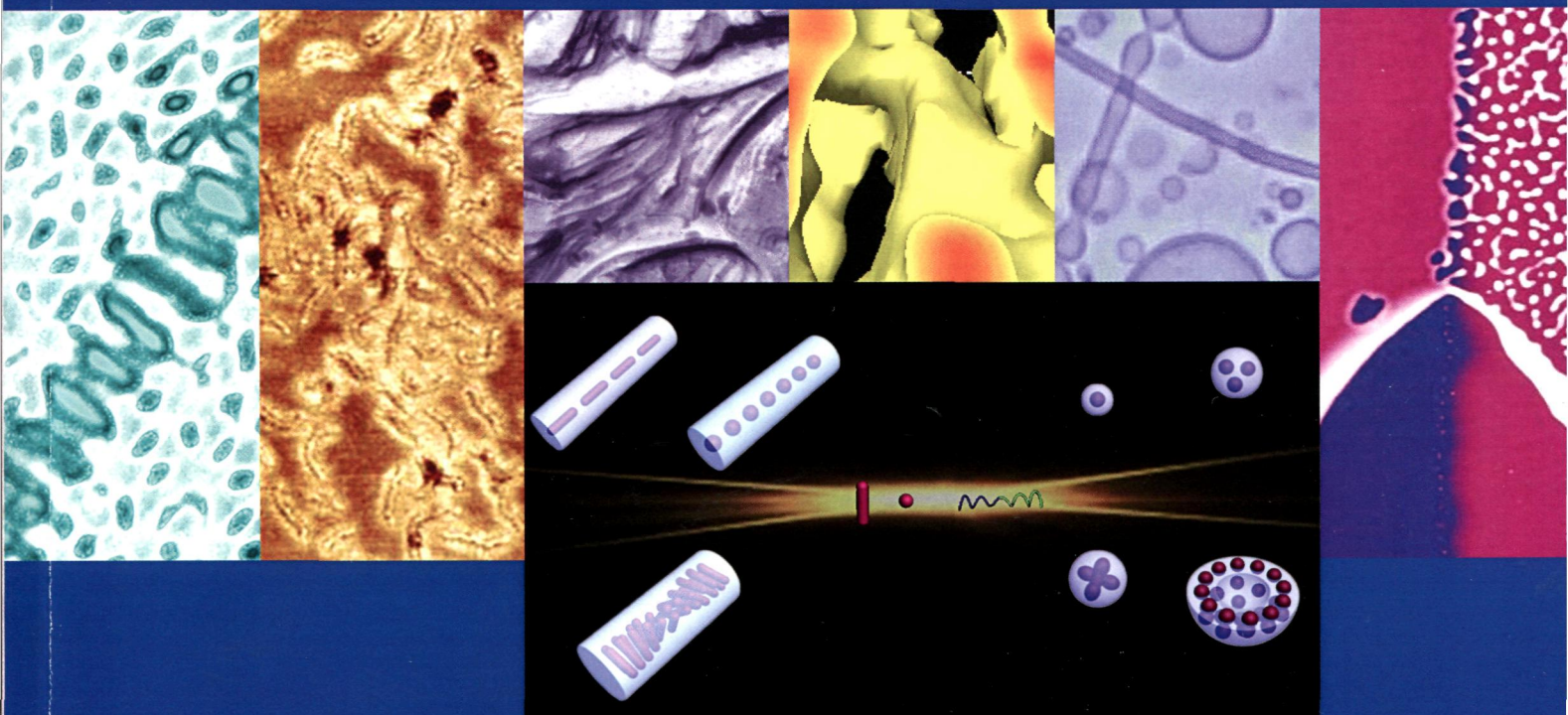
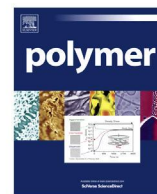


# polymer





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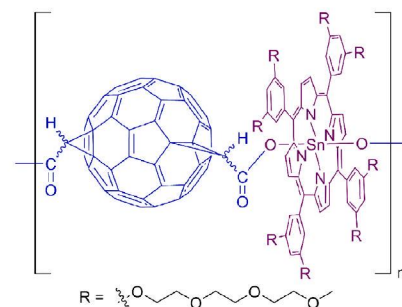
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Haiying Zhao<sup>a</sup>, Yizhou Zhu<sup>b</sup>, Chen Chen<sup>b</sup>, Jianyu Zheng<sup>b,\*</sup>

<sup>a</sup> College of Chemistry and Chemical Engineering, Inner Mongolia University, Huhhot 010021, China  
<sup>b</sup> State Key Laboratory and Institute of Elemento-Organic Chemistry, Nankai University, Tianjin 300071, China

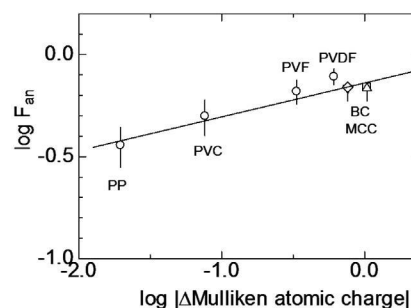


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Masato Sakaguchi<sup>a,\*</sup>, Masakazu Makino<sup>a</sup>, Takeshi Ohura<sup>b</sup>, Tadahisa Iwata<sup>c</sup>

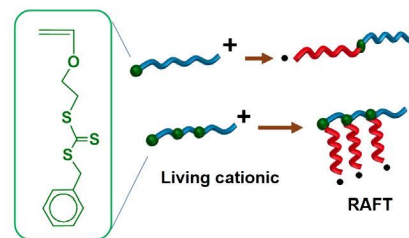
<sup>a</sup> Institute for Environmental Sciences, University of Shizuoka, 52 Yada, Suruga-ku, Shizuoka 422-8526, Japan  
<sup>b</sup> Faculty of Agriculture, Meijo University, 1-501, Shiogamaguchi, Tempaku-ku, Nagoya 468-8502, Japan  
<sup>c</sup> Department of Biomaterial Sciences, Graduate School of Agricultural and Life Sciences, The University of Tokyo, 1-1-1 Yayoi, Bunkyo-ku, Tokyo 133-8657, Japan



## POLYMER PAPERS

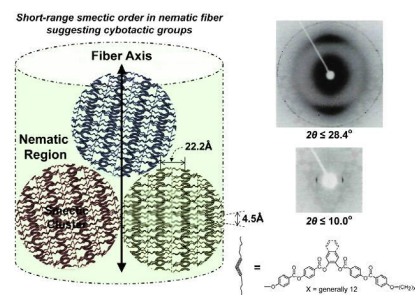
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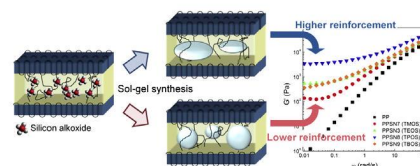
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Kengo Takeuchi, Minoru Terano, Toshiaki Taniike<sup>\*</sup>

School of Materials Science, Japan Advance Institute of Science and Technology, 1-1 Asahidai, Nomi, Ishikawa 923-1292, Japan

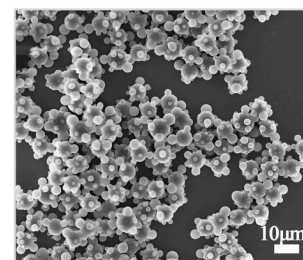


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School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing 100083, China

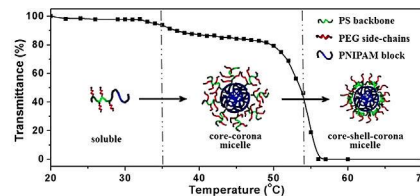


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Key Laboratory of Functional Polymer Materials of the Ministry of Education, Synergetic Innovation Center of Chemical Science and Engineering (Tianjin), Institute of Polymer Chemistry, Nankai University, Tianjin 300071, China

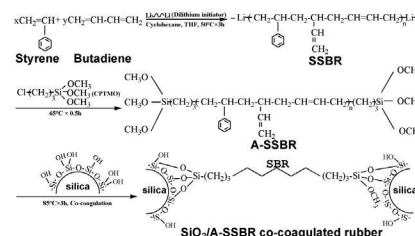


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<sup>a</sup> College of Materials Science and Engineering, Beijing University of Technology, Beijing 100124, China  
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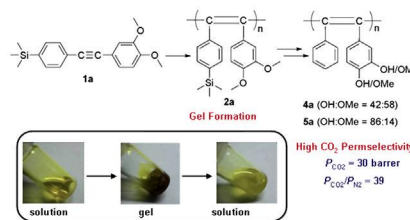


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<sup>a</sup> Department of Materials Science and Engineering, Graduate School of Engineering, University of Fukui, Bunkyo, Fukui 910-8507, Japan  
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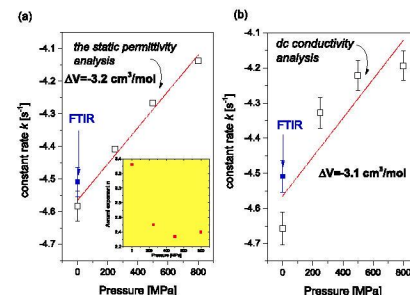


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<sup>b</sup> Institute of Materials Science, University of Silesia, 75 Pulk Piechoty 1, 41-500 Chorzow, Poland  
<sup>c</sup> NanoBioMedical Centre, Adam Mickiewicz University, Umultowska 85, 61-614 Poznan, Poland



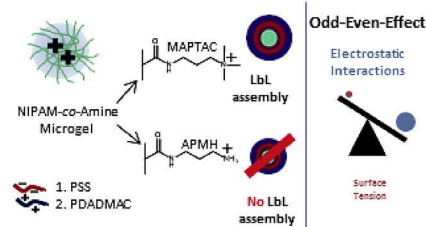
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Walter Richtering<sup>a,\*</sup>

<sup>a</sup>Institute of Physical Chemistry II, RWTH Aachen University, Landoltweg 2, 52056 Aachen, Germany

<sup>b</sup>Department of Chemistry, M.V. Lomonosov Moscow State University, Leninskie Gory 1/3, 119991 Moscow, Russian Federation



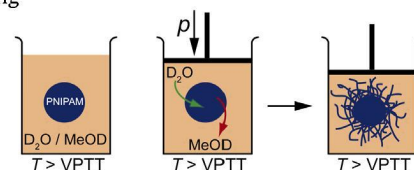
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<sup>a</sup>Institute of Physical Chemistry, RWTH Aachen University, Landoltweg 2, D 52056 Aachen, Germany

<sup>b</sup>Department of Chemistry and Chemical Biology, Physical Chemistry I, TU Dortmund University, Otto-Hahn-Straße 6, 44227 Dortmund, Germany

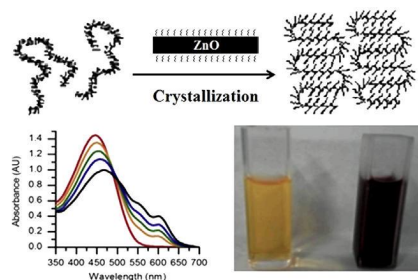


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Department of Chemistry and Biochemistry, California Polytechnic State University, San Luis Obispo, CA 93407, United States



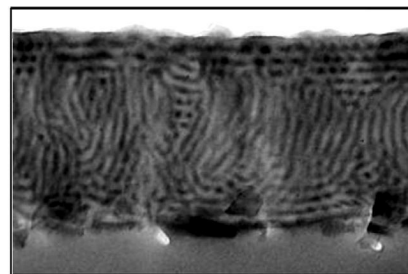
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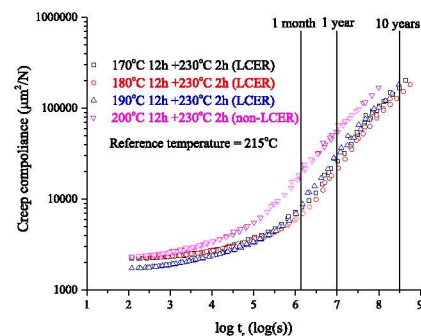
<sup>a</sup>Department of Applied Chemistry, Dongduk Women's University, Seoul 136-714, Republic of Korea

<sup>b</sup>Department of Chemical Engineering, Kyonggi University, Suwon 443-760, Republic of Korea

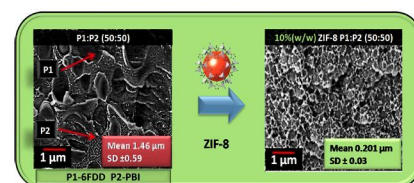


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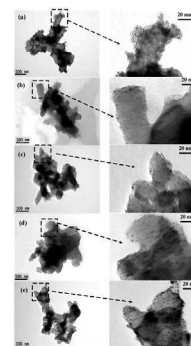
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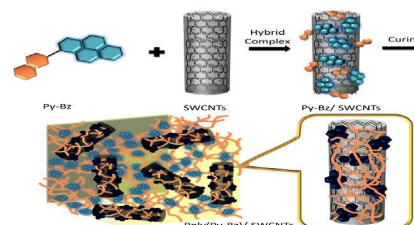
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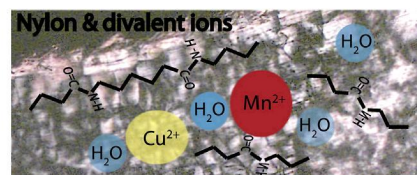
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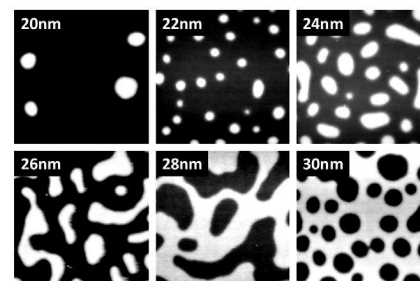
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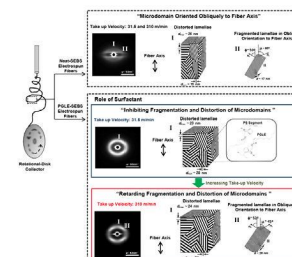
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Department of Chemical and Biological Engineering, and Princeton Institute for The Science and Technology of Materials, Princeton University, Princeton, NJ 08544, USA



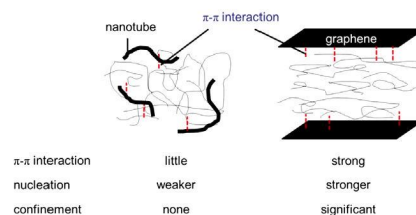
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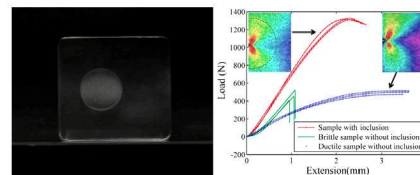
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<sup>a</sup> Department of Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL 32611, United States

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<sup>c</sup> Department of Materials Science and Engineering, University of Florida, Gainesville, FL 32611, United States



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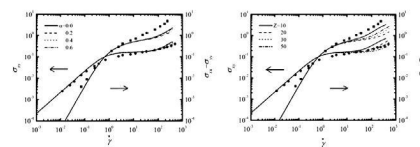
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<sup>a</sup> Institut für Physik, Johannes Gutenberg-Universität Mainz, Staudingerweg 9, D-55099 Mainz, Germany

<sup>b</sup> Beijing National Laboratory for Molecular Sciences (BNLMS), Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China

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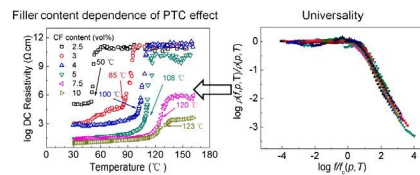
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<sup>a</sup> Department of Polymer Materials and Engineering, Dalian University of Technology, Dalian 116024, PR China

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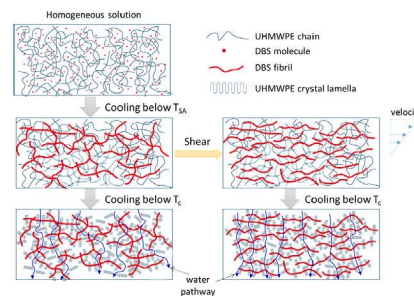
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<sup>a</sup> Advanced Rheology Institute, Department of Polymer Science and Engineering, Shanghai Jiao Tong University, Shanghai 200240, PR China

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 Terano, M. 1940  
 Tsai, M.-J. 2035  
 Tseng, P.-H. 2035  
 Tsuzuki, T. 1977
- Wagner, T. W. 2008  
 Wang, G. 1948  
 Wang, P.-I. 2044  
 Wang, Y.-Z. 2035  
 Watanabe, J. 1931  
 Wei, T.-E. 2035  
 Wijenayake, S. N. 2028  
 Winter, R. 2000  
 Wu, Q. 1948  
 Wu, R.-H. 2035
- Xu, D. 2103
- Yan, D. 2094  
 Yang, C.-C. 2044  
 Yang, M. 1948  
 Yang, S. 2094  
 Yu, W. 2113
- Zhang, R. 2103  
 Zhang, S. 2008  
 Zhang, W. 1955  
 Zhang, X. 1964  
 Zhao, H. 1913  
 Zhao, S. 1964  
 Zheng, J. 1913  
 Zhou, C. 2113  
 Zhu, Y. 1913