

## KATSUKI KIMURA

### EDUCATION

**Hokkaido University**, Sapporo, Japan Dr. Engineering  
Environmental Engineering September 2000  
**Dissertation:** A noble biofilm-membrane bioreactor for advanced drinking water treatment

**Hokkaido University**, Sapporo, Japan B.S.  
**Sanitary Engineering** March 1993

### EXPERIENCE

September 2018-Present: **Professor**, Division of Environmental Engineering, Hokkaido University, Sapporo, Japan

April 1997-August 2018: **Associate Professor (2005-present), Assistant Professor (1997-2005)**, Department of Environmental Engineering, Hokkaido University, Sapporo, Japan

October 2001-October 2002: **Postdoctoral Fellow**, Department of Civil, Environmental and Architectural Engineering, University of Colorado at Boulder, Boulder, CO

### RESEARCH INTERESTS

Application of membrane technology to water/wastewater treatment, Understanding of phenomena in membrane fouling, Recovery of energy and resources from wastewater, Fate of organic-micro pollutants in wastewater treatment

### AWARDS

IWA Fellow, 2018

Best paper award, Frontiers International Conference on Wastewater Treatment, Palermo, 2017

Best scientific paper award, Japan Society of Water Environment, 2011

Excellent teachers award, Hokkaido University, 2007, 2009

Best scientific paper by young researchers, Japan Society of Water Environment, 2001

Best presentation by young researcher in annual conference, Japan Society of Civil Engineering, 2000, 2003, 2004

## **PROFESSIONAL AFFILIATIONS AND SERVICE**

**Associate Editor**, Water Research

**Associate Editor**, Environmental Engineering Science

**Guest editor**, Journal of Water Supply: Research and Technology – AQUA (Special edition for membrane technology)

**Chairman**, Specialist group in International Water Association (Particle Separation), Specialists group in Japanese Society of Water Environment (application of membrane technology to water/wastewater treatment)

**Committee member**, Specialist group in International Water Association (Membrane Technology)

**Member**, International Water Association

**Reviewer** for Scientific Journals (approximately 150 reviews in past 5 years)

## **SELECTED PEER-REVIEWED PUBLICATIONS**

**Kimura, K.**, Uchida, H. Intensive membrane cleaning for MBRs equipped with flat-sheet ceramic membranes: Controlling negative effects of chemical reagents used for membrane cleaning. *Water Research*, 150, 21-28, 2019.

**Kimura, K.**, Shikato, K., Oki, Y., Kume, K., Huber, S.A. Surface water biopolymer fractionation for fouling mitigation in low-pressure membranes. *Journal of Membrane Science*, 554, 83-89, 2018.

**Kimura, K.**, Oki, Y. Efficient control of membrane fouling in MF by removal of biopolymers: Comparison of various pretreatments. *Water Research*, 115,172-179, 2017.

**Kimura, K.**, Honoki, D., Sato, T. Effective physical cleaning and adequate membrane flux for direct membrane filtration (DMF) of municipal wastewater: Up-concentration of organic matter for efficient energy recovery. *Separation and Purification Technology*, 181, 37-43, 2017.

**Kimura, K.**, Okazaki, S., Ohashi, T., Watanabe, Y. Importance of the co-presence of silica and organic matter in membrane fouling for RO filtering MBR effluent. *Journal of Membrane Science*, 501, 60-67, 2016.

Kurita, T., Mogi, T., **Kimura, K.** Influence of different biofilm carriers on the operation and membrane fouling of submerged membrane bioreactors. *Separation and Purification Technology*, 169, 43-49, 2016.

**Kimura, K.**, Ando, N. Maximizing biopolymer removal by coagulation for mitigation of fouling in the following membrane process. *Separation and Purification Technology*, 163, 8-14, 2016.

**Kimura, K.**, Nishimura, S.-I., Miyoshi, R., Hoque, A., Miyoshi, T., Watanabe, Y. Application of glyco-blotting for identification of structures of polysaccharides causing membrane fouling in a pilot-scale membrane bioreactor treating municipal wastewater. *Bioresource Technology*, 179, 180-186, 2015.

Yamamura, H., **Kimura, K.**, Higuchi, K., Watanabe, Y., Ding, Q., Hafuka, A. Tracking inorganic foulants irreversibly accumulated on low-pressure membranes for treating surface water. *Water Research*, 87, 218-224, 2015.

**Kimura, K.**, Ogyu, R., Miyoshi, T., Watanabe, Y. Transition of major components in irreversible fouling of MBRs treating municipal wastewater. *Separation and Purification Technology*, 142, 326-331, 2015.

Kurita, K., **Kimura, K.** and Watanabe, Y. (2014) The influence of granular materials on the operation and membrane fouling characteristics of submerged MBRs. *Journal of Membrane Science*, 469, 292-299.

Kurita, T., **Kimura, K.**, Watanabe, Y. Energy saving in the operation of submerged MBRs by the insertion of baffles and the introduction of granular materials. *Separation and Purification Technology*, 141, 207-213, 2015.

Wang, Z., Ma, J., Tang, C.Y., **Kimura, K.**, Wang, Q., Han, X. (2014) Membrane cleaning in membrane bioreactors: A review. *Journal of Membrane Science*, 468, 276-307.

Yamamura, H., **Kimura, K.** and Watanabe, Y. (2014) Seasonal variation of effective chemical solution for cleaning of ultrafiltration membrane treating a surface water. *Separation and Purification Technology*, 132, 110-114.

Yamamura, H., Okimoto, K., **Kimura, K.** and Watanabe, Y. (2014) Hydrophilic fraction of natural organic matter causing irreversible fouling of microfiltration and ultrafiltration membranes. *Water Research*, 54,123-136.

Fukushima, T., Hara-Yamamura, H., Urai, M., Kasuga, I., Kurisu, F., Miyoshi, T., **Kimura, K.**, Watanabe, Y. and Okabe, S. (2014) Toxicity assessment of chlorinated wastewater effluents by using transcriptome-based bioassays and Fourier transform mass spectrometry (FT-MS) analysis. *Water Research*, 52, 73-82.

**Kimura, K.**, Tanaka, K. and Watanabe, Y. (2014) Microfiltration of different surface waters with/without coagulation: Clear correlations between membrane fouling and hydrophilic biopolymers. *Water Research*, 49, 434-443.

Böhm, L., Kurita, T., **Kimura, K.** and Kraume, M. (2014) Rising behaviour of single bubbles in narrow rectangular channels in Newtonian and non-Newtonian liquids. *International Journal of Multiphase Flow*, 65, 11-23.

Lateef, S.K., Soh, B.Z. and **Kimura, K.** (2013) Direct membrane filtration of municipal wastewater with chemically enhanced backwash for recovery of organic matter. *Bioresource Technology*, 150, 149-155.

**Kimura, K.**, Ogyu, R., Miyoshi, T., Naruse, T., Tsuyuhara, T. and Watanabe, Y. (2013) Membrane fouling caused by sub-micron particles in a mixed liquor suspension of an MBR. *Water Science and Technology*, 67, 2602-2607.

**Kimura, K.**, Ogawa, N. and Watanabe, Y. (2013) Permeability decline in nanofiltration/reverse osmosis membranes fed with municipal wastewater treated by a membrane bioreactor. *Water Science and Technology*, 67, 1994-1999.

Miyoshi, T., Aizawa, T., **Kimura, K.** and Watanabe, Y. (2012) Document Identification of proteins involved in membrane fouling in membrane bioreactors (MBRs) treating municipal wastewater. *International Biodeterioration and Biodegradation*, 75, 15-22.

**Kimura, K.**, Tanaka, I., Nishimura, S.-I., Miyoshi, R., Miyoshi, T. and Watanabe, Y. (2012) Further examination of polysaccharides causing membrane fouling in membrane bioreactors (MBRs): Application of lectin affinity chromatography and MALDI-TOF/MS. *Water Research*, 46, 5725-5734.

Hoque, A., **Kimura, K.**, Miyoshi, T., Yamato, N. and Watanabe, Y. (2012) Characteristics of foulants in air-sparged side-stream tubular membranes used in a municipal wastewater membrane bioreactor. *Separation and Purification Technology*, 93, 83-91.

Hoque, A., Miyoshi, T., **Kimura, K.** and Watanabe, Y. (2012) Performance of membrane bio-reactor equipped with air-sparged side-stream tubular membrane: treatment efficiency and membrane fouling. *Separation Science and Technology*, 47, 1455-1463.

Miyoshi, T., Aizawa, T., **Kimura, K.** and Watanabe, Y. (2011) Document Characteristics of proteins involved in membrane fouling in membrane bioreactors (MBRs) treating municipal wastewater: The application of metaproteomic analyses. *Desalination and Water Treatment*, 34, 150-155.

Tsuyuhara, T., Hanamoto, Y., Miyoshi, T., **Kimura, K.** and Watanabe, Y. (2010) Influence of membrane properties on physically reversible and irreversible fouling in membrane bioreactors, *Water Science and Technology*, 61 (9), 2235-2240.

Miyoshi, T. Tanaka, I. Tsuyuhara, T., Watanabe, E., Aizawa, T., **Kimura, K.** and Watanabe, Y. (2010) Fouling potentials of polysaccharides in membrane bioreactors (MBRs) assessed by lectin affinity chromatography. *Water Science and Technology*, 61 (7), 1787-1792.

**Kimura, K.**, Hara, H. and Watanabe, Y. (2010) Elimination of selected pharmaceuticals by biosolids from municipal wastewater treatment plants: importance of modest pH change and degree of mineralization. *Water Science and Technology*, 62 (5), 1084-1089.

Ogawa, N., **Kimura, K.** and Watanabe, Y. (2010) Membrane fouling in nanofiltration/reverse osmosis membranes coupled with a membrane bioreactor used for municipal wastewater treatment. *Desalination and Water Treatment*, 18 (1-3), 292-296.

Miyoshi, T., Tsuyuhara, T., Ogyu, R., **Kimura, K.** and Watanabe, Y. (2009) Seasonal variation in membrane fouling in membrane bioreactors (MBRs) treating municipal wastewater. *Water Research*, 43, 5109-5118.

**Kimura, K.**, Iwase, T., Kita, S., and Watanabe, Y. (2009) Influence of residual organic macromolecules produced in biological wastewater treatment processes on removal of pharmaceuticals by NF/RO membranes. *Water Research*, 43, 3751-3758.

**Kimura, K.**, Naruse, T. and Watanabe, Y. (2009) Changes in characteristics of soluble microbial products in membrane bioreactors associated with different solid retention times: Relation to membrane fouling. *Water Research*, 43, 1033-1039.

Yamamura, H., **Kimura, K.**, Okajima, T., Tokumoto, H. and Watanabe, Y. (2008) Affinity of functional groups for membrane surfaces: Implications for physically irreversible fouling. *Environmental Science and Technology*, 42, 5310-5315.

**Kimura, K.**, Maeda, T., Yamamura, H. and Watanabe, Y. (2008) Irreversible membrane fouling in microfiltration membranes filtering coagulated surface water. *Journal of Membrane Science*, 320, 356-362.

**Kimura, K.**, Nishisako, R., Miyoshi, T., Shimada, R. and Watanabe, Y. (2008) Baffled membrane bioreactor (BMBR) for efficient nutrient removal from municipal wastewater. *Water Research*, 42, 625-632.

Yamamura, H., Okimoto, K., **Kimura, K.** and Watanabe, Y. (2007) Influence of calcium on the evolution of irreversible fouling in microfiltration/ultrafiltration membranes. *Journal of Water Supply Research and Technology-AQUA*, 56, 425-434.

Yamamura, H., Chae, S., **Kimura, K.** and Watanabe, Y. (2007) Transition in fouling mechanism in microfiltration of a surface water. *Water Research*, 41, 3812-3822.

Yamamura, H., **Kimura, K.** and Watanabe, Y. (2007) Mechanism involved in the evolution of physically irreversible fouling in microfiltration and ultrafiltration membranes used for drinking water treatment. *Environmental Science and Technology*, 41, 6789-6794.

**Kimura, K.**, Hara, H. and Watanabe, Y. (2007) Elimination of selected acidic pharmaceuticals from municipal wastewater by an activated sludge system and membrane bioreactors. *Environmental Science and Technology*, 41, 3708-3714.

**Kimura, K.**, Enomoto, M. and Watanabe, Y. (2007) Modification of submerged membrane bioreactors (MBRs) by inserting baffles: pilot scale study. *Water Science and Technology*, 55(7), 119-126.

Yamato, N., **Kimura, K.**, Miyoshi, T. and Watanabe, Y. (2006) Difference in membrane fouling in membrane bioreactors (MBRs) caused by membrane polymer materials. *Journal of Membrane Science*, 280, 911-919.

**Kimura, K.**, Yamamura, H. and Watanabe, Y. (2006) Irreversible fouling in MF/UF membranes caused by natural organic matters (NOMs) isolated from different origins. *Separation Science and Technology*, 41 (7), 1331-1344.

**Kimura, K.**, Yamato, N., Yamamura, H. and Watanabe, Y. (2005) Membrane fouling in pilot-scale membrane bioreactors (MBRs) treating municipal wastewater. *Environmental Science and Technology*, 39, 6293-6299.

**Kimura, K.**, Hara, H. and Watanabe, Y. (2005) Removal of pharmaceutical compounds by submerged membrane bioreactors (MBRs). *Desalination*, 178, 135-140.

**Kimura, K.**, Hane, Y. and Watanabe, Y. (2005) Effect of pre-coagulation on mitigating irreversible fouling during ultrafiltration of a surface water. *Water Science and Technology*, 51 (6-7), 93-100.

**Kimura, K.** and Watanabe, Y. (2005) Baffled membrane bioreactor (BMBR) for advanced wastewater treatment: easy modification of existing MBRs for efficient nutrient removal. *Water Science and Technology*, 52 (10-11), 427-434.

**Kimura, K.**, Hane, Y., Watanabe, Y., Amy, G. and Ohkuma, N. (2004) Irreversible membrane fouling during ultrafiltration of a surface water. *Water Research*, 38, 3431-3441.

Itonaga, T., **Kimura, K.** and Watanabe, Y. (2004) Influence of suspension viscosity and colloidal particles on permeability of membrane used in membrane bioreactor (MBR). *Water Science and Technology*, 50 (12), 301-309.

**Kimura, K.**, Toshima, S., Amy, G. and Watanabe, Y. (2004) Rejection of neutral endocrine disrupting compounds (EDCs) and pharmaceutically active compounds (PhACs) by RO membranes. *Journal of Membrane Science*, 245, 71-78.

**Kimura, K.**, Amy, G., Drewes, J. E., Heberer, T., Kim, T.-U. and Watanabe, Y. (2003) Rejection of organic micropollutants (disinfection by-products, endocrine disrupting



compounds, and pharmaceutically active compounds) by NF/RO membranes. *Journal of Membrane Science*, 227, 113-121.

**Kimura, K.**, Amy, G., Drewes, J. and Watanabe, Y. (2003) Adsorption of hydrophobic compounds onto NF/RO membranes –an artifact leading to overestimation of rejection–. *Journal of Membrane Science*, 221, 89-101.

**Kimura, K.** and Watanabe, Y. (2002) Performance and membrane foulant in the pilot operation of a novel biofilm-membrane reactor. *Water Science and Technology: Water Supply*, 2 (2), 177-183.

**Kimura, K.**, Nakamura, M. and Watanabe, Y. (2002) Nitrate removal by a combination of elemental sulfur-based denitrification and membrane filtration. *Water Research*, 36 (7), 1758-1766.

**Kimura, K.**, Watanabe, Y. and Ohkuma, N. (2001) A novel biofilm-membrane reactor for advanced water treatment–pilot scale study–. *Water Science and Technology: Water Supply*, 1 (5), 169-175.

**Kimura, K.**, Watanabe, Y., Okabe, S. and Satoh, H. (2001) Kinetic analysis of nitrifying biofilm growing on the rotating membrane disk. *Water Science and Technology: Water Supply*, 1 (4), 119-124.

**Kimura, K.**, Watanabe, Y. and Ohkuma, N. (2000) Filtration resistance and efficient cleaning methods of the membrane with fixed nitrifiers. *Water Research*, 34 (11), 2895-2904.

**Kimura, K.**, Watanabe, Y. and Ohkuma, N. (1998) Filtration resistance induced by ammonia oxidizers accumulating on the rotating membrane disk. *Water Science and Technology*, 38 (4-5), 443-452.

Watanabe, Y., **Kimura, K.**, Okabe, S., Ozawa, G. and Ohkuma N. (1997) A novel biofilm-membrane reactor for ammonia oxidation at low concentrations. *Water Science*

*and Technology*, 36 (1), 51-60.