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## Cover

See Joe Heffron and  
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## **Research highlights: applications of atomic force microscopy in natural and engineered water systems**

Ruochen Zhu, David T. Tan and Danmeng Shuai\*

This article highlights recent applications of AFM in the characterization of membrane fouling by organic polymers, biofilms in drinking water distribution systems, and nucleation and growth processes of manganese (hydr)oxide nanoparticles.

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## **Advances in predicting organic contaminant abatement during ozonation of municipal wastewater effluent: reaction kinetics, transformation products, and changes of biological effects**

Yunho Lee\* and Urs von Gunten\*

Ozonation of municipal wastewater effluent has been considered in recent years as an enhanced wastewater treatment technology to abate trace organic contaminants (micropollutants).

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**Emerging investigators series: virus mitigation by coagulation: recent discoveries and future directions**

Joe Heffron and Brooke K. Mayer\*

Forces influencing virion sorption and recent findings of coagulation-based inactivation inform new research directions for mitigating waterborne viruses by coagulation.

**Emerging investigators series: prediction of trace organic contaminant abatement with UV/H<sub>2</sub>O<sub>2</sub>: development and validation of semi-empirical models for municipal wastewater effluents**

Daniel Gerrity,\* Yunho Lee,\* Sujanie Gamage, Minju Lee, Aleksey N. Pisarenko, Rebecca A. Trenholm, Urs von Gunten and Shane A. Snyder

Recent evaluations of potable reuse treatment trains suggest that the use of UV and UV/H<sub>2</sub>O<sub>2</sub> may become increasingly common, particularly in systems employing ozone and/or biofiltration.

**Impact of microbial activities and hydraulic retention time on the production and profile of long chain fatty acids in grease interceptors: a laboratory study**

Xia He and Tao Yan\*

Fat, oil and grease (FOG) deposits are a major cause of sanitary sewer overflows (SSOs), and calcium salts of long chain fatty acids (LCFAs) have recently been identified as key components of FOG deposits in sewer systems.

**Reduction of MS2 bacteriophage and rotavirus in biosand filters**

Hanting Wang, Mingming Li, Kazami Brockman and Thanh H. Nguyen\*

Biosand filter can potentially remove up 99.99% of rotavirus to provide safe drinking water to communities in developing countries.

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**Achieving sustainable sanitation chains through better informed and more systematic improvements: lessons from multi-city research in Sub-Saharan Africa**

L. S. Medland,\* R. E. Scott and A. P. Cotton

Consolidating findings from research managed by 5 international consortia considering the factors that influence the development and effectiveness of sanitation service chains in 9 cities of Francophone and Anglophone Africa.

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**Control of nitrosamines during non-potable and *de facto* wastewater reuse with medium pressure ultraviolet light and preformed monochloramine**

Daniel L. McCurry, Stuart W. Krasner and William A. Mitch\*

Medium pressure UV light and preformed monochloramine can effectively control NDMA formation for *de facto* or non-potable wastewater reuse.

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**Is the combination of nanofiltration membranes and AOPs for removing microcontaminants cost effective in real municipal wastewater effluents?**

S. Miralles-Cuevas, I. Oller, A. Agüera, J. A. Sánchez Pérez, Ricardo Sánchez-Moreno and S. Malato\*

Economic assessment of treatment of municipal wastewater plant effluent containing microcontaminants based on the combination of nanofiltration and advanced oxidation processes (EDDS-assisted solar photo-Fenton or ozonation).

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**Optimization of porous structure of superparamagnetic nanoparticle adsorbents for higher and faster removal of emerging organic contaminants and PAHs**

Yuxiong Huang, Aaron N. Fulton and Arturo A. Keller\*

Superparamagnetic permanently confined micelle array (Mag-PCMAs) nanoparticle adsorbents have been successfully synthesized with a core/shell structure of a silica/surfactant mesostructured hybrid layer on negatively charged maghemite nanoparticles.

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**Clayey-sand filter for the removal of pharmaceuticals from wastewater effluent: percolation experiments**

T. Thiebault,\* M. Boussafir, R. Guégan, C. Le Milbeau and L. Le Forestier

The objective of the study was to evaluate the sorption of a pool of pharmaceutically active compounds (PhACs) onto a clay-sand filter in a dynamic sorption experiment.

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**Silica fouling in high salinity waters in reverse osmosis desalination (sodium-silica system)**

L. Lunevich,\* P. Sancio, L. F. Dumée and S. R. Gray

Silica fouling patterns in a sodium-silica system and the effect of pH on residual dissolved silica concentrations are reported.