

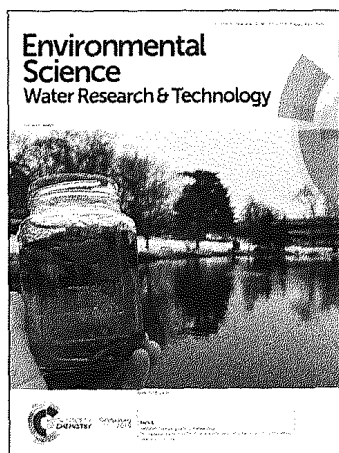
# Environmental Science Water Research & Technology

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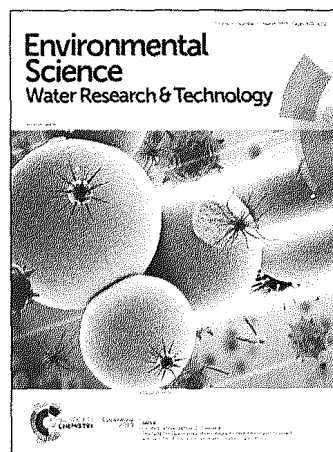
## IN THIS ISSUE

ISSN 2053-1400 CODEN ESWRAR 5(3) 435-620 (2019)



### Cover

See Kathleen Parrish and N. L. Fahrenfeld, pp. 495–505. Image reproduced by permission of N. L. Fahrenfeld from *Environ. Sci.: Water Res. Technol.*, 2019, 5, 495.



### Inside cover

See Geoffroy Lesage, Samuel D. Snow *et al.*, pp. 482–494. Image reproduced by permission of Samuel D. Snow from *Environ. Sci.: Water Res. Technol.*, 2019, 5, 482.

## EDITORIAL

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### Editorial Perspectives: using bacteria in rubber ducks to improve scientific literacy, advance citizen science, and expand fundamental science

Frederik Hammes\*

Frederik Hammes discusses microbial ecology of the built environment in the second of a series of 'Editorial Perspectives' for *Environmental Science: Water Research & Technology*.

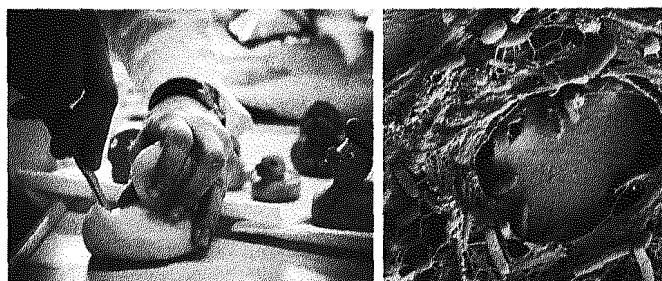


Photo credits: Jürg Sigrist, Eawag; Centre for Microscopy, University of Zurich.

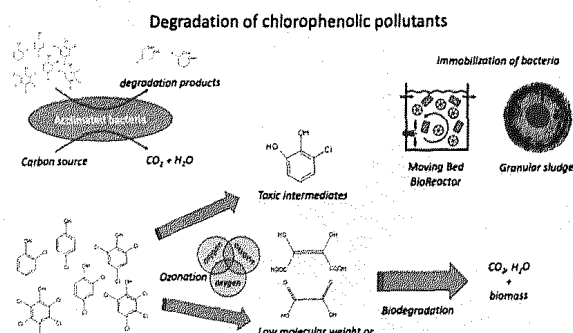
## CRITICAL REVIEW

444

### Advances in ozonation and biodegradation processes to enhance chlorophenol abatement in multisubstrate wastewaters: a review

P. Van Aken, N. Lambert, R. Van den Broeck, J. Degève and R. Dewil\*

The objective of this study is to emphasize relevant knowledge gaps and research needs regarding chlorophenol degradation by applying biological and/or ozone-based oxidation techniques.

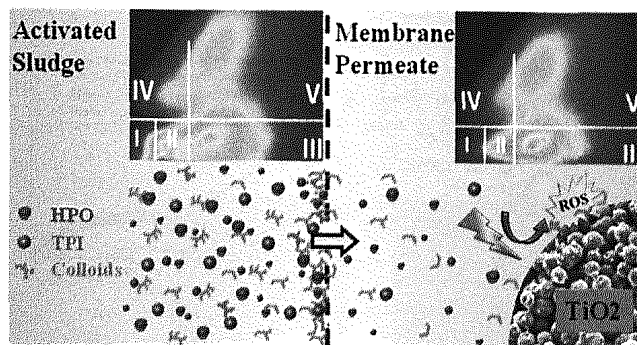


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**Emerging investigator series: photocatalysis for MBR effluent post-treatment: assessing the effects of effluent organic matter characteristics**

Mostafa Maghsoodi, Céline Jacquin, Benoit Teychené, Marc Heran, Volodymyr V. Tarabara, Geoffroy Lesage\* and Samuel D. Snow\*

Organic matter from a membrane bioreactor is fractionated and characterized in novel ways to understand component-specific inhibition of photooxidation reactions.

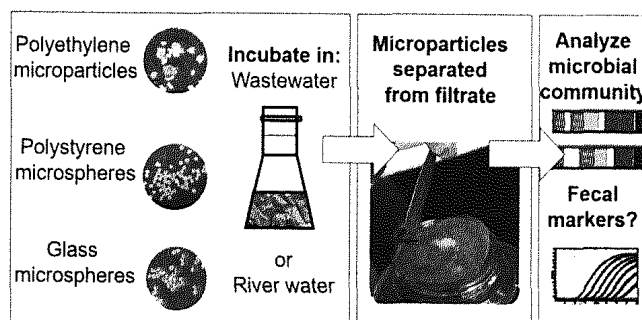


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**Microplastic biofilm in fresh- and wastewater as a function of microparticle type and size class**

Kathleen Parrish and N. L. Fahrenfeld\*

Microplastics are pollutants of concern in the freshwater and marine environments. These microparticles carry biofilm communities unique from the surrounding water.

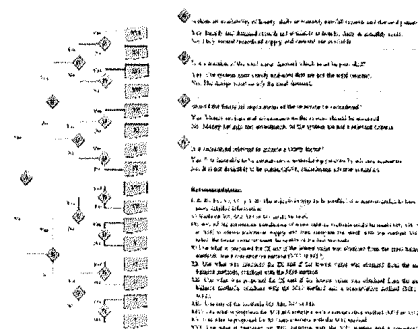


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**Assisting global rainwater harvesting practitioners: a decision support tool for tank sizing method selection under uncertainty**

D. Vargas, I. Dominguez, S. Ward\* and E. R. Oviedo-Ocaña

For the first time, a decision support tool has been produced that assists global rainwater harvesting practitioners in selecting an appropriate tank sizing method.

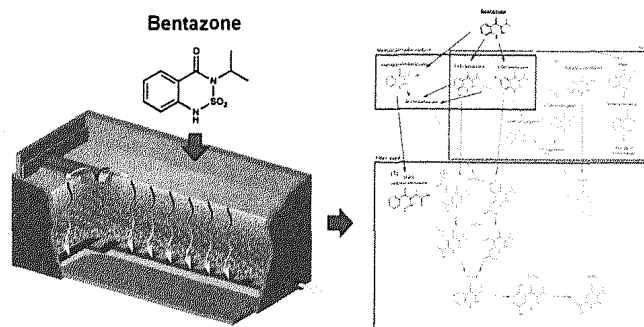


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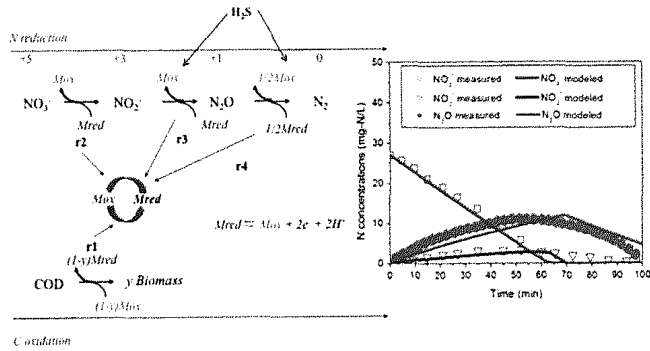
**Microbial degradation pathways of the herbicide bentazone in filter sand used for drinking water treatment**

Mathilde J. Hedegaard,\* Carsten Prasse and Hans-Jørgen Albrechtsen

Three bentazone biodegradation pathways were identified in rapid sand filter material and relevant transformation products were less hazardous than bentazone.



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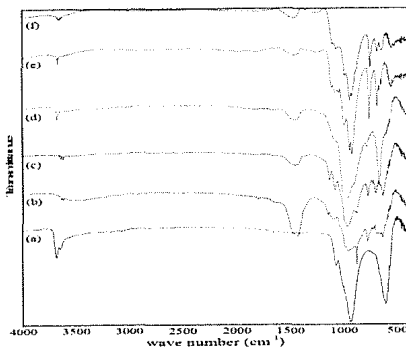


**Modeling effects of H<sub>2</sub>S on electron competition among nitrogen oxide reduction and N<sub>2</sub>O accumulation during denitrification**

Yuting Pan, Yiwen Liu, Dongbo Wang\* and Bing-Jie Ni\*

A novel model was developed to describe electron competition during three-step denitrification through linking nitrogen reduction and carbon oxidation with electron carriers.

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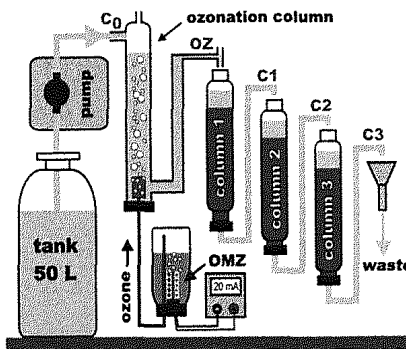


**Comparison of analysis of asbestos fibres in drinking water using phase contrast microscopy and micro-FTIR spectrometry with scanning electron microscopy and energy-dispersive X-ray spectroscopy**

Jie Li, Hongyan Li,\* Bei Zheng and Zhiyong Yu

PCM combined micro-FTIR for asbestos analysis in drinking water was proposed.

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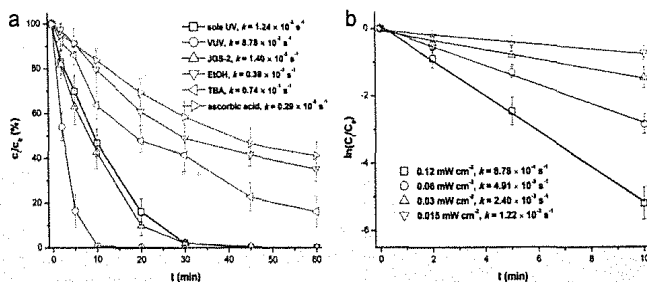


**COMBI, continuous ozonation merged with biofiltration to study oxidative and microbial transformation of trace organic contaminants**

Garyfalia A. Zoumpouli, Marco Scheurer, Heinz-Jürgen Brauch, Barbara Kasprzyk-Hordern, Jannis Wenk\* and Oliver Happel

Investigating the biodegradation of ozonation products of trace organic contaminants is important to further elucidate their fate and to assess the efficiency of advanced water treatment processes.

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**Degradation of ciprofloxacin by 185/254 nm vacuum ultraviolet: kinetics, mechanism and toxicology**

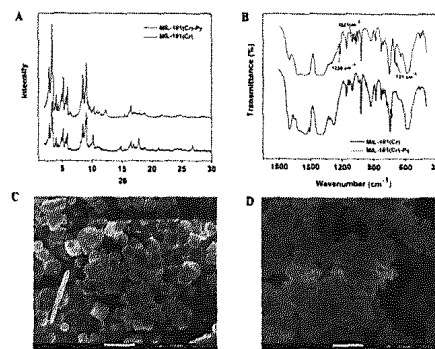
Han Hu, Ya Chen, Jinshao Ye, Li Zhuang, Hongling Zhang and Huase Ou\*

Fluoroquinolone antibiotics (FQs) are highly resistant to conventional biological water treatment processes, thus, it is desirable to develop novel water treatment methods for eliminating FQs efficiently.

## Pyridine-grafted Cr-based metal-organic frameworks for adsorption and removal of microcystin-LR from aqueous solution

Yu Wei and Yan Xia\*

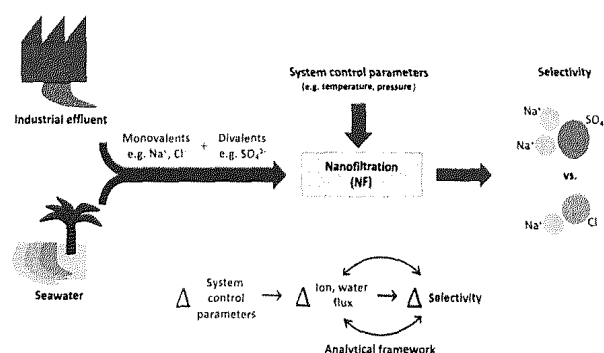
A Cr-based metal-organic framework grafted with pyridine was named MIL-101(Cr)-Py, and was used to adsorb microcystin-LR (MC-LR) from aqueous solution.



## A framework to analyze sulfate versus chloride selectivity in nanofiltration

Yagnaseni Roy and John H. Lienhard V\*

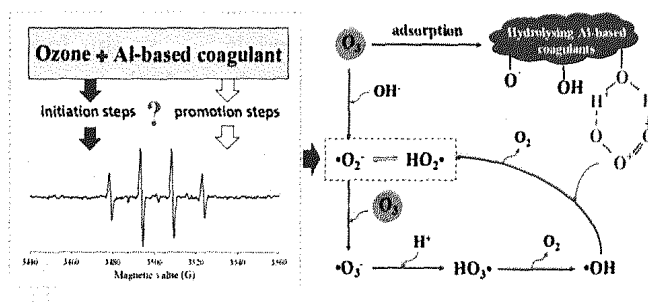
Interspecies selectivity between NaCl and Na<sub>2</sub>SO<sub>4</sub> in nanofiltration is explained by a simple, intuitive analytical framework.



## Role of Al-based coagulants on a hybrid ozonation-coagulation (HOC) process for WWTP effluent organic matter and ibuprofen removal

Xin Jin, Yong Shi, Rui Hou, Weijie Zhang, Pengkang Jin\* and Xiaochang Wang

The hydrolysing Al-based coagulants acted more like promoters for the generation of  $\cdot\text{O}_2^-$  to propagate the  $\cdot\text{OH}$  chain reactions.



## Experimental validation of a test to estimate the remaining adsorption capacity of granular activated carbon for taste and odour compounds

Yifeng Huang, Zhijie Nie, Jie Yuan, Audrey Murray, Yi Li, Gwen Woods-Chabane and Ron Hofmann\*

A test was developed to measure the present-day adsorptive capacity of granular activated to help drinking water treatment professionals to determine when the GAC needs replacement.

