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Emerging investigators series: the source and fate of pandemic viruses in the urban water cycle

K. R. Wigginton,* Y. Ye and R. M. Ellenberg

This review provides a comprehensive look at whether a pandemic enveloped virus would pose challenges for the wastewater and drinking water industries.

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Mathematical modeling of microbial extracellular electron transfer by electrically active microorganisms

Yiwen Liu, Lai Peng, Shu-Hong Gao, Xiaohu Dai and Bing-Jie Ni*

A new mathematical model was proposed to describe the extracellular electron transfer process by electrically active microorganisms.

Carbon nanotube-immobilized super-absorbent membrane for harvesting water from the atmosphere

Sagar Roy, Chaudhery Mustansar Hussain and Somenath Mitra*

This paper describes the development of a carbon nanotube (CNT)-immobilized membrane for harvesting pure water from air.

Enhancement of sludge decomposition and hydrogen production from waste activated sludge in a microbial electrolysis cell with cheap electrodes

Yinghong Feng, Yiwen Liu and Yaobin Zhang*

Cheap Fe/graphite electrodes substantially enhanced hydrogen production from anaerobic waste activated sludge digestion in a microbial electrolysis cell.

Electrochemical wastewater treatment with carbon nanotube filters coupled with *in situ* generated H₂O₂

Yanbiao Liu, Jianping Xie, Choon Nam Ong, Chad D. Vecitis and Zhi Zhou*

An effective and novel wastewater treatment system was developed by combining oxidation & adsorption at the CNT anode and additional oxidation with *in situ* generated H₂O₂ at the CNT cathode.

Poly(ϵ -caprolactone) microfiber meshes for repeated oil retrieval

J. S. Hersey, S. T. Yohe and M. W. Grinstaff*

A biodegradable, reusable, and microfiber poly(ϵ -caprolactone) electrospun absorbent is described for separating oil (crude/processed) and water (deionized/seawater) mixtures.

Decontaminating chemically contaminated residential premise plumbing systems by flushing

K. S. Casteloes, R. H. Brazeau and A. J. Whelton*

Recent large-scale drinking water chemical contamination incidents in Canada and the U.S. have affected more than 1 000 000 people and involved disparate premise plumbing decontamination approaches.

Differences in microbial communities and performance between suspended and attached growth anaerobic membrane bioreactors treating synthetic municipal wastewater

Moustapha Harb, Yanghui Xiong, Jeremy Guest, Gary Amy and Pei-Ying Hong*

Two different lab-scale anaerobic membrane bioreactors (AnMBRs) were operated under mesophilic conditions (35 °C) and compared based on their microbial community and microbial foulant characteristics.

Lead removal from solution by a porous ceramisite made from bentonite, metallic iron, and activated carbon

Li Yuan, Wei Zhi, Qinglong Xie, Xi Chen* and Yangsheng Liu*

The Fe⁰/AC-ceramisite offers an effective and economical alternative for Pb²⁺ removal owing to its efficiency, low cost, and operational simplicity.

Enhanced disinfection by-product formation due to nanoparticles in wastewater treatment plant effluents

Jacob W. Metch, Yanjun Ma, Amy Pruden and Peter J. Vikesland*

Nanoparticles (NPs) are increasingly being incorporated into consumer products and are being used for industrial applications in ways that will lead to their environmental dissemination *via* wastewater treatment plants (WWTPs).

Ion exchange-precipitation for nutrient recovery from dilute wastewater

A. T. Williams, D. H. Zitomer and B. K. Mayer*

Regulated phosphorus (P) and nitrogen (N) discharges and the cost of fertilizer provide economic drivers for nutrient removal and recovery from wastewater.

Arsenic removal using a sulfonated poly(ether ether ketone) coated hollow fiber nanofiltration membrane

Jianfeng Song, Mengxi Zhang, Alberto Figoli, Yong Yin, Baolong Zhao, Xue-Mei Li* and Tao He*

A new composite hollow fiber nanofiltration (NF) membrane with a thin sulfonated poly(ether ether ketone) (SPEEK) active layer was prepared and used for arsenic removal.

Rejection of trace organic chemicals by a nanofiltration membrane: the role of molecular properties and effects of caustic cleaning

Takahiro Fujioka,* Stuart J. Khan, James A. McDonald and Long D. Nghiem

The aim of this study was to provide further insights to the rejection mechanisms of trace organic chemicals (TrOCs) by nanofiltration (NF).

Modeling low impact development in two Chicago communities

A. R. Martin,* L. M. Ahiablame and B. A. Engel

Sustainable practices that will aid in reducing runoff volume and nutrient loading during storm events are needed in many urban areas.

Reducing nitrogen crossover in microbial reverse-electrodialysis cells by using adjacent anion exchange membranes and anion exchange resin

Maxwell J. Wallack, Geoffrey M. Geise, Marta C. Hatzell, Michael A. Hickner and Bruce E. Logan*

An additional low concentration chamber using two adjacent anion exchange membranes filled 50% with resin reduced nitrogen crossover to the anode.

Antibacterial behavior of halloysite nanotubes decorated with copper nanoparticles in a novel mixed matrix membrane for water purification

Linlin Duan, Qianqian Zhao, Jindun Liu and Yatao Zhang*

Poly(4-vinylpyridine) (P4VP) with various molecular weights was grafted onto halloysite nanotubes (HNTs) *via* reverse atom transfer radical polymerization (RATRP).

Microbial composition of purified waters and implications for regrowth control in municipal water systems

Caitlin R. Proctor, Marc A. Edwards and Amy Pruden*

The limits of water treatment to control microbial regrowth were examined using highly purified waters.

Nanostructured polyaniline incorporated ultrafiltration membrane for desalination of brackish water

Raka Mukherjee, Rahul Sharma, Parveen Saini and Sirshendu De*

A novel salt rejecting ultrafiltration (UF) membrane was prepared by a facile, scalable route involving *in situ* incorporation of negatively charged polyaniline (PANI) nanoparticles within polysulfone (PSF).

Transformation of atrazine, bisphenol A and chlorendic acid by electrochemically produced oxidants using a lead dioxide electrode

N. Hermes and G. Knupp*

A novel microscale ozonation apparatus based on electrocatalytical decomposition of water proved to be effective for treatment of contaminated water.

Biocatalytic perchlorate reduction: kinetics and effects of groundwater characteristics

Justin M. Hutchison and Julie L. Zilles*

This paper evaluates the kinetics of perchlorate-reducing biocatalysts and the effects of groundwater characteristics. Under conditions tested such as varying temperature, pH and NOM, the biocatalysts maintained robust perchlorate reducing activity, supporting their potential use in drinking water treatment.