





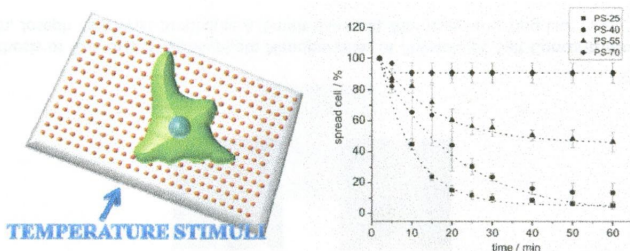
### Selective In Vitro Anticancer Effect of Superparamagnetic Iron Oxide Nanoparticles Loaded in Hyaluronan Polymeric Micelles

Daniela Šmejkalová,\* Kristina Nešporová, Gloria Huerta-Angeles, Jakub Syrovátka, Daniel Jirák, Andrea Gálisová, and Vladimír Velebný



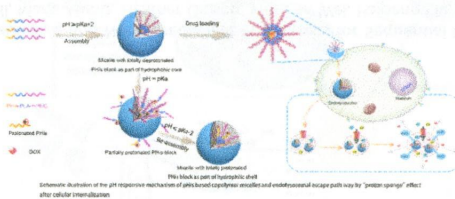
### Self-Assembled Two-Dimensional Thermoresponsive Microgel Arrays for Cell Growth/Detachment Control

Yongqing Xia, Xinlong He, Meiwen Cao, Xiaojuan Wang, Yawei Sun, Hua He, Hai Xu,\* and Jian Ren Lu\*



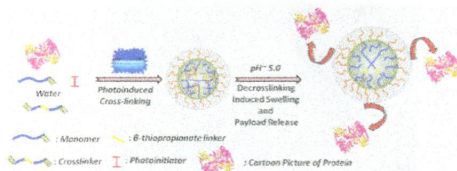
### Poly(L-histidine) Based Triblock Copolymers: pH Induced Reassembly of Copolymer Micelles and Mechanism Underlying Endolysosomal Escape for Intracellular Delivery

Xiaojun Zhang, Dawei Chen, Shuang Ba, Jia Zhu, Jie Zhang, Wei Hong, Xiuli Zhao, Haiyang Hu, and Mingxi Qiao\*



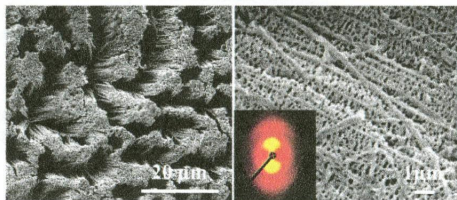
### Unlocking a Caged Lysosomal Protein from a Polymeric Nanogel with a pH Trigger

Mijanur Rahaman Molla, Tyler Marcinko, Priyaa Prasad, Derrick Deming, Scott C. Garman,\* and S. Thayumanavan\*



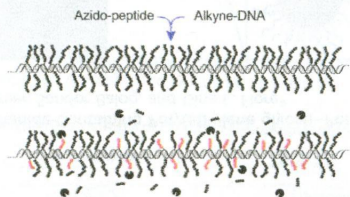
### Unprecedented Access to Strong and Ductile Poly(lactic acid) by Introducing In Situ Nanofibrillar Poly(butylene succinate) for Green Packaging

Lan Xie, Huan Xu, Ben Niu, Xu Ji,\* Jun Chen, Zhong-Ming Li,\* Benjamin S. Hsiao, and Gan-Ji Zhong\*



### Construction and Characterization of Kilobasepair Densely Labeled Peptide-DNA

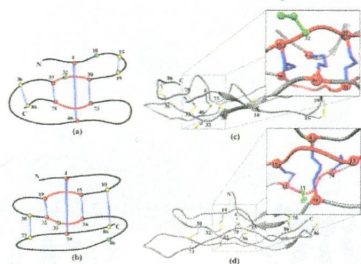
Suzana Kovacic, Laleh Samii, Guillaume Lamour, Hongbin Li, Heiner Linke, Elizabeth H. C. Bromley, Derek N. Woolfson, Paul M. G. Curmi, and Nancy R. Forde\*



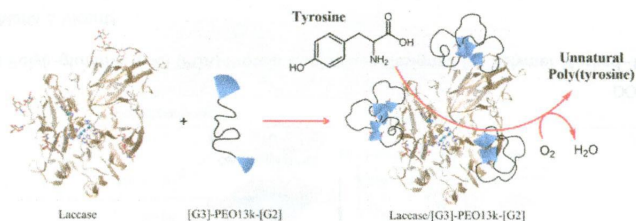


**Dragline Silk: A Fiber Assembled with Low-Molecular-Weight Cysteine-Rich Proteins**

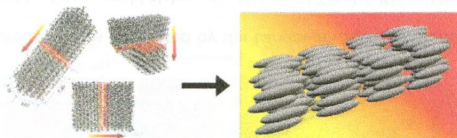
Thanh Pham, Tyler Chuang, Albert Lin, Hyun Joo, Jerry Tsai, Taylor Crawford, Liang Zhao, Caroline Williams, Yang Hsia, and Craig Vierra\*

**“Green” Synthesis of Unnatural Poly(Amino Acid)s with Zwitterionic Character and pH-Responsive Solution Behavior, Mediated by Linear–Dendritic Laccase Complexes**

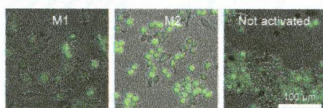
Ivan Gitsov,\* Lili Wang, Nikolay Vladimirov, Arsen Simonyan, David J. Kiemle, and Andri Schutz

**Thermal Conductivity in Nanostructured Films: From Single Cellulose Nanocrystals to Bulk Films**

Jairo A. Diaz, Zhijiang Ye, Xiawa Wu, Arden L. Moore, Robert J. Moon,\* Ashlie Martini,\* Dylan J. Boday,\* and Jeffrey P. Youngblood\*

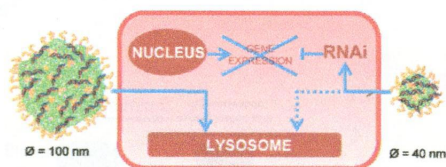
**Effect of Surface Modification and Macrophage Phenotype on Particle Internalization**

Daniel Wang, Ngoc Phan, Christopher Isely, Lucas Bruene, and Kaitlin M. Bratlie\*

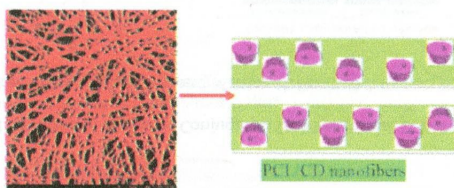


**Size-Dependent Knockdown Potential of siRNA-Loaded Cationic Nanohydrogel Particles**

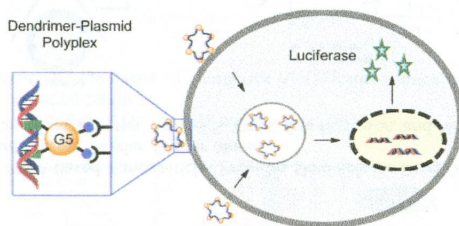
Lutz Nuhn, Stephanie Tomcin, Kanjiro Miyata, Volker Mailänder, Katharina Landfester, Kazunori Kataoka, and Rudolf Zentel\*

**Poly( $\epsilon$ -caprolactone) Nanowebbs Functionalized with  $\alpha$ - and  $\gamma$ -Cyclodextrins**

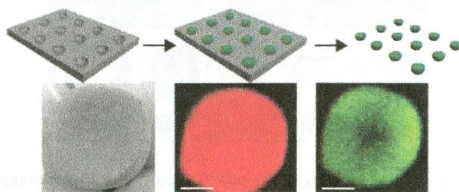
Ganesh Narayanan, Bhupender S. Gupta, and Alan E. Tonelli\*

**Multivalent Dendrimer Vectors with DNA Intercalation Motifs for Gene Delivery**

Pamela T. Wong, Kenny Tang, Alexa Coulter, Shengzhuang Tang, James R. Baker Jr., and Seok Ki Choi\*

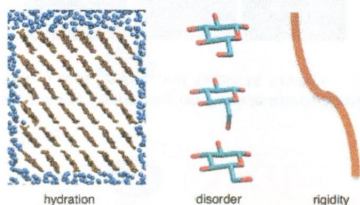
**Mold-Templated Inorganic–Organic Hybrid Supraparticles for Codelivery of Drugs**

James W. Maina, Jiwei Cui, Mattias Björnmalm, Andrew K. Wise, Robert K. Shepherd, and Frank Caruso\*



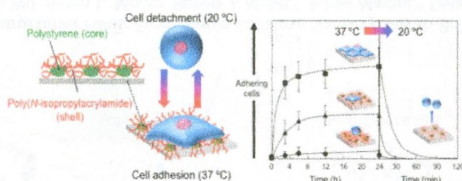
### Hydration Control of the Mechanical and Dynamical Properties of Cellulose

Loukas Petridis,\* Hugh M. O'Neill, Mariah Johnsen, Bingxin Fan, Roland Schulz, Eugene Mamontov, Janna Maranas, Paul Langan, and Jeremy C. Smith



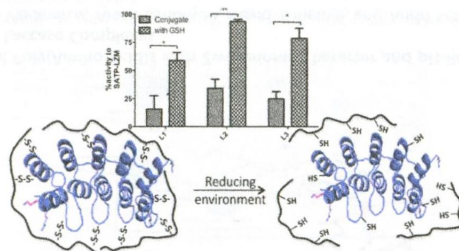
### Thermoresponsive Nanostructured Surfaces Generated by the Langmuir–Schaefer Method Are Suitable for Cell Sheet Fabrication

Morito Sakuma, Yoshikazu Kumashiro,\* Masamichi Nakayama, Nobuyuki Tanaka, Kazuo Umemura, Masayuki Yamato, and Teruo Okano\*



### Reduction Sensitive Poly(L-glutamic acid) (PGA)-Protein Conjugates Designed for Polymer Masked–Unmasked Protein Therapy

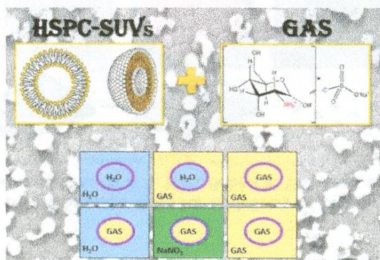
Marina Talelli\* and María J. Vicent\*





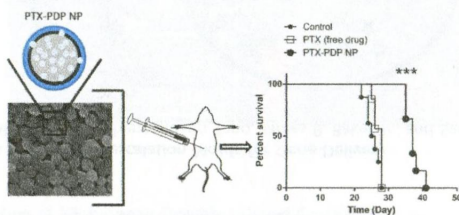
## Effect of Glucosamine Sulfate on Surface Interactions and Lubrication by Hydrogenated Soy Phosphatidylcholine (HSPC) Liposomes

Anastasia Gaisinskaya-Kipnis, Sabrina Jahn, Ronit Goldberg, and Jacob Klein\*



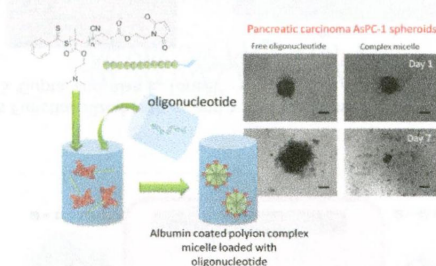
## Dual-Layer Surface Coating of PLGA-Based Nanoparticles Provides Slow-Release Drug Delivery To Achieve Metronomic Therapy in a Paclitaxel-Resistant Murine Ovarian Cancer Model

Zohreh Amoozgar, Lei Wang, Tania Brandstoeetter, Samuel S. Wallis, Erin M. Wilson, and Michael S. Goldberg\*



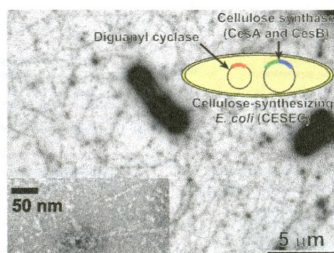
## Polyion Complex Micelle Based on Albumin–Polymer Conjugates: Multifunctional Oligonucleotide Transfection Vectors for Anticancer Chemotherapeutics

Yanyan Jiang, Hongxu Lu, Yee Yee Khine, Aydan Dag, and Martina H. Stenzel\*



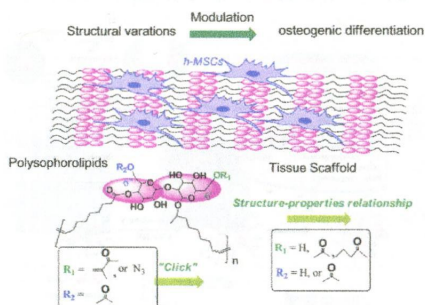
### Functional Reconstitution of Cellulose Synthase in *Escherichia coli*

Tomoya Imai,\* Shi-jing Sun, Yoshiki Horikawa, Masahisa Wada, and Junji Sugiyama



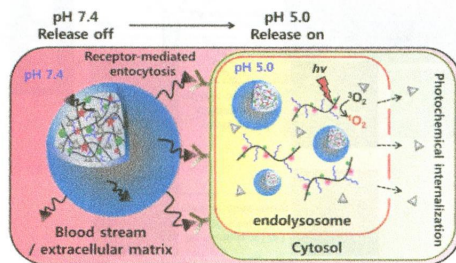
### Poly(sophorolipid) Structural Variation: Effects on Biomaterial Physical and Biological Properties

Yifeng Peng, Dany J. Munoz-Pinto, Mingtao Chen, John Decatur, Mariah Hahn, and Richard A. Gross\*



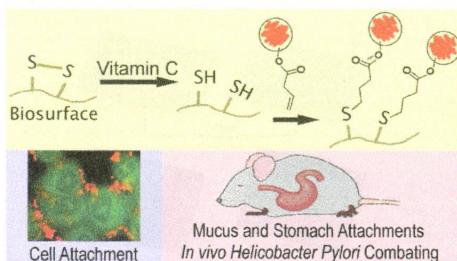
### Photochemically Triggered Cytosolic Drug Delivery Using pH-Responsive Hyaluronic Acid Nanoparticles for Light-Induced Cancer Therapy

Chung-Sung Lee and Kun Na\*



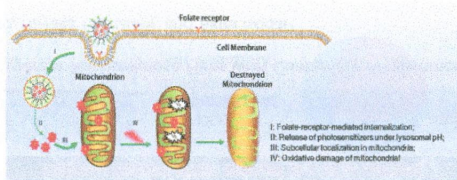
### Acrylate-Tethering Drug Carrier: Covalently Linking Carrier to Biological Surface and Application in the Treatment of *Helicobacter pylori* Infection

Amornset Tachaprutinun, Pornpip Pan-In, Pawatsanai Samutprasert, Wijit Banlunara, Nuntaree Chaichanawongsaroj, and Supason Wanichwecharungruang\*



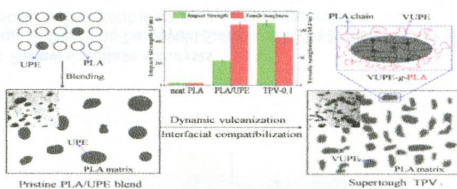
### Enhanced Photodynamic Efficiency Achieved via a Dual-Targeted Strategy Based on Photosensitizer/Micelle Structure

Jiangsheng Xu, Fang Zeng,\* Hao Wu, Caiping Hu, and Shuizhu Wu\*



### Fully Biobased and Supertough Poly(lactide)-Based Thermoplastic Vulcanizates Fabricated by Peroxide-Induced Dynamic Vulcanization and Interfacial Compatibilization

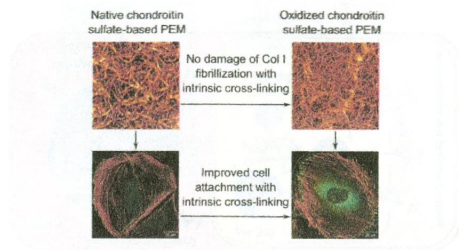
Guang-Chen Liu, Yi-Song He, Jian-Bing Zeng,\* Qiu-Tong Li, and Yu-Zhong Wang\*





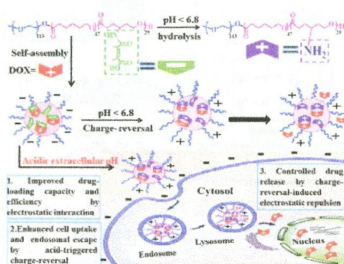
### Improved Stability and Cell Response by Intrinsic Cross-Linking of Multilayers from Collagen I and Oxidized Glycosaminoglycans

Mingyan Zhao, Lihua Li, Changren Zhou, Frank Heyroth, Bodo Fuhrmann, Karsten Maeder, and Thomas Groth\*



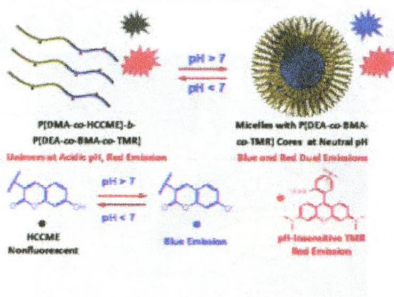
### PEG-*b*-PCL Copolymer Micelles with the Ability of pH-Controlled Negative-to-Positive Charge Reversal for Intracellular Delivery of Doxorubicin

Hongzhang Deng, Jinjian Liu, Xuefei Zhao, Yuming Zhang, Jianfeng Liu, Shuxin Xu, Liandong Deng, Anjie Dong, and Jianhua Zhang\*

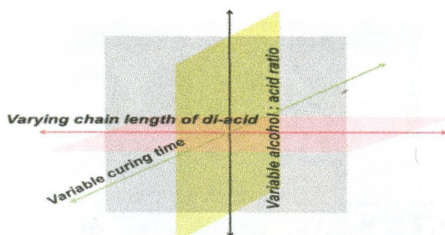


### Spatiotemporal Monitoring Endocytic and Cytosolic pH Gradients with Endosomal Escaping pH-Responsive Micellar Nanocarriers

Jinming Hu, Guhuan Liu, Cheng Wang, Tao Liu, Guoying Zhang, and Shiyong Liu\*

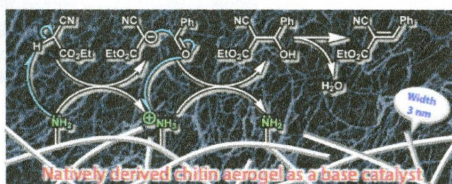


**Combinatorial Approach to Develop Tailored Biodegradable Poly(xylitol dicarboxylate) Polyesters**  
 Queeny Dasgupta, Kaushik Chatterjee, and Giridhar Madras\*



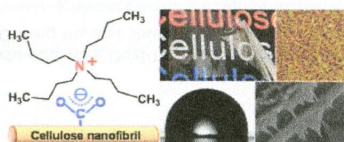
**Nanofibrillar Chitin Aerogels as Renewable Base Catalysts**

Yoshiyuki Tsutsumi, Hiroataka Koga, Zi-Dong Qi, Tsuguyuki Saito, and Akira Isogai\*



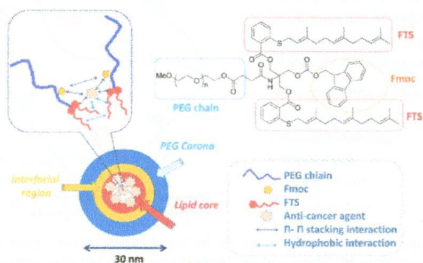
**Hydrophobic, Ductile, and Transparent Nanocellulose Films with Quaternary Alkylammonium Carboxylates on Nanofibril Surfaces**

Michiko Shimizu, Tsuguyuki Saito, Hayaka Fukuzumi, and Akira Isogai\*



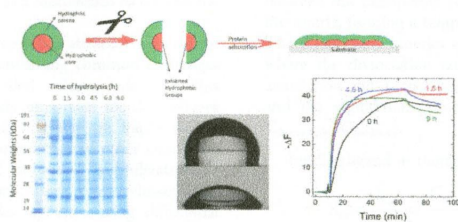
### Targeted Delivery of Anticancer Agents via a Dual Function Nanocarrier with an Interfacial Drug-Interactive Motif

Xiaolan Zhang, Yixian Huang, Wenchen Zhao, Hao Liu, Rebecca Marquez, Jianqin Lu, Peng Zhang, Yifei Zhang, Jiang Li, Xiang Gao, Raman Venkataraman, Liang Xu, and Song Li\*



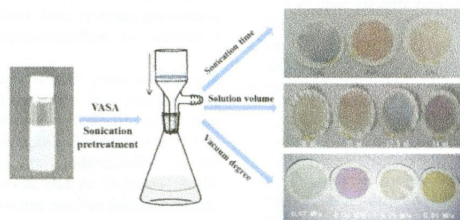
### Acid-Generated Soy Protein Hydrolysates and Their Interfacial Behavior on Model Surfaces

Julio C. Arboleda, Orlando J. Rojas,\* and Lucian A. Lucia\*



### Tuning the Iridescence of Chiral Nematic Cellulose Nanocrystal Films with a Vacuum-Assisted Self-Assembly Technique

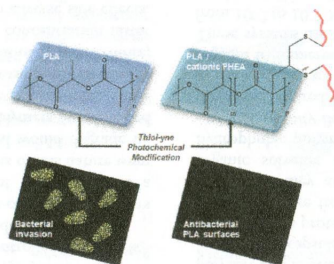
Qi Chen, Ping Liu, Fuchun Nan, Lijuan Zhou, and Jianming Zhang\*





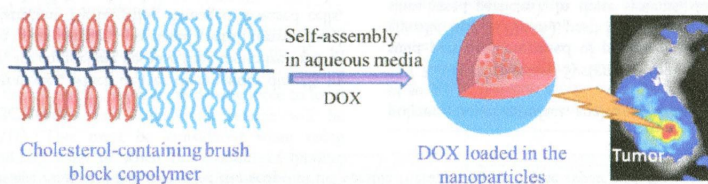
### When Functionalization of PLA Surfaces Meets Thiol–Yne Photochemistry: Case Study with Antibacterial Polyaspartamide Derivatives

Carla Sardo, Benjamin Nottelet,\* Daniela Triolo, Gaetano Giammona, Xavier Garric, Jean-Philippe Lavigne, Gennara Cavallaro,\* and Jean Coudane



### Long Circulating Self-Assembled Nanoparticles from Cholesterol-Containing Brush-Like Block Copolymers for Improved Drug Delivery to Tumors

Thanh-Huyen Tran, Chi Thanh Nguyen, Laura Gonzalez-Fajardo, Derek Hargrove, Donghui Song, Prashant Deshmukh, Lalit Mahajan, Dennis Ndaya, Laijun Lai, Rajeswari M. Kasi, and Xiuling Lu\*



## Additions and Corrections

### Correction to Trehalose Glycopolymers as Excipients for Protein Stabilization

Juneyoung Lee, En-Wei Lin, Uland Y. Lau, James L. Hedrick, Erhan Bat, and Heather D. Maynard\*