

CRITICAL REVIEWS

778

Membrane-based methods of virus concentration from water: a review of process parameters and their effects on virus recovery

Hang Shi, Elodie V. Pasco and Volodymyr V. Tarabara*

A critical analysis of how concentration process parameters impact virus recovery during primary concentration of water samples.

793

Aromatic conjugated polymers for removal of heavy metal ions from wastewater: a short review

Kingshuk Dutta and Sirshendu De*

Aromatic conjugated polymers-based adsorbents and filtration membranes for selective removal of toxic heavy metal ions from water.

806

Addition of conductive particles to improve the performance of activated carbon air-cathodes in microbial fuel cells

Xiaoyuan Zhang,* Qiuying Wang, Xue Xia, Weihua He, Xia Huang and Bruce E. Logan

Inexpensive carbon black combined with heat-treatment produced the most effective activated carbon catalyst for improving microbial fuel cell cathode performance.

PAPERS

811

On the optimal design of forward osmosis desalination systems with $\text{NH}_3\text{-CO}_2\text{-H}_2\text{O}$ solutions

Matteo Gazzani, Thomas Hartmann, José-Francisco Pérez-Calvo, Daniel Sutter and Marco Mazzotti*

The optimal working pressure and composition of the draw solution is identified. The forward osmosis process is compared with reverse osmosis and thermal desalination in terms of specific work, membrane area, and second law efficiency.

830

The microbial colonization of activated carbon block point-of-use (PoU) filters with and without chlorinated phenol disinfection by-products

Chia-Chen Wu, Sudeshna Ghosh, Kelly J. Martin, Ameet J. Pinto, Vincent J. Denef, Terese M. Olson and Nancy G. Love*

Activated carbon based point-of-use drinking water filters change the bacterial community structure and increase the absolute abundance of genera, including those associated with opportunistic pathogens.

844

Evaluating and modeling the activated carbon adsorption of wastewater-derived *N*-nitrosodimethylamine precursors

Riley E. Mulhern,* R. Scott Summers and Eric R. V. Dickenson

Activated carbon adsorption of wastewater-derived NDMA precursors indicates distinctive micropollutant characteristics, and can be well-predicted from bench-scale results.

857

Improved degradation of anaerobically digested sludge during post aerobic digestion using ultrasonic pretreatment

Kang Song, Guo-Jun Xie, Jin Qian, Philip L. Bond, Dongbo Wang, Beibei Zhou, Yiqi Liu* and Qilin Wang*

We propose that ultrasonic pretreatment could significantly improve the degradation of anaerobically digested sludge with economic favorability in post aerobic digestion.

865

Flat flexible thin milli-electrode array for real-time *in situ* water quality monitoring in distribution systems

Zhiheng Xu, Wangchi Zhou, Qiuchen Dong, Yan Li, Dingyi Cai, Yu Lei, Amvrossios Bagtzoglou and Baikun Li*

Drinking water quality along distribution systems is critical for public health.

875

Investigation of pH-dependent phosphate removal from wastewaters by membrane capacitive deionization (MCDI)

Xin Huang, Di He,* Wangwang Tang, Peter Kovalsky and T. David Waite*

Membrane capacitive deionization (MCDI) is a promising technology for the removal of charged species from aqueous feed streams.

883

Solids retention time, influent antibiotic concentrations, and temperature as selective pressures for antibiotic resistance in activated sludge systems

Majid Neyestani, Eric Dickenson, Jean McLain, Victoria Obergh, Oscar Quinones, Channah Rock and Daniel Gerrity*

This paper evaluates changes in antibiotic resistance during biological wastewater treatment.

897

Investigating bacterial community changes and organic substrate degradation in microbial fuel cells operating on real human urine

S. G. Barbosa, L. Peixoto, A. Ter Heijne, P. Kuntke, M. M. Alves and M. A. Pereira*

New insights are reported on the degradation of organics in urine, changes in the anodic bacterial community and MFC performance on urine.

905

Accurate and rapid organic detection by eliminating hysteresis in bioanode sensor applications

Pengyi Yuan and Younggy Kim*

Bioanode sensors utilizing exoelectrogenic bacteria can be used for real-time and *in situ* assessment of water quality.

911

Silica fouling in coal seam gas water reverse osmosis desalination

L. Lunevich,* P. Sanciuolo, N. Milne and S. R. Gray

Silica fouling was studied in RO desalination of high salinity (30–60 g L⁻¹ as NaCl) coal seam gas (CSG) water for a range of silica concentrations, pH conditions and dissolved aluminium concentrations.

922

Effect of hydraulic retention time and substrate availability in denitrifying bioelectrochemical systems

Narcis Pous, Sebastià Puig,* M. Dolors Balaguer and Jesús Colprim

This paper evaluates the influence of HRT and nitrate content on denitrifying BES.

930

Reversing membrane wetting in membrane distillation: comparing dryout to backwashing with pressurized air

David M. Warsinger, Amelia Servi, Grace B. Connors, Musthafa O. Mavukkandy, Hassan A. Arafat, Karen K. Gleason and John H. Lienhard V*

Wetting of saline water through membrane distillation pores can be reversed with either drying out the membrane, or more effectively, by backwashing with pressurized air to force out wetting feed water.

940

A conductive wood membrane anode improves effluent quality of microbial fuel cells

Zhe Huang, Amy Gong, Dianxun Hou, Liangbing Hu* and Zhiyong Jason Ren*

A wood membrane electrode enables electricity production from wastewater with good effluent quality.

947

Long-term assessment of six-stacked scaled-up MFCs treating swine manure with different electrode materials

A. Vilajeliu-Pons, S. Puig,* I. Salcedo-Dávila, M. D. Balaguer and J. Colprim

Evaluation of different electrode materials in stacked scaled-up MFCs for swine manure treatment to move the technology towards application.

960

Degradation of ibuprofen using ozone combined with peroxymonosulfate

Zhen Yuan, Minghao Sui,* Bojie Yuan, Pan Li,* Jingyu Wang, Jie Qin and Guangyi Xu

The O₃/PMS oxidative system shows a compelling degradation efficiency towards ibuprofen due to the contribution of $\cdot\text{OH}$ and $\text{SO}_4^{\cdot-}$.