

Distinguished Speakers'

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Prediction of Micropollutant Abatement during Ozonation: From Lab to Field

Speaker: Prof. Changha Lee
School of Chemical and Biological Engineering,
Seoul National University

Oxidation of micropollutants (MPs) by ozonation proceeds via the reactions with molecular ozone (O_3) and hydroxyl radicals ($\bullet OH$). To predict MP abatement during ozonation, a model that can accurately predict oxidant exposures needs to be developed. This study demonstrates machine learning models based on the random forest (RF) algorithm to output oxidant exposures from water quality parameters (input variables) that include pH, alkalinity, dissolved organic carbon concentration, and fluorescence excitation–emission matrix (FEEM) data. Four RF models were developed depending on how FEEM data were utilized. The models using high-resolution FEEM data generally exhibited high prediction accuracy with reasonable AIC values, implying that organic matter characteristics quantified by FEEM can be important factors to improve the accuracy of the prediction model. The developed models can be applied to predict the abatement of MPs in drinking water and wastewater ozonation processes and to optimize the O_3 dose for the intended removal of target MPs. The machine learning models using higher-resolution FEEM data offer more accurate prediction by better calculating the complex nonlinear relationship between organic characteristics and oxidant exposures.

- **When : Tuesday, August 2nd, 3 pm**
- **Where : Bldg. 113, B101**
Zoom: unist-kr.zoom.us/j/6605199020
- **Host : Prof. Kyung Hwa Cho**
(khcho@unist.ac.kr)