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**Emerging investigators series: frontier review:
occurrence and speciation of chromium in drinking
water distribution systems**

Michelle Chebeir, Gongde Chen and Haizhou Liu*

Chromium can exist as both trivalent Cr(III) and hexavalent Cr(VI) in typical drinking water conditions, with Cr(VI) being of particular concern due to its high toxicity and new regulatory perspectives.

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**A review of recent developments in graphene-enabled
membranes for water treatment**

Yi Jiang, Pratim Biswas and John D. Fortner*

Graphene based materials, including graphene and derivatives such as graphene oxide, have considerable potential as key components in next-generation membrane technologies.

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A consilience model to describe N₂O production during biological N removal

C. Domingo-Félez and B. F. Smets*

A mathematical model congruent with the current understanding of the biological processes occurring during wastewater treatment operations is proposed.

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Fishing, trapping and killing of *Escherichia coli* (*E. coli*) in potable water

Saamyadeb Dasgupta, Naga Siva Kumar Gunda and Sushanta K. Mitra*

An innovative process of effective 'fishing, trapping and killing' of *Escherichia coli* (*E. coli*) in contaminated water samples using paper strips is proposed here.

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Emerging investigators series: using an analytical solution approach to permit high volume groundwater withdrawals

Ivan S. Jayawan, Avery H. Demond and Brian R. Ellis*

Sustainable water management is paramount to ensuring continued access to fresh water resources.

953

Selection of screw characteristics and operational boundary conditions to facilitate post-flush urine and faeces separation within single household sanitation systems

E. Mercer, P. Cruddas, L. Williams, A. Kolios, A. Parker, S. Tyrrel, E. Cartmell, M. Pidou and E. J. McAdam*

This article demonstrates the application of a screw auger to separate fresh urine and faeces in a household scale sanitation system.

Affordable, flexible, and modular: a guide to open-source membrane-based water treatment systems

Adam Slade and David Jassby*

A guide towards the implementation of open-source/open-access tools for the design and construction of affordable, scalable, and reliable membrane-based treatment systems.

Effect of chemical structure on the sonochemical degradation of perfluoroalkyl and polyfluoroalkyl substances (PFASs)

Nerea Abad Fernandez, Lucia Rodriguez-Freire, Manish Keswani* and Reyes Sierra-Alvarez

The study provides insights into the effect of carbon chain length, functional group substitutions and chemical structure on sonochemical degradation of perfluoroalkyl and polyfluoroalkyl substances.

Microbial electrochemical systems outperform fixed-bed biofilters in cleaning up urban wastewater

A. Aguirre-Sierra, T. Bacchetti-De Gregoris, A. Berná, J. J. Salas, C. Aragón and A. Esteve-Núñez*

Water impact: MET biofilters outperform gravel biofilters in wastewater treatment and will reduce the surface for CW, selecting certain genera of bacteria reported to be electroactive.

An aerated and fluidized bed membrane bioreactor for effective wastewater treatment with low membrane fouling

Yaoli Ye, Nicole LaBarge, Hiroyuki Kashima, Kyoung-Yeol Kim, Pei-Ying Hong, Pascal E. Saikaly and Bruce E. Logan*

An aerobic fluidized bed membrane bioreactor (AOFMBR) with GAC particles suspended by rising air bubbles had low membrane fouling.

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Trihalomethane, dihaloacetonitrile, and total N-nitrosamine precursor adsorption by carbon nanotubes: the importance of surface oxides and pore volume

Erin M. Needham, Shelby M. Sidney, Justin R. Chimka and Julian L. Fairey*

Carboxyl groups on CNTs enhanced pore volume and in turn disinfection byproduct precursor adsorption.

1014

Virus removal of new and aged UF membranes at full-scale in a wastewater reclamation plant

Petra Reeve, Rudi Regel, Jennifer Dreyfus, Paul Monis, Melody Lau, Brendon King and Ben van den Akker*

We examined the consequence of long-term membrane ageing on the virus rejection performance of full-scale ultrafiltration membranes to better understand health risks associated with membrane use in wastewater reuse schemes.

1022

Self-sustained high-rate anammox: from biological to bioelectrochemical processes

Yan Li, Zhiheng Xu, Dingyi Cai, Brandon Holland and Baikun Li*

The slow growth rate of anammox bacteria is a pressing problem for system efficiency and stability.

1032

Time series relationships between chlorophyll-a, dissolved oxygen, and pH in three facultative wastewater stabilization ponds

J. Wallace, P. Champagne* and G. Hall

This study involved the evaluation of time-series relationships between chlorophyll-a (chl-a), dissolved oxygen (DO), and pH in three facultative wastewater stabilization ponds (WSPs) operated in series at a wastewater treatment plant in eastern Ontario, Canada.

1041

Impact of acclimation methods on microbial communities and performance of anaerobic fluidized bed membrane bioreactors

Nicole LaBarge, Yaoli Ye, Kyoung-Yeol Kim, Yasemin Dilsad Yilmazel, Pascal E. Saikaly, Pei-Ying Hong and Bruce E. Logan*

Granular activated carbon was acclimated to different substrates, and then used in an anaerobic fluidized bed membrane bioreactor (AFMBR) to treat diluted domestic wastewater. Acetate acclimation produced the best results.

1049

Evaluation of electron donors for biological perchlorate removal highlights the importance of diverse perchlorate-reducing populations

Nadine Kotlarz, Giridhar Upadhyaya, Paul Togna and Lutgarde Raskin*

Electron donors tested for biological treatment of perchlorate-contaminated groundwater highlight the importance of diverse perchlorate-reducing populations for contaminant removal.

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Fate of microplastics and other small anthropogenic litter (SAL) in wastewater treatment plants depends on unit processes employed

Marlies R. Michielssen, Elien R. Michielssen, Jonathan Ni and Melissa B. Duhaime*

The accumulation of microplastics (plastic particles less than 5 mm) and similarly sized small anthropogenic litter (SAL; e.g., cellulosic products manufactured from natural material) in aquatic ecosystems is a growing concern.