

OSAKA UNIVERSITY MACROMOLECULAR SYMPOSIUM  
ON  
Chemistry, Physics, and Biology in Macromolecular Science

**Time Table of Program**

Dec. 12 (Saturday)		Dec. 13 (Sunday)	
9:00	Opening Remarks		
9:05	F. M. Winnik	9:00	Y. Kobayashi
9:45	A. Kajiwara	9:40	L. Zhang
10:25	Coffee Break	10:20	Coffee Break
10:40	K. Imada	10:40	S. Nishimura
11:20	S. J. Lee	11:20	K. Szczubialka
12:00	L. Brunsveld	12:00	K. Terao
12:40	Lunch	12:40	Lunch
14:00	J. Li	14:00 - 15:30	Poster Session II
14:40	S. Yusa	15:30	Coffee Break
15:20	K. Onitsuka	15:40	A. Ogawa
16:00	Coffee Break	16:20	C. Barner-Kowollik
16:15 - 17:45	Poster Session I	17:00	K. Sakurai
19:00 - 21:00	Reception	17:40	Closing Remarks

# Scientific Program

**December 12<sup>th</sup> (Saturday)**

**Lecture Room D501**

9:00 - 9:05 **Opening remarks**

**Session 1** Chairperson: T. Sato

9:05 - 9:45 **L1** F. M. Winnik (University of Montreal)  
**Polymeric micelles: their self-assembly, characterization and applications in biology**

9:45 - 10:25 **L2** A. Kajiwara (Nara University of Education)  
**Electron spin resonance study of conventional and controlled radical polymerizations: direct detection of active species during polymerization reactions**

10:25 - 10:40 **Coffee Break**

**Session 2** Chairperson: A. Harada

10:40 - 11:20 **L3** K. Imada (Osaka University)  
**Structure of a biological macromolecular nanomachine, the bacterial flagellum**

11:20 - 12:00 **L4** S. J. Lee (Chungbuk National University)  
**The structure and function of importins and exportins**

12:00 - 12:40 **L5** L. Brunsveld (Eindhoven University of Technology)  
**Supramolecular architectures for the modulation of proteins**

12:40 - 14:00 **Lunch**

**Session 3**      Chairperson: S. Aoshima

14:00 - 14:40 **L6**      J. Li (National University of Singapore)

**Biopolyester-based amphiphilic block copolymers and biomaterials applications**

14:40 - 15:20 **L7**      S. Yusa (University of Hyogo)

**pH-Responsive nanogel based on a photo-cross-linked micelle**

15:20 - 16:00 **L8**      K. Onitsuka (Osaka University)

**Precise syntheses and properties of organometallic macromolecules**

16:00 - 16:15 **Coffee Break**

16:15 - 17:45 **Poster Session I** (at Lecture Room D403)

## **December 13<sup>th</sup> (Sunday)**

### **Lecture Room D501**

**Session 4**      Chairperson: K. Okuyama

9:00 - 9:40    **L9**    Y. Kobayashi (Osaka University of Pharmaceutical Sciences)  
**From the triple helical structure of collagen to rational drug design**

9:40 - 10:20 **L10**   L. Zhang (Wuhan University)  
**New cellulose solvents and regenerated cellulose functional materials**

10:20 - 10:40 **Coffee Break**

**Session 5**      Chairperson: T. Inoue

10:40 - 11:20 **L11**   S. Nishimura (Kyushu University)  
**A study on rubber composites as sealing materials for high-pressure hydrogen gas vessels**

11:20 - 12:00 **L12**   K. Szczubialka (Jagiellonian University)  
**Polymers for biomedical and environmental applications**

12:00 - 12:40 **L13**   K. Terao (Osaka University)  
**Solution properties and helical structure of amylose carbamates in solution**

12:40 - 14:00 **Lunch**

14:00 - 15:30 **Poster Session II** (at Lecture Room D403)

15:30 - 15:40 **Coffee Break**

**Session 6**      Chairperson: K. Onitsuka

15:40 - 16:20 **L14**    A. Ogawa (Max Plank Institute for Developmental Biology)

**Evolution of biomolecules involved in survival strategies of nematodes**

16:20 - 17:00 **L15**    C. Barner-Kowollik (Karlsruhe University)

**Facile access to complex polymeric materials: from ultrafast click conjugations to novel avenues for controlling radical polymerizations**

17:00 - 17:40 **L16**    K. Sakurai (University of Kitakyushu)

**A novel triple helix of  $\beta$ -1,3-polysaccharide and DNA and its application to control immunological response**

17:40 - 17:45 **Closing Remarks**

## **Poster Session I [December 12<sup>th</sup> (Saturday); Lecture Room D403]**

**Obligation time: 16:15–17:00 (odd poster number)**

**17:00–17:45 (even poster number)**

### **I-1**

**Wataru Oi**, Mio Isobe, Daisuke Taura, Akihito Hashidzume, Hiroyasu Yamaguchi, and Akira Harada  
(Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Interaction of cyclodextrins with bovine and human serum albumins**

### **I-2**

**Daisuke Jomori**,<sup>1</sup> Kunihiro Uramatsu,<sup>1</sup> Yoshinori Takashima,<sup>1</sup> Hiroyasu Yamaguchi,<sup>1</sup> and Akira Harada<sup>1,2</sup> (<sup>1</sup>Department of Macromolecular Science, Graduate School of Science, Osaka University; <sup>2</sup>JST · CREST)

**Synthesis and ROMP catalytic effect of ruthenium complexes with a cyclodextrin derivative as a ligand**

### **I-3**

**Shogo Yoshida**,<sup>1</sup> Daisuke Taura,<sup>1</sup> Akihito Hashidzume,<sup>1</sup> Yoshinori Takashima,<sup>1</sup> Hiroyasu Yamaguchi,<sup>1</sup> and Akira Harada<sup>1,2</sup> (<sup>1</sup>Department of Macromolecular Science, Graduate School of Science, Osaka University; <sup>2</sup>JST · CREST)

**Preparation of supramolecular spherical cyclodextrin dendrimer and its molecular recognition**

### **I-4**

**Akira Kanaya**, Naoki Tomimasu, Yoshinori Takashima, Hiroyasu Yamaguchi, and Akira Harada  
(Department of Macromolecular Science, Graduate School of Science Osaka University)

**Supramolecular structures of cyclodextrin derivatives and migration of ester groups**

### **I-5**

**Shingo Tamesue**,<sup>1</sup> Yoshinori Takashima,<sup>1</sup> Hiroyasu Yamaguchi,<sup>1</sup> Seiji Shinkai,<sup>2</sup> and Akira Harada<sup>1,3</sup>  
(<sup>1</sup>Department of Macromolecular Science, Graduate School of Science, Osaka University; <sup>2</sup>Information Technologies and Nanotechnologies (ISIT), Fukuoka; <sup>3</sup>CREST, JST)

**Supramolecular fastener-photoswitchable hydrogel formed by cyclodextrin and azobenzene polymers**

## I-6

**Shujing Li**, Daisuke Taura, Akihito Hashidzume, Yoshinori Takashima, Hiroyasu Yamaguchi, and Akira Harada (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Photocontrolled size changes of doubly-threaded dimer based on an  $\alpha$ -CD derivative with two recognition sites**

## I-7

**Yoshinori Takashima**,<sup>1</sup> Dai Nishimura,<sup>1</sup> Hiroyuki Aoki,<sup>2</sup> Toshiaki Takahashi,<sup>2</sup> Hiroyasu Yamaguchi,<sup>1</sup> Shinzaburo Ito,<sup>2</sup> and Akira Harada<sup>1</sup> (Department of Macromolecular Science, Graduate School of Science, Osaka University; <sup>2</sup> Department of Polymer Chemistry, Graduate School of Engineering, Kyoto University)

**Single-molecular imaging of rotaxane based on glass substrates: observations of rotary movement of a rotor**

## I-8

**Shogo Nobukawa**, Osamu Urakawa, Toshiyuki Shikata, and Tadashi Inoue (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Molecular orientation and rotational motion in polymer/low-molecular weight compound blend**

## I-9

**Tomoko Maeda** and Toshiyuki Shikata (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Hydration behavior of partially hydrophilically modified poly(*N*-isopropylacrylamide) in aqueous solution**

## I-10

**Ayako Minakawa**, Toshiyuki Shikata, and Kenji Okuyama (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Hydration behavior of partially hydrophilically modified poly(*N*-isopropylacrylamide) in aqueous solution**

### I-11

**Toshiyuki Shikata**, Nao Yoshida, and Kenji Okuyama (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Anomalous dehydration behavior of a short collagen model polypeptide, (L-Prolyl-L-ProlylGlycyl)<sub>5</sub>, in aqueous solution**

### I-12

**Keita Miyama**,<sup>1</sup> Tatsuya Morimoto,<sup>1</sup> Koichi Masakiyo,<sup>1</sup> Tatsuya Kawaguchi,<sup>1</sup> Kenji Okuyama,<sup>1</sup> Kazunori Mizuno,<sup>2</sup> Hans Peter Bächinger<sup>2</sup> (<sup>1</sup> Department of Macromolecular Science, Graduate School of Science, Osaka University; <sup>2</sup> Shriners Hospital for Children, Research Department Portland)

**Stabilization mechanism by Hyp-Thr-Gly sequence in collagen-helix**

### I-13

**Tatsuya Kawaguchi**,<sup>1</sup> Masaki Shimura,<sup>1</sup> Keiichi Noguchi,<sup>1</sup> Kenji Okuyama,<sup>1</sup> Kazunori Mizuno,<sup>2</sup> and Hans Peter Bächinger<sup>2</sup> (<sup>1</sup>Department of Macromolecular Science, Graduate School of Science, Osaka University; <sup>2</sup>Shriners Hospital for Children, Research Department Portland)

**The crystal structure of two collagen model peptides, (Pro-Pro-Gly)<sub>4</sub>-Hyp-Asp-Gly-(Pro-Pro-Gly)<sub>4</sub> and (Pro-Pro-Gly)<sub>4</sub>-Hyp-Asn-Gly-(Pro-Pro-Gly)<sub>4</sub>**

### I-14

**Kosaku Yasuoka**, Jun Ashida, Shokyoku Kanaoka, and Sadahito Aoshima (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Living cationic polymerization of  $\alpha$ -,  $\beta$ -, and *p*-methylstyrenes**

### I-15

**Dai Fukami**, Hiroaki Shimomoto, Shokyoku Kanaoka, and Sadahito Aoshima (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Living cationic polymerization of fluorinated vinyl ethers and their UCST-type phase separation behavior**



### **I-16**

**Yasushi Ishido**, Shokyoku Kanaoka, and Sadahito Aoshima (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**A unique copolymerization system of aldehydes and vinyl ethers: precision synthesis and chemical recycle via quantitative hydrolysis**

### **I-17**

**Yasuhito Ushijima**, Taka-aki Okamura, Hitoshi Yamamoto, and Kiyotaka Onitsuka (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Synthesis and properties of a novel molybdenum oxidoreductase model with two intramolecular NH...S hydrogen bonds**

### **I-18**

**Kumiko Kunisue**, Taka-aki Okamura, Hitoshi Yamamoto, and Kiyotaka Onitsuka (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Synthesis and properties of molybdoenzyme model complexes with intramolecular NH...S hydrogen bonds**

### **I-19**

**Noriaki Iwaguchi**,<sup>1</sup> Taka-aki Okamura,<sup>1</sup> and Hitoshi Yamamoto<sup>2</sup> (<sup>1</sup> Department of Macromolecular Science, Graduate school of Science, Osaka University; <sup>2</sup> Department for the Administration of Safety and Hygiene, Osaka University)

**Synthesis and electrochemical properties of low-barrier ion conductive polymer electrolytes having thioamide group**

### **I-20**

**Yuichi Yoshimura**,<sup>1</sup> Kazumasa Sakurai,<sup>1</sup> Young-Ho Lee,<sup>1</sup> Takahisa Ikegami,<sup>1</sup> Eri Chatani,<sup>2</sup> Hironobu Naiki,<sup>3</sup> and Yuji Goto<sup>1</sup> (<sup>1</sup>Institute for Protein Research, Osaka University; <sup>2</sup>Faculty of Pharmaceutical Science, Ritsumeikan University; <sup>3</sup>Faculty of Medical Science, University of Fukui)

**Direct observation of  $\beta_2$ -microglobulin amyloid fibrils using solution NMR**

### I-21

**Yasuhiro Matsuda**, Mayuko Matsukage, Kazutaka Fukui, and Shigeru Tasaka (Department of Materials Science and Chemical Engineering, Faculty of Engineering, Shizuoka University)

**Interaction and structure at the interface between polyacrylates and metals**

### I-22

**Akihito Hashidzume**, Taku Fujimoto, Makoto Masaoka, Yusuke Sanada, and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Preparation of porous alumina by the sol-gel process in the presence of sugars and functions of the alumina obtained**

### I-23

**Yusuke Kita**, Ken Terao, and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Triple-helix-coil transition of a collagen model peptide grafted on the polyacrylate chain and the global conformation of the graft polymer chain**

### I-24

**Yasuko Nakamura**, Ken Terao, and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Complexation of a cationic  $\pi$ -conjugated polyelectrolyte with various anionic biopolymers in aqueous solution**

### I-25

**Makoto Masaoka**, Akihito Hashidzume, and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Formose reaction in water pools of Aerosol OT reverse micelles**

### I-26

**Kohei Tanaka**,<sup>1</sup> Takahiro Sato,<sup>1</sup> and Shin-ichi Yusa<sup>2</sup> (<sup>1</sup>Department of Macromolecular Science, Graduate School of Science, Osaka University; <sup>2</sup>Department of Materials Science and Chemistry, Graduate School of Engineering, University of Hyogo)

**Thermally induced morphology change of thermoresponsive block copolymer micelles in aqueous solution**

**I-27**

**Mari Mizuse**, Akihito Hashidzume, and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Self-association behavior of amphiphilic statistical copolymers bearing various hydrophobes in aqueous solution**

**I-28**

**YuJing Xu** and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Micellization behavior in aqueous salt solutions containing an amphiphilic random copolymer and a surfactant**

## Poster Session II [December 13<sup>th</sup> (Sunday); Lecture Room D403]

Obligation time: 14:00–14:45 (odd poster number)

14:45–15:30 (even poster number)

### II-1

**Daisuke Taura**, Shujing Li, Akihito Hashidzume, and Akira Harada (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Formation of side-chain poly-*pseudo*-[3]rotaxane composed of  $\alpha$ - and  $\beta$ -cyclodextrins with a water-soluble copolymer,**

### II-2

**Tomoki Odaka**,<sup>1</sup> Hiroyasu Yamaguchi,<sup>1</sup> and Akira Harada<sup>1,2</sup> (<sup>1</sup>Department of Macromolecular Science, Graduate School of Science, Osaka University; <sup>2</sup>JST-CREST)

**Monoclonal antibodies with specific binding affinity for binaphthyl enantiomers**

### II-3

**Tamaki Giann**, Hiroyasu Yamaguchi, and Akira Harada (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Preparation of monoclonal antibodies for ruthenium (II) tris-bipyridine complex and their enantioselective binding properties**

### II-4

**Yumi Takeda**, Hiroyasu Yamaguchi, and Akira Harada (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**A photoinduced electron transfer based on supramolecular complex formation of porphyrin-PEG derivatives with acceptor-modified cyclodextrins**

### II-5

**Takaya Yamamoto**, Akihito Hashidzume, Yoshinori Takashima, Hiroyasu Yamaguchi, and Akira Harada (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Redox-responsive control of supramolecular structures formed from a ferrocene-carrying  $\beta$ -cyclodextrin derivative**

## II-6

**Hiroyasu Yamaguchi** and Akira Harada (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Construction of specific reaction control systems using antigen binding sites of antibodies**

## II-7

**Osamu Urakawa**, Shogo Nobukawa, Toshiyuki Shikata, and Tadashi Inoue (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Dynamics of polymer/low mass molecule mixtures**

## II-8

**Naoya Kitamura**, Toshiyuki Shikata, and Tadashi Inoue (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Electric birefringence of a supramolecular polymeric system formed by *N,N,N'*-tris-(3,7-dimethyloctyl)benzene-1,3,5-tricarboxamide in *n*-decane**

## II-9

**Hiroshi Iwawaki**, Osamu Urakawa, and Tadashi Inoue (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Dynamic birefringence and dynamic viscoelasticity of polymacromonomers**

## II-10

**Miho Fujita**, Osamu Urakawa, Toshiyuki Shikata, and Tadashi Inoue (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Effect of intermolecular hydrogen bonds on the rheological behavior in polymer melts.**

## II-11

**Tadashi Inoue**, Toshiyuki Shikata, and Osamu Urakawa (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Recent progress of rheo-optical research on soft matters**

## II-12

**Fumitoshi Kaneko**, Natsuko Kashiwara, Tatsuya Kawaguchi, and Kenji Okuyama (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Complexation of syndiotactic polystyrene with crown ethers**

## II-13

**Madoka Kimura**, Shokyoku Kanaoka, and Sadahito Aoshima (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Isomerization cationic polymerization of vinylcyclohexane**

## II-14

**Hayato Yoshimitsu**, Shokyoku Kanaoka, and Sadahito Aoshima (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Synthesis of poly(vinyl ether)s with pendant imidazolium salts and their thermally-induced phase transition: UCST-type phase separation in water**

## II-15

**Minato Takeguchi**, Shokyoku Kanaoka, and Sadahito Aoshima (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Living cationic polymerization of isobutyl vinyl ether: acetylacetone/Lewis acid initiating system**

## II-16

**Ayumi Hirai** and Kiyotaka Onitsuka (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Tris(ethynyliduryl)borane-bridged trinuclear platinum-acetylide complex: a new building block for organometallic dendrimers**

## II-17

**Shingo Tokuhara** and Kiyotaka Onitsuka (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Synthesis of helical polyisocyanides with crown ether pendants**

## II-18

**Naoya Kanbayashi** and Kiyotaka Onitsuka (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Regio- and enantioselective allylation of carboxylate catalyzed by a planar-chiral cyclopentadienyl-ruthenium complex**

## II-19

**Taka-aki Okamura**, Takuya Matsumura, Hitoshi Yamamoto, and Kiyotaka Onitsuka (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Crystal structures of expanded polypeptides having bis(pyridine)silver(I) moieties**

## II-20

**Iwao Fukuchi**, Takuya Ishibashi, Takashi Matsuhira, Iwaguchi Noriaki, and Hitoshi Yamamoto (Department for the Administration of Safety and Hygiene, Osaka University)

**Synthesis and evaluation of the side-chain structure of novel low-barrier ion conductive solid polymer electrolytes**

## II-21

**So Nakagawa**,<sup>1</sup> Shoji Maeda,<sup>1</sup> Michihiro Suga,<sup>1</sup> Eiki Yamashita,<sup>1</sup> Atsunori Oshima,<sup>2</sup> Yoshinori Fujiyoshi,<sup>2</sup> and Tomitake Tsukihara<sup>1,3</sup> (<sup>1</sup>Institute for Protein Research, Osaka University; <sup>2</sup>Graduate School of Science, Kyoto University; <sup>3</sup>Picobiology Institute, University of Hyogo)

**Structure of the human connexin 26 gap junction channel**

## II-22

**Aiko Mizuno**, Hisashi Yagi, Kazumasa Sakurai, and Yuji Goto (Institute for Protein Research, Osaka University)

**Producing amyloid fibrils of fusion protein GB1-K3**

## II-23

**Ryoko Kanenaga**,<sup>1</sup> Ken Terao,<sup>1</sup> Han Young Woo,<sup>2</sup> Shinichi Kitamura,<sup>3</sup> and Takahiro Sato<sup>1</sup> (<sup>1</sup>Department of Macromolecular Science, Graduate School of Science, Osaka University; <sup>2</sup>Department of Nanomaterials Engineering, Pusan National University; <sup>3</sup>Graduate School of Life and Environmental Sciences, Osaka Prefecture University)

**Complex formation of carboxymethylamylose and a cationic  $\pi$ -conjugated polyelectrolyte**

## **II-24**

**Takaaki Ochiai**, Yasuko Nakamura, Ken Terao, Takahiro Sato, and Takashi Norisuye (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Chain stiffness and helical structure of curdlan tris(phenylcarbamate) in solution**

## **II-25**

**Yusuke Sanada** and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Circular dichroism induction of an optically active polyfluorene derivative in phase-separating solutions**

## **II-26**

**Arina Miyawaki** and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Aggregation of  $\beta$ -lactoglobulin after denaturation in aqueous solution**

## **II-27**

**Dai Sakaguchi**, Akihito Hashidzume, and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Towards synthetic macromolecules with well-defined monomer sequences utilizing “click chemistry”**

## **II-28**

**Motoki Ueda**, Akihito Hashidzume, and Takahiro Sato (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Molecular weight dependency of the association behavior of alternating copolymers of sodium maleate and dodecyl vinyl ether in dilute aqueous solutions**

## **II-29**

**Yoshinori Takashima**, Motofumi Osaki, Hiroyasu Yamaguchi, and Akira Harada (Department of Macromolecular Science, Graduate School of Science, Osaka University)

**Nano-sphere having polymerization ability coated by polyrotaxane**