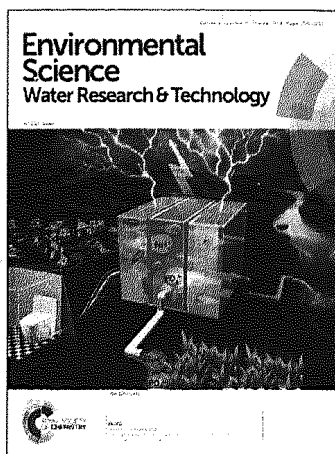


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IN THIS ISSUE

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Cover

See Xi Chen, Xia Huang *et al.*, pp. 1427-1438.

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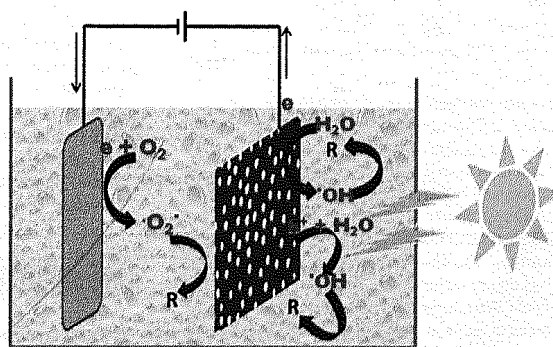
CRITICAL REVIEW

1389

Recent trend in visible-light photoelectrocatalytic systems for degradation of organic contaminants in water/wastewater

Moses G. Peleyeju and Omotayo A. Arotiba*

Electrochemical advanced oxidation process and heterogeneous photocatalysis have received great attention in the last few years as alternative/complementary water treatment technologies.



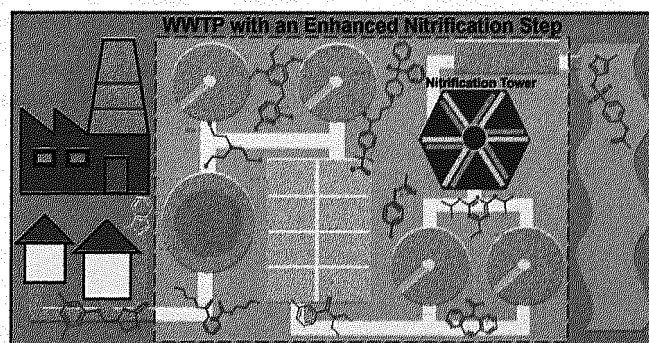
PAPERS

1442

Emerging investigators series: occurrence and fate of emerging organic contaminants in wastewater treatment plants with an enhanced nitrification step

Yue Xing, Yaochun Yu and Yujie Men*

The goal of this study is to investigate the occurrence and removal of emerging organic contaminants (EOCs) during wastewater treatment processes and understand the role of enhanced nitrification treatment in removing EOCs.

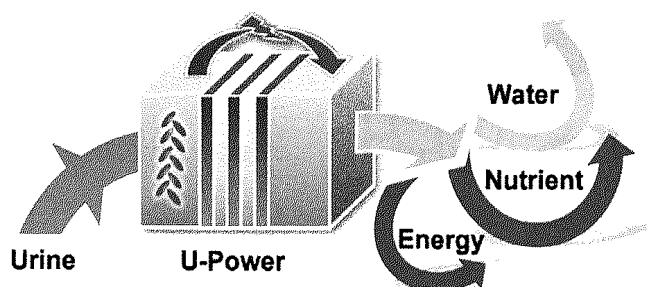


1427

Urine-powered synergy of nutrient recovery and urine purification in a microbial electrochemical system

Yifan Gao, Dongya Sun, Han Wang, Lu Lu, He Ma, Lisheng Wang, Zhiyong Jason Ren, Peng Liang, Xiaoyuan Zhang, Xi Chen* and Xia Huang*

Energy in urine was extracted to synergize the *in situ* urine purification and nutrient recovery with net electricity production via a microbial electrochemical system named U-Power.

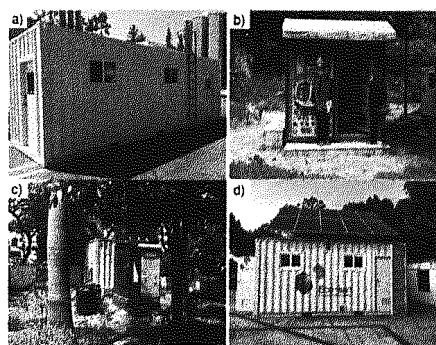


1439

Design and preliminary implementation of onsite electrochemical wastewater treatment and recycling toilets for the developing world

Clément A. Cid, Yan Qu and Michael R. Hoffmann*

Self-contained toilet wastewater treatment system prototypes based on electrochemical oxidation of feces and urine using bi-layered semiconductor anodes ($[\text{Bi}_2\text{O}_3]_z[\text{TiO}_2]_{1-z}/\text{Ir}_x\text{Ta}_y\text{O}_2/\text{Ti}$) have been designed, constructed, and implemented in regions where access to proper and sufficient sanitation is limited.

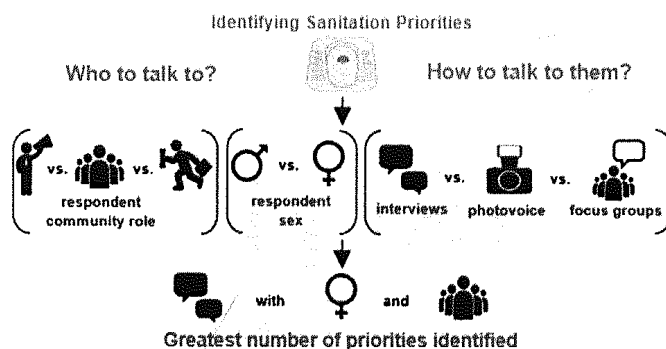


1451

A comparison of interviews, focus groups, and photovoice to identify sanitation priorities and increase success of community-based sanitation systems

Allie Davis, Amy Javernick-Will and Sherri M. Cook*

Semi-structured interviews with females and community members identified the greatest number of unique and most priorities in resource-limited communities.

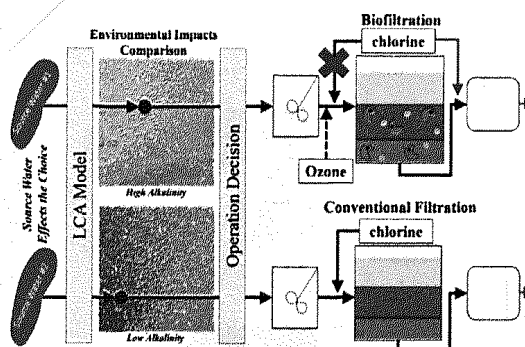


1464

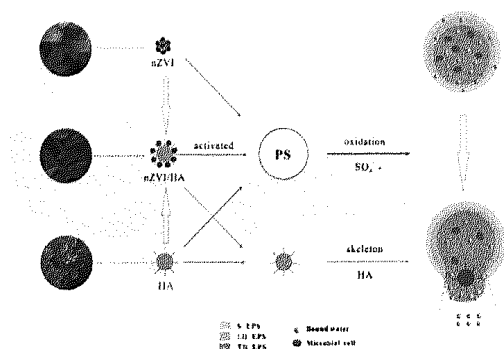
Environmental life cycle comparison of conventional and biological filtration alternatives for drinking water treatment

Christopher H. Jones, Leigh G. Terry, R. Scott Summers and Sherri M. Cook*

This work identified and quantified the environmental impacts of conventional filtration, nonozonated biofiltration, and ozonated biofiltration alternatives for a diverse set of source waters and treatment requirements.



1480

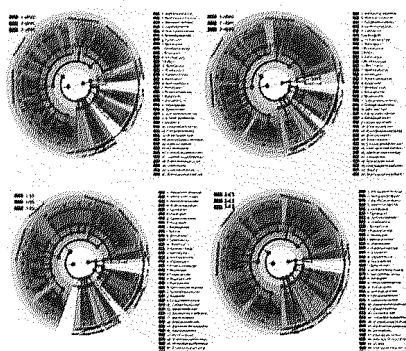


Improved sludge dewaterability using persulfate activated by humic acid supported nanoscale zero-valent iron: effect on sludge characteristics and reaction mechanisms

Hao Li, Lei Song,* Baohong Han and Hongwei Song

Sludge dewatering was efficiently enhanced by nZVI/HA-PS conditioning, and nZVI/HA-PS exhibited the synergistic effect of advanced oxidation and skeleton building.

1489

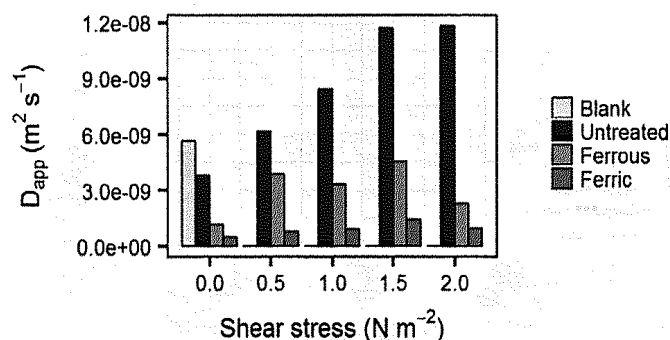


Characteristics of biofilm community structure in a reclaimed water cast iron pipeline

Dongpo Liu, Chao Rong, Juntao Jin,* Sichen Liang and Jinsong Zhang

The results indicate that the main biofilm communities in different pipe materials are significantly different from each other. With the passage of time, the richness and diversity of the microbial community in the cast iron pipe biofilm shows a downwards trend.

1501

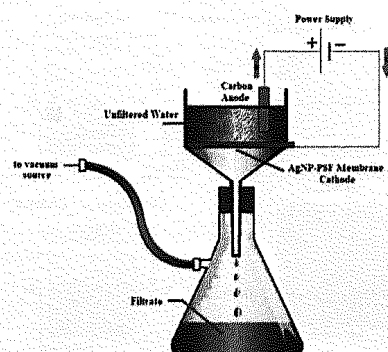


Apparent diffusion coefficients in sewer force main biofilms treated with iron salts

Bruno Kiilerich,* Michael Wagner, Asbjørn H. Nielsen and Jes Vollertsen

Iron treatment of wastewater in sewer force mains for sulfide abatement reduces biofilm diffusivity.

1511



Anti-biofilm AgNP-polyaniline-polysulfone composite membrane activated by low intensity direct/alternating current

Yingge Zhou, Shahrma Maharubin, Phat Tran, Ted Reid and George Z. Tan*

Biofouling is a serious problem in membrane bioreactor systems, which reduces membrane permeability, increases energy costs, and decreases the lifetime of membranes.

1522

First acid ionization constant of the drinking water relevant chemical cyanuric acid from 5 to 35 °C

David G. Wahman*

The first acid ionization constant (K_6) for cyanuric acid was determined from 5 to 35 °C where $\ln K_6 = -\frac{4013}{T_k} - 2.58$ or $pK_6 = \frac{1743}{T_k} + 1.12$ and $\Delta H^\circ = 33.4 \pm 1.7 \text{ kJ mol}^{-1}$.

$$K_6 = f(T)$$

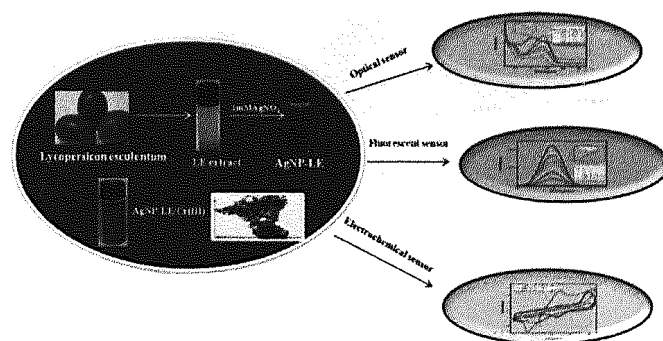


1534

Green synthesized unmodified silver nanoparticles as a multi-sensor for Cr(III) ions

Archana Aravind, Maria Sebastian and Beena Mathew*

In this work we present optical, fluorescence and electrochemical sensing of Cr(III) ions using silver nanoparticles (AgNPs) synthesized by a green method using *Lycopersicon esculentum* (LE) extract without any surface functionalization.

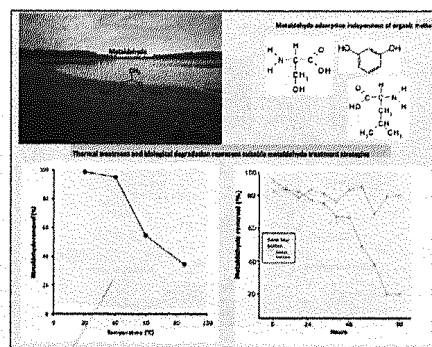


1543

Metaldehyde removal from drinking water by adsorption onto filtration media: mechanisms and optimisation

C. A. Rolph, B. Jefferson, F. Hassard and R. Villa*

Trace micropollutants should be removed during drinking water production without increasing the disinfection-by-product formation potential or energy demand of the treatment process.

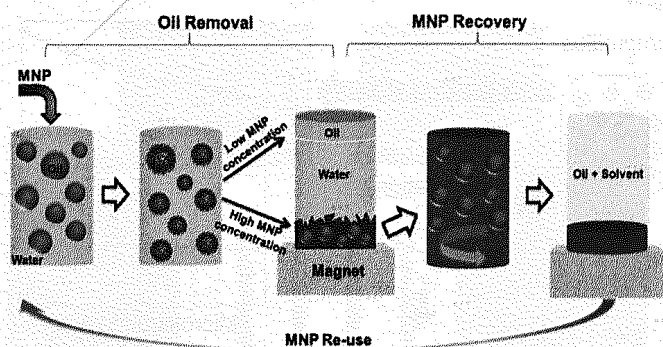


1553

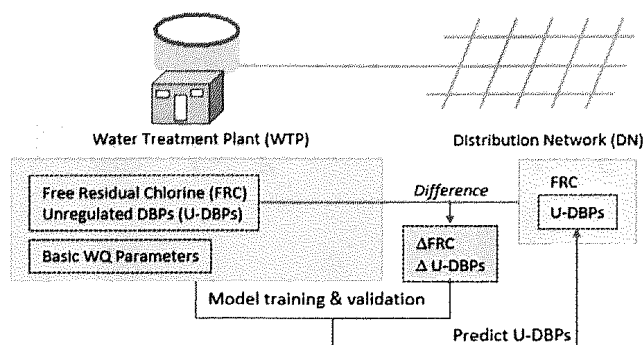
Recyclable amine-functionalized magnetic nanoparticles for efficient demulsification of crude oil-in-water emulsions

Qing Wang, Maura C. Puerto, Sumedh Warudkar, Jack Buehler and Sibani L. Biswal*

Produced water from the oil and gas industry often contains stable crude oil-in-water emulsions that are typically difficult to treat with conventional separation methods.



1564

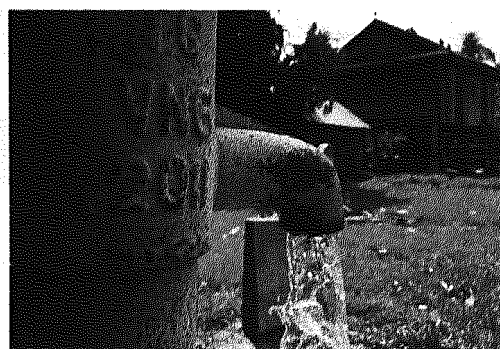


Framework for cost-effective prediction of unregulated disinfection by-products in drinking water distribution using differential free chlorine

Gyan Chhipi-Shrestha,* Manuel Rodriguez and Rehan Sadiq

A framework for estimating the concentration of unregulated disinfection by-products in water distribution using ΔCl_2 and other basic water quality parameters.

1577

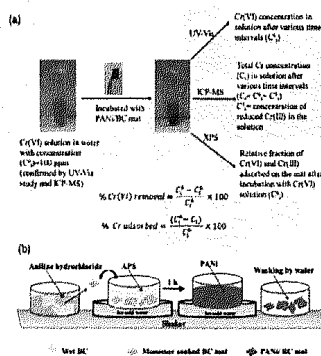


Factors associated with operational sustainability of rural water supplies in Cambodia

Tim Foster,* Andrew Shantz, Sunetra Lala and Juliet Willetts

This study shows handpump technology and private ownership are significant predictors of operational performance of rural water supplies in Cambodia.

1589

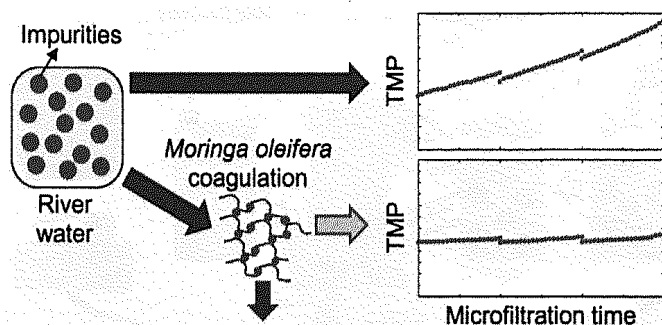


Removal of hexavalent chromium from potable drinking using a polyaniline-coated bacterial cellulose mat

Kousar Jahan, Nitesh Kumar and Vivek Verma*

Polyaniline-based composites serve as adsorbent materials for the removal of hazardous heavy metal impurities such as Cr(vi) from wastewater.

1604



Moringa oleifera coagulation as pretreatment prior to microfiltration for membrane fouling mitigation

Ronald Katalo, Tetsuji Okuda, Long D. Nghiem and Takahiro Fujioka*

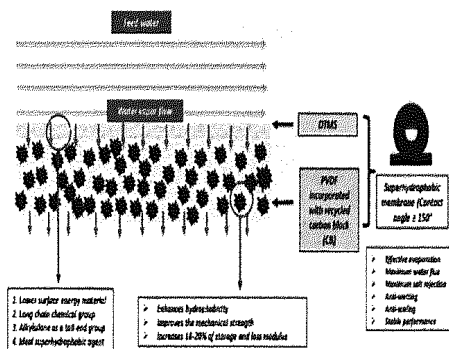
Coagulation pretreatment using *Moringa oleifera* in the microfiltration of river water achieved membrane fouling mitigation and filtered water quality improvement.

1612

Anti-wetting behaviour of a superhydrophobic octadecyltrimethoxysilane blended PVDF/recycled carbon black composite membrane for enhanced desalination

Saikat Sinha Ray, Mansi Gandhi, Shiao-Shing Chen,*
Hau-Ming Chang, Cao Thanh Ngoc Dan
and Huy Quang Le

A novel superhydrophobic octadecyltrimethoxysilane (OTMS)-modified composite membrane was fabricated by incorporating recycled carbon black (CB).

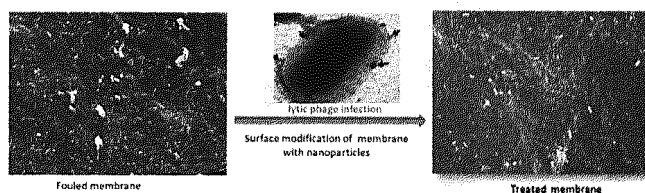


1624

Biofouling reduction in a MBR by the application of a lytic phage on a modified nanocomposite membrane

Sivasankaran Ayyaru, Jeongdong Choi and
Young-Ho Ahn*

Biological contamination of membranes is an unavoidable problem in membrane bioreactor (MBR) systems.

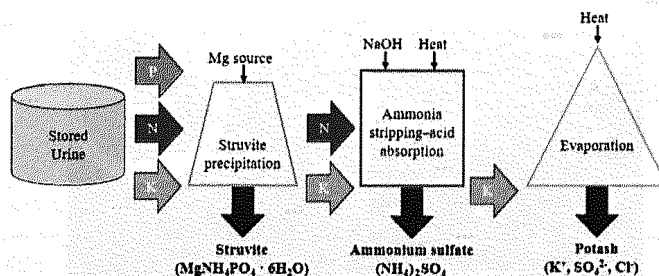


1639

Integrated, multi-process approach to total nutrient recovery from stored urine

Neha Jagtap* and Trevor H. Boyer

This research investigated an integrated, multi-process approach of struvite precipitation, ammonia stripping-acid absorption, and evaporation to recover NPK from stored urine.

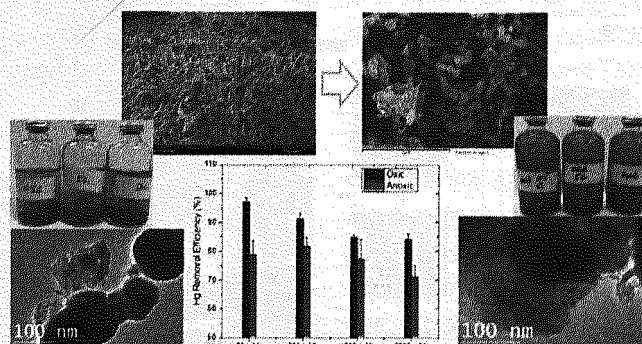


1651

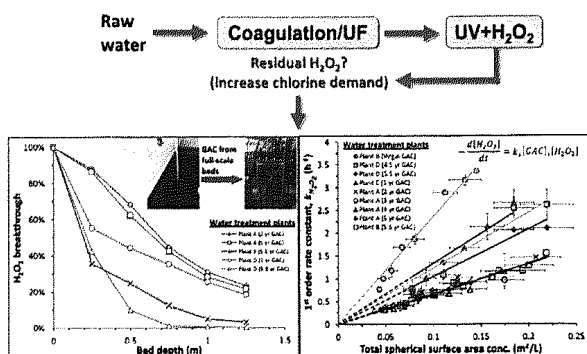
Dissolved oxygen and nitrate effects on the reduction and removal of divalent mercury by pumice supported nanoscale zero-valent iron

Ghulam Hussain Qasim, Sangwook Lee, Giehyeon Lee,
Woojin Lee, Yongseok Hong and Seunghee Han*

Absence of dissolved oxygen and presence of nitrate in groundwater increases Hg(0) during the Hg(II) removal using pumice supported nZVI.



1662

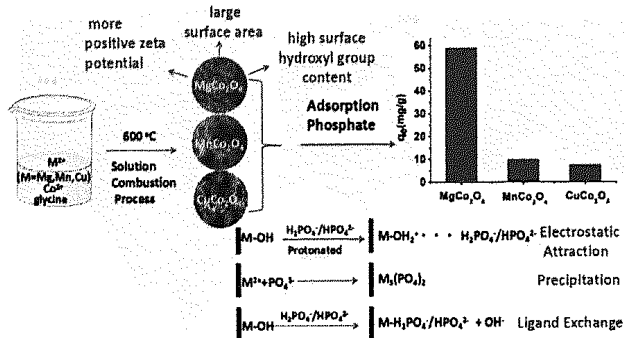


Quenching H₂O₂ residuals after UV/H₂O₂ oxidation using GAC in drinking water treatment

Yifeng Huang, Zhijie Nie, Chengjin Wang, Yi Li, Mindy Xu and Ron Hofmann*

Pilot-scale and lab-scale experiments were performed to evaluate the ability of granular activated carbon (GAC) to quench hydrogen peroxide (H₂O₂).

1671

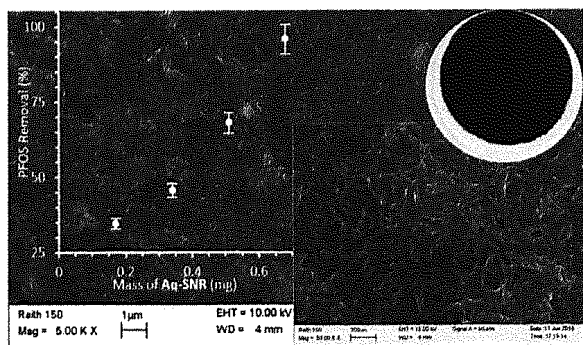


Preparation of cobalt-containing spinel oxides as novel adsorbents for efficient phosphate removal

Ting Li, Taiwan Liao, Xiangde Su, Xiang Yu, Boping Han, Yi Zhu* and Yuanming Zhang*

We prepared a series of novel and efficient phosphate removal adsorbents, figured out the adsorption mechanism in depth and revealed the relationship between the properties of adsorbents and their adsorption capacity.

1685

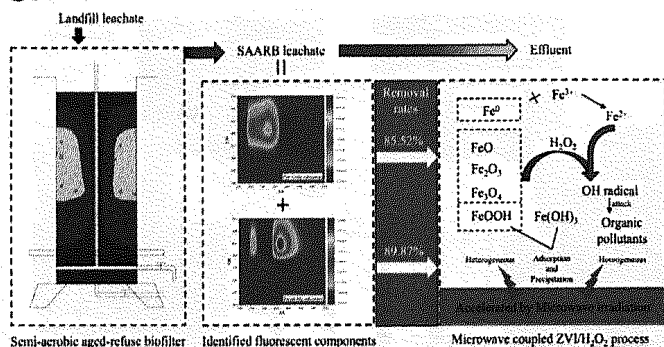


Green synthesis of nanoscale anion exchange resin for sustainable water purification

Abhispa Sahu, Kayla Blackburn, Kayla Durkin, Tim B. Eldred, Billy R. Johnson, Rabia Sheikh, James E. Amburgey and Jordan C. Poler*

A new water purification ion exchange membrane has been synthesized using an all-aqueous and sustainable process. These thin film membranes exhibit a pin hole free, mesoporous architecture that rapidly removes several classes of pervasive and persistent contaminants from water.

1695



Degradation of leachate from a semi-aerobic aged refuse biofilter by the ZVI/H₂O₂ process coupled with microwave irradiation: optimization, organics transformation, and reaction mechanisms

Aiping Zhang,* Zhepei Gu, Weiming Chen and Qibin Li

The semi-aerobic aged refuse biofilter (SAARB) is highly efficient in removing organic matter and ammonia nitrogen, but the effluent of the SAARB (SAARB leachate) contains high concentrations of recalcitrant organics.