# NIMS Award 2022 Winner

## Prof. Kazuhiko Ishihara

Specially Appointed Professor,
Graduate School of Engineering, Osaka University
Emeritus Professor, The University of Tokyo

**Research Field**
Polymer Chemistry, Biomaterials Science and Engineering

**History**

| | |
|---|---|
| 1984 | Doctor of Engineering (Applied Chemistry), Waseda University |
| 1984～1986 | Research Associate, Sagami Chemical Research Center |
| 1987～1990 | Assistant Professor, Tokyo Medical and Dental University |
| 1991～1998 | Associate Professor, Tokyo Medical and Dental University |
| 1998～2000 | Associate Professor, The University of Tokyo |
| 2000～2021 | Professor, The University of Tokyo |
| 2021 | Emeritus Professor, The University of Tokyo |
| 2021～Present | Specially Appointed Professor, Osaka University |

**Major Awards**

| | |
|---|---|
| 2000 | Technical Progress Award, Japanese Society of Artificial Organs |
| 2001 | Award of Japanese Society for Biomaterials (2001) |
| 2004 | Harushige Inoue Prize, Japan Science and Technology Agency |
| 2004 | SPSJ Mitsubishi Chemical Award, Society of Polymer Science, Japan (2004) |
| 2006 | Frank Stinchfield Award, The Hip Society, The American Academy of Orthopedic Surgeons |
| 2009 | Clemson Award, Society for Biomaterials |
| 2011 | High-technology Award: Award of METI |
| 2011 | Technical Progress Award, Japanese Society of Artificial Organs |
| 2013 | Industrial Award, Fine Ceramic Society, Japan |
| 2014 | Award of Society of Polymer Science, Japan (2014) |
| 2017 | Prizes for Science and Technology from MEXT, Development Category |
| 2017 | Science and Technology of Advanced Materials 2017 Altmetrics Award |
| 2018 | Samuel F. Hulbert Award, Clemson University |
| 2018 | The Prize of METI National Commendation for Invention |
| 2018 | The Japan Medical Research and Development Grand Prize, Award of Ministry of Health, Labor and Welfare, Japan |
| 2020 | Japan Techno-Economics Society President Award |
| 2020 | Cosmetology Research Award, KOSÉ Cosmetology Research Foundation |
| 2020 | SPSJ Award for Outstanding Achievement in Polymer Science and Technology, Society of Polymer Science, Japan (2020) |

2021 The Award for Distinguished Contribution in Advancement of Biomaterials Science, Japanese Society for Biomaterials (2021)

2021 Japan Bioindustry Award, Japan Bioindustry Association

**Major Publications/Books**


1) Ishihara K, Ueda T, Nakabayashi N. Preparation of phospholipid polymers and their properties as polymer hydrogel membrane. *Polym J* 1990;**23**:355-360.
2) Ishihara K, Aragaki R, Ueda T, Watanabe A, Nakabayashi N. Reduced thrombogenicity of polymers having phospholipid polar groups. *J Biomed Mater Res.* 1990;**24**(8):1069-1077.
3) Ishihara K, Ziats NP, Tierney BP, Nakabayashi N, Anderson JM. Protein adsorption from human plasma is reduced on phospholipid polymers. *J Biomed Mater Res.* 1991;**25**(11):1397-1407.
4) Ishihara K, Nomura H, Mihara T, Kurita K, Iwasaki Y, Nakabayashi N. Why do phospholipid polymers reduce protein adsorption? *J Biomed Mater Res.* 1998 **39**(2):323-30.
5) Ishihara K. Bioinspired phospholipid polymer biomaterials for making high performance artificial organs. *Sci Technol Adv Mater.* 2000;**1**(3):131-138.
6) Moro T, Takatori Y, Ishihara K, Konno T, Takigawa Y, Matsushita T, Chung UI, Nakamura K, Kawaguchi H. Surface grafting of artificial joints with a biocompatible polymer for preventing periprosthetic osteolysis. *Nat Mater*. 2004;**3**(11):829-836.
7) Ishihara K, Chen W, Liu Y, Tsukamoto Y, Inoue Y. Cytocompatible and multifunctional polymeric nanoparticles for transportation of bioactive molecules into and within cells. *Sci Technol Adv Mater.* 2016;**17**(1):300-312.
8) Ishihara K, Mu M, Konno T, Inoue Y, Fukazawa K. The unique hydration state of poly(2-methacryloyloxyethyl phosphorylcholine). *J Biomater Sci Polym Ed*. 2017;**28**(10-12):884-899.
9) Ishihara K, Mu M, Konno T. Water-soluble and amphiphilic phospholipid copolymers having 2-methacryloyloxyethyl phosphorylcholine units for the solubilization of bioactive compounds. *J Biomater Sci Polym Ed*. 2018;**29**(7-9):844-862.
10) Ishihara K. Revolutionary advances in 2-methacryloyloxyethyl phosphorylcholine polymers as biomaterials. *J Biomed Mater Res A*. 2019;**107**(5):933-943.
11) Ishihara K. Blood-compatible surfaces with phosphorylcholine-based polymers for cardiovascular medical devices. *Langmuir*. 2019;**35**(5):1778-1787.
12) Ishihara K, Oda H, Konno T. Spontaneously and reversibly forming phospholipid polymer hydrogels as a matrix for cell engineering. *Biomaterials.* 2020;**230**:119628.
13) Ishihara K, Fukazawa K. Cell-membrane-inspired polymers for constructing biointerfaces with efficient molecular recognition. *J Mater Chem B*. 2022;**10**(18):3397-3419.