JOINT EVENT

4th International Conference on

Pollution Control & Sustainable Environment

&

6th Edition of International Conference on

Water Pollution & Sewage Management

July 26-27, 2018 Rome, Italy

Scientific Tracks & Abstracts

Day 1

Pollution Control 2018 & Water Pollution 2018

Sessions

Environmental Pollution | Water Pollution and Treatment | Marine Pollution | Pollution and Health Effects Agricultural Soil Science | Adsorption Technology | Water Contamination Agriculture and Environmental Pollution Ground water Pollution | Waste water Technologies

Session Chair
Emilly Obuya
The Sage Colleges, USA

Session Chair
Qiaowen Lin
Huazhong University of Science and Technology, China

Session Introduction

Title: **Mobility of atrazine in stable manure-amended agricultural soil**
Nihat Hakan Akyol, Kocaeli University, Turkey

Title: **Seasonal variation of phosphorus in sediments, overlying water, interstitial water in Lake Taihu**
Geng Xue, Suzhou University of Science and Technology, China

Title: **A proposal of objective analysis method on environmental sea temperature for evaluation of warm water dispersion discharged from power plants**
Shin'ichi Sakai, Central Research Institute of Electric Power Industry, Japan

Title: **Simultaneous treatment of leachates and landfill gas (CH_4) by a passive biofiltration process well adapted for Nordic regions**
Rino Dubé, Quebec Industrial Research Center, Canada

Title: **Temperature of the liquid effluent in sewage treatment lagoons**
Ulises Damian Pepe, University of Buenos Aires, Argentina

Title: **The effectiveness of chemical oxidation in remediating hot and saline groundwater impacted with hydrocarbons**
Mansor Kashir, Saudi Aramco, Saudi Arabia

Title: **Nanochitosan for toxic metals adsorption from waste water**
P S Jassal, University of Delhi, India

Title: **Ingestion of lead, mercury, and selenium by babies through breast milk in three gold mining areas of Nigeria**
Joshua Ojo, Obafemi Awolowo University, Nigeria

Title: **Assessment of organochlorine pesticides in Ogun River and abattoir meat products from Kara abattoir, near Berger, Lagos, Nigeria**
Rose Alani, University of Lagos, Nigeria

Title: **Aquifer vulnerability in parts of Yenagoa, Southern Niger Delta, Nigeria**
Willabo Miepamo, Federal Polytechnic Ekowe, Nigeria

Title: **A environmental impact of refined copper in china based on life cycle assessment**
Chen Jing Jing, Beijing University of Technology, China

Title: **Effect of dietary supplementation of flavonoids against Cypermethrin-induced oxidative stress in Tilapia zillii**
Mohammad Wahsha, The University of Jordan and Yarmouk University, Jordan

Title: **Video Presentation on Sustainable urban landscape planning: A search for possibilities around the periphery of Dhaka city**
Sayed Ahmed, Anhalt Universiy of Applied Sciences, Germany

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Mobility of atrazine in stable manure-amended agricultural soil

Nihat Hakan Akyol and **Gokce Akyol**
Kocaeli University, Turkey

The objective of this study was to conduct a series of batch and miscible-displacement experiments to examine the mobility of atrazine herbicide in stable-manure amended agricultural soil. Agricultural soil with 10% w/w stable-manure amendment were used for the objectives. Laboratory studies showed that the high sorption of atrazine was described by rate-limited, non-linear reversible processes for stable-manure amended agricultural soil. This non-ideal transport behavior was most likely due to the fraction of high organic matter content in soil. Flow interruption tests in the column experiments indicated that the rate-limited desorption of atrazine mainly controlled the non-ideal transport of atrazine. Behavior of atrazine in such soils could have important impacts for risk assessment of atrazine-contaminated soil and should be taken into account in the regulation, management, and remediation of atrazine-contaminated sites.

Biography

Nihat Hakan Akyol has completed his PhD at Kocaeli University. He is working as an Associate Professor in Department of Geological Engineering at Kocaeli University. He has published 12 papers in reputed SCI journals and currently continues high budget projects in Turkey and has been a part of various research projects in United States of America with University of Arizona and Alabama University.

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Seasonal variation of phosphorus in sediments, overlying water, interstitial water in Lake Taihu

Geng Xue and **Li Dapeng**
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To investigate the effect of benthic organisms on migration and conversion of phosphorus, our research carried out a quarterly monitoring at two fixed sample points in Lake Taihu, between October 2017 and April 2018. The main contents of the monitoring were the changes of phosphorus in the sediments, overlying water, interstitial water and microorganism in sediments. Microbial content is characterized by using FDA hydrolase analysis. The SMT sequential extraction method was applied in morphometry of phosphorus contained in surface sediment samples in two different trophic level regions of northeast of Lake Taihu. The sum of all forms of phosphorus, which including NH_4Cl-P, Fe-P, Al-P, Org-P, Ca-P, and Res-P is regarded as total phosphorus. Through analysis all of them, we can obtain the migration and conversion of phosphorus in sediments in different seasons. Through the determination and analysis of microbial content and bioavailable phosphorus which including WSP, RDP, AAP, Olsen-P, the effect of microorganisms on migration and conversion of phosphorus can be drawn. Then we can explore the role of benthos in it.

Recent Publications

1. Li D P and Huang Y (2010) Sedimentary phosphorus fractions and bioavailability as influenced by repeated sediment resuspension. Ecological Engineering 36(7):958-962.
2. Li D P, Huang Y, Fan C X and Yuan Y (2011) Contributions of phosphorus on sedimentary phosphorus bioavailability under sediment resuspension conditions. Chemical Engineering Journal 168(3):1049-1054.
3. Li D P and Huang Y (2013) Phosphorus uptake by suspended sediments from a heavy eutrophic and standing water system in Suzhou China. Ecological engineering 60(11):29-36.
4. Li D P and Huang Y (2014) Distribution of added phosphorus in sediment under intermittent resuspension conditions. Environmental Engineering and Management Journal 13(10):2593-2600.
5. Wu Xiaofei, Li Dapeng, Wang Ren and Wang Ming (2015) Bioavailability of sedimentary phosphorus under repeated sediment resuspension with the addition of algae. Environmental Science and Pollution Research 22(17):13004-13013.

Biography

Dapeng Li has completed his PhD at Harbin Institute of Technology and Postdoctoral studies at Nanjing Institute of Geography and Limnology, Chinese Academy of Science. He is the Professor of Environmental Science and Engineering College at Suzhou University of Science and Technology, mainly engaged in the research of phosphorus migration and transformation in sediments and overlying water in shallow lakes. He is the Director of Collaborative Innovation Centre at Suzhou University of Science and Technology. He has published more than 50 papers in reputed journals and has been serving as an Editorial Board Member of reputed journals.

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A proposal of objective analysis method on environmental sea temperature for evaluation of warm water dispersion discharged from power plants

Shin'ichi Sakai, Norikazu Nakashiki, Takaki Tsubono and **Yasuo Niida**
Central Research Institute of Electric Power Industry, Japan

In Japan thermal and nuclear power plants have been generally constructed in coasts to use a plenty of sea water for a cooling system of vapor, and warm water is discharged again into the surrounding seas. Then the evaluation of dispersion of warm water is one of the important issues for an environmental impact assessment (EIA) and for environmental monitoring under operation of power plants. Therefore the dispersion area of warm water is decided relatively against the environmental sea temperature as a reference, the decision of environmental sea temperature is essential in the evaluation process. A new analysis method using an optimal interpolation on environmental sea temperature, which can take account of spatial non-uniformity of environmental sea temperature, is proposed for the EIA and environmental monitoring of warm water. As the result of applying the proposed method to the environmental survey data with a thermal power plant where warm water is discharged as surface buoyant jet, the optimal correlation length, the important parameter of optimal interpolation, is estimated about one and a half times of maximum distance between observational points. In addition, the enclosed area of 2°C higher dispersion area of warm water according to the preliminarily prediction based on such as numerical simulations is found to be adequate criteria for selection of the observational data to be analyzed. Finally, the estimated dispersion area of warm water in the surface based on the proposed method is certified to be consistent with the result of the EIA.

Biography

Shin'ichi Sakai has and received his Doctor of Engineering degree titled: Study for coastal current analysis with remote sensing data and data assimilation method, from Kyoto University. He has started the career of Research Scientist at Central Research Institute of Electric Power Industry in 1989 and now is in charge of coastal environmental issues as a Senior Research Scientist.

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Simultaneous treatment of leachates and landfill gas (CH_4) by a passive biofiltration process well adapted for Nordic regions

Rino Dubé, Nicolas Turgeon, Yann Le Bihan and **Gerardo Buelna**
Quebec Industrial Research Center, Canada

Leachate treatment and the elimination of landfill gas (LFG) are the main environmental challenges faced by operators in the province of Quebec, Canada. CRIQ, in collaboration with its partners (Université Laval and Université de Sherbrooke), has been working for more than ten years on the development of biofiltration processes for the treatment of leachate and methane (CH_4). The leachates treatment is intended to comply with the limit values as prescribed in the regulation (in particular BOD: 65 mg/l, ammonium: 10 mgN_NH_4/l, zinc: 0.07 mg Zn/l and phosphorus: 0.3 mg Ptot/l). The process makes it possible to envisage, using methanotrophic bacteria that are unique in their ability to use CH_4 as a source of carbon and energy, the treatment of landfill gas. The results obtained in laboratory tests over a period of 16 months for simultaneous treatment (leachate-methane) will be shown for parameters such as BOD5, MES, NH_4, NO_3-, pH, CH_4. The behaviors observed for nitrogen are presented in figures 1 and 2. For the period when the conditions were optimal (250th to 450th day) the nitrification process made it possible to reach N-NH_4 transformation rates higher than 95% (output concentration of less than 10 mgN NH_4/l). Considering the average concentration of N_NH_4 contained in the leachates (680 mg N-NH_4/l) as well as the observed transformation rates (nitrification), the elimination of N-NO_3 in the biofiltration process would be attributable to the activity methanotrophic bacteria (methanotrophic denitrification). Overall, the results obtained make it possible for landfill operators to make significant gains in terms of sustainable development (passive technology, increased treatment of nitrogen (NH_4 and NO_3), autothermal biological process), reduction of GHG emissions, etc.). Those work led to a patent in 2017. Future work planned is on-site testing using a prototype.

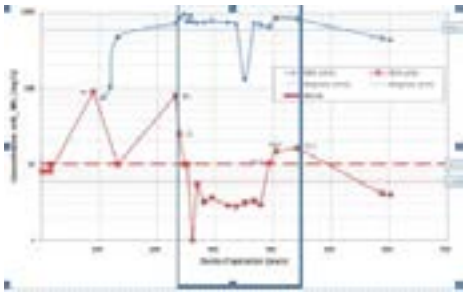

Figure 1: Transformation of ammonium

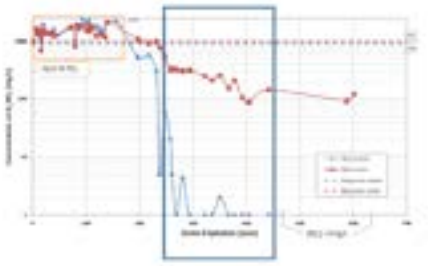

Figure 2: Elimination of nitrates

Recent Publications

1. Dia O, P Drogui, G Buelna and R Dubé (2017) Strategical approach to prevent ammonia formation during electrocoagulation of landfill leachate obtained from a biofiltration process. Separation and Purification Technology 189:253-259.
2. Dia O, Drogui P, Buelna G, Dubé R and Ben Salah Ihsen (2017) Electrocoagulation of bio-filtrated landfill leachate: Fractionation of organic matter and influence of anode materials. Chemosphere 168:1136-1141.
3. M Zolfaghari, P Drogui, S K Brar, G Buelna and R Dubé (2016) Unwanted metals and hydrophobic contaminants in bioreactor effluents are associated with the presence of humic substances. Environmental Chemistry Letters DOI: 10.1007/s10311-016-0598-7.

Biography

Rino Dubé has held a position as a Research and Development Officer at the Centre de recherche industrielle du Québec (CRIQ) since 1995. He is a civil engineer by training, specializing in environment and bioprocesses with a Master's degree from Université Laval. Mr. Dubé carries out laboratory-scale and large-scale technological innovation projects in the agricultural, industrial and municipal wastewater sectors, more recently including treatment of leachates from composting sites and landfills. He has conducted several projects on removal/ transformation of nutrients (nitrogen, phosphorus). In particular, he has participated actively in the development of biofiltration on organic media for the simultaneously treatment of highly-charged liquids and gases. This work was concretized in twenty pilot systems installed in the field in an industrial context, and has been the subject of several articles and lectures, as well as four invention patents.

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Temperature of the liquid effluent in sewage treatment lagoons

Ulises Damian Pepe
University of Buenos Aires, Argentina

In very extensive geographies and/or with low population densities, the lagoons for the treatment of sewage effluents are of great application and one of the most applied solutions. Its cost of implementation, operation and maintenance makes this alternative one of the most sustainable in relation to the management of sewage drains for localities with these characteristics. Many years designing and evaluating sewage treatment lagoons, makes me reflect on one of the most important design parameters, which is usually estimated slightly and without many considerations: the temperature of the liquid effluent in the lagoon. Most of the time, it is calculated with foreign correlations that are not adapted to our reality and are linked to the average air temperature of the coldest month of the year. Uncertainty that we have when defining this important design parameter makes us to commit one of the most common errors that are observed in its design. Uncertainty is synonymous with oversizing and, in practice, designing larger lagoons than necessary, being as bad as the design of small lagoons. Some of the problems that large lagoons produce: lagoons that do not fill up, erosion and vandalism of their slopes, higher costs for their implementation, etc. In order to limit this uncertainty, this work proposes a rational method that takes into account the flow of energy in the process and the time that the liquid effluent is in the lagoon.

Biography

Ulises Damian Pepe has completed his Magister in Sanitary and Environmental Engineering at the Institute of Sanitary and Environmental Engineering of University of Buenos Aires. Previously he was a Chemical Engineer at UTN and then he was a Specialist in Sanitary and Environmental Engineering of the Institute of Sanitary and Environmental Engineering of UBA, Buenos Aires.

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The effectiveness of chemical oxidation in remediating hot and saline groundwater impacted with hydrocarbons

Mansor Kashir[1] and **Rick McGregor**[2]

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A series of laboratory microcosm experiments and a field-pilot test was performed to evaluate the potential for the *in situ* chemical oxidation of aromatic hydrocarbons and methyl tertiary butyl ether (MTBE), in saline, high temperature (greater than 30) groundwater. Groundwater samples from a site in Saudi Arabia were amended in the laboratory portion of the study with the chemical oxidants persulfate, percarbonate and stabilized hydrogen peroxide to evaluate the changes in select hydrocarbons and MTBE concentrations with time. Almost complete degradation of the aromatic hydrocarbons, naphthalene and trimethylbenzene was found in the groundwater samples amended with persulfate and stabilized hydrogen peroxide whereas the percarbonate-amended samples showed little to no degradation of the target hydrocarbon compounds in the laboratory. Isotopic analyses of the persulfate-amended samples suggested that C-isotope fractionation for xylenes occurred after approximately 30% reduction in concentration with a decline in the δ13C values of xylenes of about 1%. Based on the laboratory results, pilot-scale testing at a Saudi Arabian field site was carried out to verify the persulfate laboratory results. Results obtained from the pilot test indicated that all the target compounds decreased substantially with time. pH of the groundwater remained neutral following injections whereas oxidation-reduction potential remained anaerobic throughout the injection zone with time. Nitrate concentrations decreased within the injection zone suggesting that the nitrate may be consumed by denitrification reactions while sulfate concentrations increased as expected within the reactive zone suggesting that the persulfate was being reduced to sulfate. Overall, the injection of the oxidant persulfate was shown to be an effective approach to treating dissolved aromatic and associated hydrocarbons within the groundwater. The generation of sulfate as a byproduct was an added benefit as the sulfate could be utilized by sulfate-reducing bacteria (SRBs) presents within the subsurface to further biodegrade any remaining hydrocarbons. The results of the pilot-study using stabilized hydrogen peroxide as an oxidant suggested that the hydrogen peroxide was not stabilized by citric acid but instead the citric acid enhanced the oxidation of the target compounds including the oxidation of BTEX and MTBE. It appears that the citric acid may be chelating natural metal activators, such as ferric iron, and enhancing their activation function. Analysis of the BTEX compounds indicated a degradation percent of greater than 99% over the course of the study whereas MTBE was degraded by greater than 50%. Analysis of the TBA prior to and post injection suggested that TBA was not generated and in most cases TBA was degraded by greater than 75% during the pilot test. CSIA analysis indicated the ^{13}C within the MTBE and benzene was enriched during the oxidation process. Bacterial analysis showed a dramatic change in the bacteria community makeup with aerobic bacteria responding quickly to the addition of stabilized hydrogen peroxide.

Recent Publications

1. Mansor Kashir, et al. (2015) Chemical oxidation of high saline, high temperature groundwater impacted by hydrocarbons. Remediation Journal USA 25(2):55–70.
2. Mansour Kashir, et al. (2014) Aerobic biodegradation of hydrocarbons in high temperatures and saline groundwater. Remediation Journal USA 24(2):77–90.
3. Mansor Kashir, et al. (2009) A kinetic model for the remediation of hydrocarbon impacted soils using low temperature oxidation. Journal of ASCE Practice Periodical for Hazardous Toxic and Radioactive Waste Management 11(4):259-267.
4. Mansor Kashir, et al. (2007) A numerical model simulating the remediation of hydrocarbon impacted soils using low temperature oxidation. Journal of Environmental Modeling and Assessment 13(2):265-274.
5. Mansor Kashir and Yanful E (2001) Hydraulic conductivity of bentonite permeated with acid mine drainage. Canadian Geotechnical Journal Canada 38(5):1034-1048.

Biography

Mansor Kashir is an Engineering Consultant in the Department of Environmental Protection, Saudi Aramco Oil Company, Saudi Arabia. He completed his BASc in Civil Engineering at University of Tripoli, Libya in 1984; MASc in Geotechnical Engineering at University of Waterloo, Canada in 1990 and; PhD in Geo-Environmental Engineering from University of Western Ontario, Canada in 1998. He is currently managing a number of site investigations and groundwater remedial studies at Saudi Aramco sites; including the use of mechanical, biological, and chemical treatment to remediate contaminated groundwater. Other interests and tasks include developing best environmental protection practices in the area of unconventional gas at Saudi Arabia, defining and treating credible corporate risks that could result from industrial incidents, their treatments and tools of monitoring of these risks.

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Ingestion of lead, mercury, and selenium by babies through breast milk in three gold mining areas of Nigeria

Joshua Ojo[1], **Joanna Ojo**[1] and **Darja Mazej**[2]
[1]Obafemi Awolowo University, Nigeria
[2]Jozef Stefan Institute, Slovenia

Lead, mercury, and selenium are the key elements associated with neurotoxicity, and infants are the most susceptible sub-population. This study evaluated the exposure of babies to Pb, Hg, and Se through breast milk intake in three gold mining areas with different levels of gold mining activities in Nigeria. One hundred and six volunteer mother-baby pairs were recruited as follows: 27 pairs from Yargalma, Zamfara State; 31 pairs from Iperindo, Osun State; and 48 pairs from Ile-Ife, Osun State. Levels of Pb and Se in breast milk samples from all 106 mothers were determined using ICP-MS while Hg levels in the same samples were determined using a direct mercury analyzer. Next, only for the subjects from Ile-Ife, breast milk intakes in babies were determined over a two-week period using the deuterium dose-to-mother stable isotope technique. At Ile-Ife, the daily exposure of babies to lead, mercury and selenium was evaluated as ranging from 0.11–0.65 μg/kg b.w., 0.03–0.48 μg/kg b.w., and 1.37–9.20 μg/kg b.w. respectively. At Iperindo and Yargalma, respectively, the values were 0.06–2.34 μg/kg b.w. and 0.13–22.6 μg/kg b.w. for lead; 0.01–0.28 μg/kg b.w. and 0.01–0.23 μg/kg b.w. for mercury, and 0.88–29.8 μg/kg b.w. and 0.38–10.2 μg/kg b.w. for selenium. These can be compared with the benchmark dose for lead suggested by the European food safety authority for developmental toxicity in infants (0.50 μg/kg b.w.) and FAO/WHO daily tolerable intake of 0.57 μg/kg b.w. for mercury.

Biography

Joshua Ojo obtained his PhD in Engineering Physics from the Obafemi Awolowo University, Ile-Ife, Nigeria in 1995. His broad research interest is in assessment of risks associated with exposure to environmental hazards by various population subgroups. His works include both measurements and modeling of exposure to the hazards. He is particularly interested in toxic and essential elements, pesticides, microwave radiation associated with GSM communication and environmental radioactivity. He is the Visionary and President/CEO of the non-governmental organization, Living Science Foundation, which is dedicated in promoting public health and sustainable development of Nigeria through a holistic management of the environment.

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Assessment of organochlorine pesticides in Ogun River and abattoir meat products from Kara abattoir, near Berger, Lagos, Nigeria

Rose Alani and **B Alo**
University of Lagos, Nigeria

Our previous study on Ogun River at Kara abattoir revealed high concentration of gamma hexachlorocyclohexane (HCH) also called lindane, in water and sediment of the river. The use of this river as drinking water for the animals, coupled with the serious short and long-term health effects of lindane prompted this research. In the present study, water and sediment samples were taken from twenty locations in Ogun River and assessed for physico-chemical parameters and seventeen organochlorine pesticides (OCs) which include α-HCH, β-HCH, γ-HCH, δ-HCH, endrin, endrin aldehyde, endrin, heptachlor, heptachlor epoxide, aldrin, dieldrin, endosulfan 1, endosulfan 11, endosulfan sulphate, methoxychlor, α-chlordane, γ-chlordane, DDE, and DDT. Crabs and fish samples from the river were also assessed. Meat parts including beef, blood, heart, kidney, lung, liver, skin, tongue, milk, large intestine, small intestine and urine were also taken from three bulls and three cows; one male goat and one female goat; one ram and one ewe; and their feeds, were assessed for the OCs using gas chromatography/electron capture detector (GC/ECD). Most of the physico-chemical parameters were within WHO limits, except chemical oxygen demand (COD), dissolved oxygen (DO) and biochemical oxygen demand (BOD) at some locations. Generally, OCs was higher in the sediments than in the water, meat parts, animal feeds, fish and crabs. γ-HCH, DDT, aldrin, endrin, dieldrin, and endosulfan all exceeded the Canadian water quality guidelines (CWQG) where present. Dieldrin (12.33 ug/Kg) exceeded the Canadian interim sediment quality guideline (ISQGs) of 2.58 ug/Kg while endosulfan sulfate (2.047-42.748 ug/Kg), endosulfan II (3.54-154.37 ug/Kg), endrin aldehyde (5.98-13.53 ug/Kg) and methoxychlor (1.71-2.86 ug/Kg) were quite high. OCs in other samples was below WHO maximum residue level (MRL). The male animals had more OCs than their females. Sum of OCs were highest in tongues, large intestines, liver, heart, with one bull blood sample having the highest sum concentration of 21.16 ug/Kg.

Recent Publications

1. Alani R, Odunuga S, Andrew-Essien N, Appia Y and Muyiolu K (2017) Assessment of the Effects of temperature, precipitation and altitude on greenhouse gas emission from soils in Lagos metropolis. Journal of Environmental Protection 8:98-107.
2. Alani Rose, Akinsanya B, Erhabor-Chimezie M and Nwude D (2017) Earthworm biomass as additional information for risk assessment of PCBs: A case study of Olusosun dumpsite, Ojota, Lagos, Nigeria. American Journal of Life Sciences Special Issue: Environmental Toxicology 5:52-59.
3. Alani Rose, Abdulfatai Mustapha, Ogbe Rachael and Akinade Bayo (2017) Health hazards, safety risks and security threats posed by Olusosun dumpsite on Olusosun community at Ojota, Lagos, Nigeria. American Journal of Life Sciences Special Issue: Environmental Toxicology 5:43-51.
4. Akinsanya B, Alani R, Ukwa U, Bamidele F and Saliu J (2015) Bioaccumulation and distribution of organochlorine residues across the food web in Lagos Lagoon, Nigeria. African Journal of Aquatic Science, 40:403-408.

Biography

Rose Alani has completed her PhD in Environmental/Analytical Chemistry in 2011 at the University of Lagos, Nigeria, after being trained at the Great Lakes Institute for Environmental Research (GLIER), University of Windsor, ON, Canada, under the Canadian Association for Environmental Analytical Laboratories (CAEAL) requirements as a Trained Analyst. She participated in the 11th summer school on toxic compounds in the environment, in the Research Centre for Toxic Compounds in the Environment (RECETOX), Brno, Czech Republic, in June 2015. She is a Senior Lecturer in the University of Lagos, and currently a Visiting Scientist at the Institute of Photonic Sciences (ICFO), Barcelona, Spain, from March to August 2018. She has published more than 18 papers in reputed journals and has been serving as an Editorial Board Member of reputed journals. She has presented papers in twelve local and eight international conferences. She is a member of local and international professional organizations.

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Aquifer vulnerability in parts of Yenagoa, Southern Niger Delta, Nigeria

Willabo Miepamo[1] and **Bisong Andy Etta**[2]
[1]Federal Polytechnic Ekowe, Nigeria
[2]University of Port Harcourt, Nigeria

This study on aquifer vulnerability assessment in certain parts of Yenagoa, Bayelsa State, Southern Niger Delta, Nigeria, adopted the use of DRASTIC method based on geographic information system (GIS) model to delineate areas susceptible to contamination. Seven hydrogeologic parameters were applied for the aquifer vulnerability evaluations, which include depth to water table, net recharge, soil media, impact of vadose zone, aquifer media, topography, and hydraulic conductivity. Data relating to the seven hydrogeologic parameters of the model were obtained and transformed in the model into seven maps by GIS to develop the DRASTIC vulnerability map which shows the three different forms of aquifer vulnerability namely high, moderate, and low zones. The communities within the high vulnerable zones include Swali, Agudama, Ovum, Igbogene, Okutukutu, Onopa and Okolobiri. Those within the moderate vulnerability zones are Kpansia, Etegwe, Yenezue, Azikoro, Opolo, Tombia, Biogbolo and Akenfa and in the low vulnerability zones, we have Amarata, Yenezuegene, Edepie, Azikoro, Akenfa and Okaka. The high vulnerability zones ranking was attributed to very high depth to water table, high net recharge, high hydraulic conductivity and permeability of gravelly sand in the aquifer media. The moderate vulnerability zones were due to high net recharge, low porosity of silt/clay in vadose zone, silty loam in soil media and high hydraulic conductivity. The low vulnerable zones were influenced by impermeability of clayloam in the soil media, low porosity of silty clay in the vadose zone and low topographic slope percent.

Biography

Willabo Miepamo has passion for conservation and preservation of the environment from further deteriorating. He organizes seminars, lectures and workshops to create public awareness on the dangers of groundwater contamination in host communities to multinational oil companies. He has completed his Master's degree in Hydrogeology from the University of Port Harcourt, Nigeria. He teaches in the Federal Polytechnic Ekowe and provides solution to groundwater contamination challenges faced by Southern Niger Delta States of Nigeria.

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A environmental impact of refined copper in China based on life cycle assessment

WU Yufeng, Chen Jingjing, LI Liquan, LI Bin, PanDe'an and **Zuo Tieyong**
Beijing University of Technology, China

Copper, as a popular base metal, has many divergent properties such as good ductility, high thermal and electrical conductivity. With the rapid development of the Chinese economy and the continual increase of demand for copper products, China has become the largest producer and consumer of refined copper in the world. The large amount of consumption not only brings resource pressure, but also causes prominent environmental problems. Although copper can be recycled to alleviate resource pressure, there are significant differences between mining primary copper and recycling scrap copper in view of resources, energy consumption and pollution emissions. Life cycle assessment (LCA) is conducted in this study to investigate the total environmental effects of the copper industry. The production of 1t refined copper employing primary ores and secondary resources is analyzed in detail. The results show that the most serious environmental impact of the refined copper was abiotic depletion potential, global warming potential and human toxicity. The environmental impacts are mainly caused by mining and smelting of primary copper by pyrometallurgy. However, for secondary copper, refining and electrolysis are the main factors. According to the normalization result, the total environmental impact of secondary copper is only 1/5 of the primary copper production process, which indicates that the regeneration has better environmental benefits. Thus, it is suggested that the secondary copper should be paid more attention and be developed vigorously. On the other hand, the main processes, which cause environmental impacts, should be promoted technologically.

Biography

WU Yufeng has completed his PhD from Beijing University of Technology. He is a professor and doctoral tutor at Beijing University of Technology. His research activities are focused on policy design and development planning on circular economy, environmental and economic assessment on resources recycling, recycling technology on solid wastes containing strategic resource. He has published more than 50 papers in reputed journals and has been serving as an editorial board member of Resources, Conservation & Recycling journal

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Effect of dietary supplementation of flavonoids against Cypermethrin-induced oxidative stress in Tilapia zillii

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Increased environmental pollution can be attributed to a variety of factors resulting from different industrial and agricultural activities. In fish, pollutants can be captured from various sources including the persistent contaminants of agricultural origin. Such pollutants can seriously affect the aquatic organisms by inducing the oxidative stress through the generation of extremely harmful substances known as free radicals. Exposure to stress and diseases and resulting losses are among the major constraints in the aquaculture business, and even more so in intensive production such as re-circulating aquaculture system (RAS). Thus diseases are a major cause for morbidity and mortality, causing substantial financial economic losses. However, one of the most promising methods of oxidative stress and diseases control in aquaculture is the strengthening of defense mechanisms in fish through prophylactic administration of immunostimulants. On the other hand, antioxidants such as the flavonoids are agents that inhibit or neutralize these free radicals. Flavonoids are naturally occurring polyphenolic compounds in plants of positive effects on human health. In this study, we investigated the influence of incorporation of some natural antioxidants in fish feed on the oxidative stress induced by the aquaculture pesticide cypermethrin which promote severe tissue injury in Redbelly tilapia (Tilapia zillii) reared in mega flow re-circulating aquaculture system (RAS).

Biography

Dr. Mohammad Wahsha has completed his Ph.D in Ecotoxicology at the age of 30 years from Ca' Foscari University of Venice. He is a researcher at the Marine Science Station The University of Jordan and Yarmouk University, and a faculty member in the department of marine biology, The University of Jordan, Aqaba branch, Jordan. He has published more than 50 papers in reputed journals and has been serving as an editorial board member in several international journals and congresses.

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Scientific Tracks & Abstracts

Day 2

Pollution Control 2018 & Water Pollution 2018

Sessions

Waste Management and Treatment | Eutrophication | Aquatic Microbiology | Waste water Reuse and Recycling | Water Borne Diseases | Water Pollution : Ethics and Regulations | Aquatic Chemistry Wastewater Sludge Management | Economics of water quality | Air Pollution and Treatment | Marine Water | Environmental Pollution

Session Chair
Xiao Zhang
Chinese Academy of Meteorological Sciences, China

Session Co-Chair
Rouzbeh Nazari
Rowan University, USA

Session Introduction

Title: **Low-carbon land use optimization and management in mine-grain composited zone from the perspective of equity of resource and environment distribution**
Qiaowen Lin, Huazhong University of Science and Technology, China

Title: **Biosynthesis & application of nanostructured composites for purification of drinking water**
Emilly Obuya, The Sage Colleges, USA

Title: **Determining Tamblingan Lake water quality status using method of STORET and AVSWAT model**
Moh Sholichin, University of Brawijaya, Indonesia

Title: **Environmental risk assessment of hospital wastewater in Federal Medical Center (FMC), Umuahia, Nigeria**
Chioma Nwakanma, Michael Okpara University of Agriculture, Nigeria

Title: **Application of satellite remote sensing for a preliminary forensic investigation of landfill elevated internal temperatures**
Rouzbeh Nazari, Rowan University, USA

Title: **Functionalized polymeric electrospun nanofibers for efficient removal of toxic organics from water**
Manjeet Jassal, Indian Institute of Technology Delhi, India

Title: **Natural products as adsorbent for wastewater valorisation**
Souad El Hajjaji, Mohammed V University, Morocco

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Low-carbon land use optimization and management in mine-grain composited zone from the perspective of equity of resource and environment distribution

Qiaowen Lin

Huazhong University of Science and Technology, China

Land use change is an important factor in global climate change and carbon cycle. This project takes the mineral grain composited area as the research object, and takes the equity of the resource and environment distribution as the research perspective in order to carry out the research on the low carbon optimization of land use. Firstly, the process and mechanism of carbon cycle in the mineral grain composited area are revealed, using the system theory. Secondly, on the basis of the analysis of land use change in the study area, carbon emissions of land use in study area from 2000 to 2016 are explored. Carbon emission effects of land use are analyzed by using the improved Kaya equation and logarithmic-mean divisia index method (LMDI). Fairness analysis on allocation of land resources and environment is done by constructing land resource environment Gini coefficient. Then, scenario analysis method and land resource environment Gini coefficient method are applied to carry out multi scenario simulation of land use change in mineral grain compound area, and explore low-carbon optimization plan for land use in mineral grain composited area. Finally, the low carbon management system of land utilization in the mineral grain compound area is constructed from aspects of management target, management subject and management measures. The research results provide theoretical guidance for effectively reducing mining damaged land, protecting food security and optimizing land use pattern scientifically, providing a certain train of thought for promoting regional low carbon economy development.

Biography

Qiaowen Lin has completed her PhD from China University of Geosciences. She is doing her Postdoctoral studies at School of Public Administration, Huazhong University of Science and Technology. She has published 5 papers in reputed journals.

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July 26-27, 2018 Rome, Italy

Biosynthesis & application of nanostructured composites for purification of drinking water

Emilly Obuya[1] and **Naumih Noah**[2]

[1]The Sage Colleges, USA

[2]United States International University, Kenya

Water pollution by microbial contamination that emanates from poor sanitation affects over 50% of the global population, particularly in developing countries. Solar disinfection (SODIS) technique has emerged within the past decade as a simple and low cost point-of-use water treatment technology. For bacterial inactivation, contaminated water is placed in plastic bottles and exposed to direct sunlight for 6-48 hours. The limited quantity of water treated (2 L-bottles) and long illumination duration makes the process cumbersome hence hampers large scale adoption. Additionally, due to the UV process of bacterial deactivation, the SODIS technique is incapable of removing chemical contaminants from the drinking water thus limiting its widespread use for efficient water treatment. In this work we have applied the green chemistry principles and nanotechnology to design, synthesize, and develop a Ag-TiO_2 heterogeneous catalyst that will be used as an additive to improve the overall efficiency of the SODIS technique. The silver nanoparticles (Ag NPs) were biosynthesized from the rind extract of the watermelon fruit, and loaded on the surface of titanium dioxide nanofibers (TiO_2 NFs) through a wet synthesis method. The surface and electronic properties of the nanocomposite material will be optimized to control the size of the Ag NPs on the TiO_2 surface. The disk diffusion method will be used as a quantitative antimicrobial assay of the as-synthesized catalysts followed by the time-kill method where photo-inactivation studies of the catalysts will be tested for their microbial activity against lab-cultured *E. coli.* We will report the biosynthesis and characterization of silver nanomaterials and results from the disk diffusion & time kill methods.

Biography

Emilly Obuya completed her PhD in Inorganic and Materials Chemistry from State University of New York in 2012 and is currently an Associate Professor of Chemistry at The Sage Colleges in Troy, NY in USA. She is working on collaboration with Dr. Noah on the biosynthesis and application of nanostructured materials for water purification.

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Determining Tamblingan Lake water quality status using method of STORET and AVSWAT model

Moh Sholichin[1], **Rini Wahyu Sayekti**[1] and **Putu Mia Devi**[2]

[1]University of Brawijaya, Indonesia

[2]Minister for Public Work and Human Settlements, Indonesia

Tamblingan Lake is a natural lake has a function as a sources of raw water dan tourism destination. The change in the cultivation of farmers around Tamblingan from hard cropping pattern (coffee) to the annual plantations (flowers and horticulture), if can't be controlled may cause decreased of water quality. The objective of this study to determine the pollution load from the agricultural element, and the water quality index based on existing condition. This research conducted tree stages; chemical analysis of water quality indicators in laboratory, analysis of water quality status using STORET method and water pollution load analysis using application AVSWAT Program. Based on measurement of water quality parameters obtained Nitrate (NO3-N) amount to 1,002 mg/l, BOD5 amount to 934 mg/l, DO amount to 683 mg/l and phosphorous as P amount to 764 mg/l. Water quality analysis using STORET method, total score from the results of the calculation is -10. These value with range -1 to10 so that status of water quality of Tamblingan Lake is "B Class". The pollution load of existing land Tamblingan Lake for phosphorous inflow of 14,374 mm/ton/ha, Nitrate inflow of 47,515 mm/ton/ha/month, BOD5 inflow of 469,635 mm/ton/ha/month, DO inflow amounted to 2054,8317 mm/ton/ha/month. The value is between (-1) to (-10), the Water Quality Status of Tamblingan Lake Class B with contaminated lightly lake water condition.

Recent Publications

1. Laksni Sedyowati, Turijan, Suhardjono, Ery Suhartanto and Mohammad Sholichin (2018) Runoff behavior on urban road intersection based on flow profile simulation. International Review for Spatial Planning and Sustainable Development 6(1):32-44.
2. Laksni Sedyowati, Turijan, Suhardjono, Ery Suhartanto and Mohammad Sholichin (2017) Runoff velocity behaviour on smooth pavement and paving blocks surfaces measured by a tilted plot. Journal of Water and Land Development 33(IV–VI):149–156.
3. Mohammad Sholichin, Very Dermawan, Suhardjono and Denik Sri Krisnayanti (2016) Energy dissipation of skimming flow on flat and pooled stepped spillways. Australian Journal of Basic and Applied Sciences 10(6).
4. Moh Sholichin (2012) Field investigation of groundwater contamination from solid waste landfill in Malang, Indonesia. International Journal of Civil & Environmental Engineering IJCEE-IJENS 12(2):74-81.
5. S M Shirazi, M Sholichin, Mohammed Jameel, Shatirah Akib and Mokhtar Azizi (2011) Effects of different irrigation regimes and nitrogenous fertilizer on yield and growth parameters of maize. International Journal of Physical Sciences 6(4):677-683.

Biography

Moh Sholichin has completed his PhD from Malaya University, Malaysia in 2010. He was a Head of Water Resources Engineering Department, Engineering Faculty, University of Brawijaya from 2010 until 2017. He has actively presented his papers in international seminars in many countries and has published more than 12 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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July 26-27, 2018 Rome, Italy

Environmental risk assessment of hospital wastewater in Federal Medical Center (FMC), Umuahia, Nigeria

Chioma Nwakanma and **Obi O**
Michael Okpara University of Agriculture, Nigeria

The study on environmental risk assessment of hospital wastewater at Federal Medical Center (FMC), Umuahia, Nigeria was carried. To this end, the microbial load and heavy metal analyses of the hospital wastewater were determined using established procedures. The wastewater samples were collected directly from the outlet of different wards (surgical, children and emergency wards), with pre-cleaned sterile and dried containers. The result show that they were significant varieties in the bacteria and fungi load of the hospital waste water from the different wards. The bacteria load was on the range of $192x10^7$ cfm/ml to $275x10^7$ cfm/ml ($1.92x10^7$ cfm/ml to $2.75x10^7$ cfm/ml) while the fungi load ranged from $1.3x10^3$ to $4.0x10^3$ cfm/ml as shown in the result; the total aerobic viable bacteria count (TVC) was highest $275x10^7$ in the wastewater for children ward and lowest, $192x10^7$ in the wastewater from the surgery ward. The concentration of lead was in the range 0.02 mg/l to 0.09 mg/l while cadmium concentrations varies between 0.02 to 0.15 mg/l, chromium and copper were in the range of 0.00 to 0.03 and 0.07 to 0.2 mg/l respectively, while zinc was found to be between 0.07 to 0.09 mg/l and mercury was 0.02 mg/l. The result shows that the concentration of the different wards varied with significant from difference ($p<0.05$). In general, the physicochemical properties of the hospital wastewater samples show that, their disposal into the environmental will impact significantly on the environment.

Biography

Chioma Nwakanma has completed her PhD from University of Port Harcourt, Nigeria. She is a Senior Lecturer in the College of Natural Resources and Environmental Management. She has published more than 55 papers in reputed journals and has Professional affiliations both local and international and has been serving as an Editorial Board Member of reputable journals.

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July 26-27, 2018 Rome, Italy

Application of satellite remote sensing for a preliminary forensic investigation of landfill elevated internal temperatures

Rouzbeh Nazari
Rowan University, USA

Subsurface fires and smoldering events at landfills can present a serious health hazard and threat to the environment. These fires are much more expensive and difficult to extinguish than open fires at the landfill surface. Initiation of a subsurface fire may go unnoticed for a long time period. Undetected fires may spread over a large area. Unfortunately, not all landfills keep or publish heat elevation data and some do not have a gas extraction system to control subsurface temperatures. The timely and cost effective identification of subsurface fires is an important and pressing issue. In this work, we describe a method for using satellite thermal infrared imagery at moderate spatial resolution to identify the location of subsurface fires and monitor their migration within the landfill. The focus of the study is on the Bridgeton Sanitary Landfill in Bridgeton, MO where a subsurface fire was first identified in 2010 and is still extant. Observations from Landsat satellite for the last seventeen years were examined for surface temperature anomalies (or hot spots) that may be associated with subsurface fires. It is shown that the location of hot spots identified in satellite imagery matches the known location of subsurface fires. Changes in the hot spot location with time correspond to the subsurface fire spreading routes determined from *in situ* measurements. The results of the study demonstrate that the proposed approach based on satellite observations can be used as a tool for landfill subsurface fire identification and thus may be used by landfill owners/operators to monitor landfills and minimize expenses associated with extinguishing landfill fires.

Biography

Rouzbeh Nazari is an Assistant Professor of Civil and Environmental Engineering at Rowan University. His primary research interests are: application of remote sensing in water technologies and environment, resiliency and flood mitigation, impact assessment of climate change and extreme weather events on cities. He has worked with NASA, NOAA, consortium on climate risk in the Urban Northeast, New York and New Jersey resiliency planning issues with the focus of climate issues affecting the urban corridor encompassing the US Northeast. His work has been funded by Federal, state agencies as well as industry partners. He has published several book chapters, journal papers and has presented his work in national and international conferences.

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July 26-27, 2018 Rome, Italy

Functionalized polymeric electrospun nanofibers for efficient removal of toxic organics from water

Manjeet Jassal, Saurabh Suryavanshi and **A K Agrawal**
Indian Institute of Technology Delhi, India

Nanofibers high surface area to volume ratio can significantly enhance the activities requiring the use of increased surface area such as adsorption of chemical species in filtration or controlled release of loaded drugs or chemical moieties. β-cyclodextrin incorporated polystyrene and cellulose acetate nanofibers are electrospun by vertical solution electro spinning method and the prepared nanofibers are characterized by SEM, FTIR, RAMAN and UV-Visible spectroscopy to understand the changes in the nanofiber morphology and also to evaluate their potential activity for absorption of target molecular species like ortho-chloro phenol from aqueous solution has been studied.

Recent Publications

1. Kamlesh Panwar, Manjeet Jassal and Ashwini K Agrawal (2018) TiO_2-SiO_2 Janus particles for photocatalytic self-cleaning of cotton fabric. Cellulose 25:2711–2720.
2. Kamlesh Panwar, Manjeet Jassal and Ashwini K Agrawal (2018) Readily dispersible antimicrobial Ag-SiO_2 Janus particles and their application on cellulosic fabric. Carbohydrate Polymers 187:43-50.
3. Kamlesh Panwar, Manjeet Jassal and Ashwini K Agrawal (2017) Ag-SiO_2 Janus particles based highly active SERS macroscopic substrates. Applied Surface Science 411:368-373.
4. Kamlesh Panwar, Manjeet Jassal and Ashwini K Agrawal (2017) Atmospheric pressure plasma-assisted green synthesis of amphiphilic SiO_2 Janus particles. Particuology 33:50-54.
5. Deepika Gupta, Manjeet Jassal and Ashwini K Agrawal (2016) Electrospinning behavior of poly(vinyl alcohol) in DMSO-water binary solvent mixtures. RSC Advances 6:102947-102955.

Biography

Manjeet Jassal has completed her MS, MTech and PhD at IIT Delhi. She has an experience of over 13 years in the R&D division of Indian Petrochemical Corporation Limited (IPCL), a leader in petrochemical sector. Since 1999, she is a Faculty in Department of Textile Technology at IIT Delhi. She has authored more than 230 research publications in national and international journals, conference proceedings and books. She has worked in collaboration with several industries and institutions and has many patents and technology transfers to her credit. She has expertise in chemistry and characterization of polymers and textiles, hydrogels, superabsorbent materials, functional polymers and nanomaterials. Much of her work in the last few years is on the development and application of smart and functional polymers/fibers, electrospun nanofibers, nanoparticles and functional nanofinishes/coatings. She is a member of several professional societies and has won several awards.

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July 26-27, 2018 Rome, Italy

Natural products as adsorbent for wastewater valorisation

Souad El Hajjaji[1] and **Abdelmalek Dahchour**[2]
[1]Mohammed V University, Morocco
[2]IAV Hassan II, Morocco

With regard to Morocco's national programme for treatment of waters (PNALEEU) and the deal with water shortage and bad quality of drinking and agricultural water, these research aim to look into new technologies to clean wastewater and polluted waters from heavy metals and organic contaminants in order to increase the countries resources of clean water available for human consumption and agricultural usage. Various reports attest to the failure of the different treatment processes used to clean waste waters (WWs); raising concern about the remaining pollutants in WWs released in the rivers or reused in agriculture. Usage of local material could improve the quality of WW. In particular, the efficiency of a water filtering technique is studied using selected natural materials prepared from vegetable waste as well as some hydroxyapatite, apatite and apatite-modified materials. The study focus on adsorption properties to be compared with some commonly used adsorbents. Tests to remove pollutants from raw and treated WWs have been conducted. Adsorbents have been prepared from apatite or some vegetable waste of nuts and/or fruits by pyrolysis (500-700°C) at a reduced level of oxygen or by chemical treatment. In this process, a kind of biochar polymer will form and these materials have been grinded to different diameter of granules, fractions of 0-45 and 45-100 µm and tested. Individual tests of adsorption have been performed with each pollutant and different adsorbents. Isotherms of adsorption have been derived in batch experiments. Different equilibrium concentrations of the pollutants will enable us to draw the isotherm and to compare different common models such as Freundlich or Langmuir. The parameters of adsorption have been deduced from the more fitting model to the data. Effects of different physical-chemical parameters such as pH, cation exchange capacity (CEC), conductivity, etc., on the performance of the tested sorbents have been studied using experimental designs.

Recent Publications

1. El Marouani M, El Fakir L, La Yakhaf S M, El Hrech N, Dahchour A, Sebbahi S, El Hajjaji S and Kifani Sahban F (2017) Removal of textile dyes from aqueous solutions by lignin and its derivative charcoals: Characterization, adsorption kinetics and isotherms. Desalination and Water Treatment 81:265-273.
2. Akartasse N, Mejdoubi E, Razzouki B, Azzaoui K, Jodeh S, Hamed O, Ramdani M, Lamhamdi A, Berrabah M, Lahmass I, Jodeh W and El Hajjaji S (2017) Natural product based composite for extraction of arsenic (III) from waste water. Chemistry Central Journal 11(1):33.
3. Foulal S, El Hajjaji S, Trif L, Sabbar A, Chtioui I, De Caro D, Faulmann C and De Caro P (2017) Molecular conductors as nanoparticles in the presence of long-chain alkyl imidazolium salts or amphiphilic molecules: Synthesis and thermoanalytical studies. Journal of Thermal Analysis and Calorimetry 127(3):1879-1888.
4. El Bouabi Y, Farahi A, Labjar N, El Hajjaji S, Bakasse M and El Mhammedi M A (2016) Square wave voltammetric determination of paracetamol at chitosan modified carbon paste electrode: Application in natural water samples, commercial tablets and human urines. Materials Science and Engineering C 58:70-77.
5. El Fakir L, Flayou M, Dahchour A, Sebbahi S, Kifani Sahban F and El Hajjaji S (2016) Adsorptive removal of copper (II) from aqueous solutions on phosphates: equilibrium, kinetics, and thermodynamics. Desalination and Water Treatment 57(36):17118-17127.

Biography

Souad El Hajjaji has completed her PhD from INP of Toulouse, France. She is the Director of Research Centre in Water, Natural Resources, Environment and Sustainable Development at Mohammed V University in Rabat. She has published more than 80 papers in reputed journals and has been responsible for LIA; she is the Coordinator of an international Master's with the University Paul Sabatier-Toulouse (France) in Analytical Sciences and Environment. She is the General Secretary of the Moroccan Association for the Environment and Sustainable Development; Vice President of Morocco Globe Association for Environment and Member of the Coordinating Committee of the Moroccan Coalition for Water (COALMA).

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Young Researchers Forum

Day 2

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6th Edition of International Conference on **Water Pollution & Sewage Management**

July 26-27, 2018 Rome, Italy

Removing of strontium ion from water using ion flotation

Mojtaba Taseidifar[1], **Richard M Pashley**[1] and **Barry W Ninham**[2]
[1]The University of New South Wales Canberra, Australia
[2]Australian National University, Australia

The effect of a new surfactant obtained with reacting cysteine and octanoyl (C8) was investigated in ion flotation removal of low levels of chromium ions from aqueous solution. The synthesised amino acid-based single-chain surfactant shows high water solubility and causes extensive foaming in a typical flotation chamber. In an ion flotation process, this surfactant was able to remove 99.8% of the 5 ppm strontium present in the contaminated water, in a simple, single-stage physiochemical process.

Recent Publications

1. Taseidifar M, Shahid M, and Pashley R. M., "A study of the bubble column evaporator method for improved thermal desalination", Desalination, 432 (2018) 97-103.
2. Taseidifar M, Makavipour M, Pashley R. M., "Removal of heavy metal ions from water using ion flotation", *J. Environ. Tech. Innovation, 8(182-190).*
3. Nikafshar S, Zabihi O, Ahmadi M, Mirmohseni A, Taseidifar M, Naebe M, "The effects of UV light on physical, chemical and mechanical properties of epoxy-diamine system with and without organic UV absorber", *J. Mater.,* 10(2), 180 (2017).
4. Taseidifar M, Khataee A. R, Vahid B, Khorram S, Joo S. W, "Production of nanocatalyst from natural magnetite by glow discharge plasma for enhanced catalytic ozonation of an oxazine dye in aqueous solution", *Appl. Mol. Catal. A,* 404-405, 218-226 (2015).
5. Khataee A. R, Taseidifar, Sheydaei M, S. Khorram, S. W. Joo, "Sonocatalytic degradation of Basic blue 3 using plasma-treated magnetite nanostructures ", *Curr. Nanosci.,* 1, 1-11 (2015).

Biography

Mojtaba Taseidifar is an Iranian PhD student attending University of New South Wales, Australia with thesis entitled “Novel Water Technologies” in research group of Professor Richard Mark Pashley. Moji’s research area generally evolve re-using wastewater, cavitation prevention and seawater desalination, which all are of paramount importance to tackle the problems associated with water pollution and shortage. He is very interested to mingle with the experts/researchers to find out about their work in order to build up his future research.

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July 26-27, 2018 Rome, Italy

Preparation of sludge based activated carbon using hydrothermal carbonization for basic dye and humic acid adsorption from aqueous solution

Reza Khoshbouy, Yusuke Kita, Fumitake Takahashi and **Kunio Yoshikawa**
Tokyo Institute of Technology, Japan

Preparation of sludge-based activated carbon (SBAC) required to the carbonization step followed by the activation process. The conventional carbonization method such as pyrolysis needs to use high energy due to high moisture and poor water dewaterability of wet sludge. Recently, the hydrothermal carbonization (HTC) as a promising wet biomass conversion technology has been introduced to solve simultaneously the proper disposal method of wet sludge and its valorization by conversion into value-added products. In this study, SBAC was prepared from high moisture wastewater sludge by hydrothermal carbonization at several temperatures (170, 200, 230, and 260° followed by the physical activation with CO_2 and the chemical activation with KOH. Moreover, the utilization of high surface area SBAC for adsorption of methylene blue (MB) as a basic dye and humic acid (HA) was investigated. The characterization of hydrochars (HCs) and SBACs were undertaken using the FTIR, SEM-EDS, BET, TG-DTA, and Zeta potential. According to the results, the chemical activation (1200-1600 m^2/g) of HCs was much more effective than the physical activation (below 300 m/g) for their development of porosity and specific surface area. Furthermore, the results indicated that by increasing the temperature of HTC, at the same operation condition of the chemical activation, the surface area and porosity of SBAC were increased. The high production yield and the best specific surface area (upto 1612.91 m^2/g) of SBAC were obtained at the HTC temperature of 260° and sequential KOH activation. The adsorption equilibrium and kinetics of MB and HA onto best SBAC were carried out in batch mode. The Langmuir isotherm and the pseudo- second-order kinetic model give the best fittings with experimental data. The maximum adsorption capacity of MB and HA at 25° was 588.24 mg^2/g and 26.32 mg^2/g, respectively, which showed better performance compare with two commercial activated carbons. In conclusion, SBAC prepared from hydrochar of wastewater sludge can be used as a low-cost and effective adsorbent for removing basic dyes and humic acid adsorption from aqueous solutions.

Biography

Reza Khoshbouy has completed his BSc and MSc at Sahand University of Technology, Tabriz, Iran. He started his PhD course in April 2016 in the Department of Environmental Science and Technology at Tokyo Institute of Technology. His major fields are water purification, adsorption technology, waste management and environmental engineering. Currently he is a second-year Doctoral student (D2) in Prof. K Yoshikawa laboratory. His research focuses on development of cost effective adsorbent for water and wastewater treatment from biomass-based waste and wastewater sludge using hydrothermal carbonization and activation process.

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4th International Conference on **Pollution Control & Sustainable Environment**

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6th Edition of International Conference on **Water Pollution & Sewage Management**

July 26-27, 2018 Rome, Italy

Knowledge, behaviour and practices (KBP) for arsenic contaminated drinking water in Bhojpur District, Bihar, India

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Teri School of Advanced Studies, India

Water is a fundamental human right, most valuable asset for human survival, economy and public health. The population of India is at a risk of arsenic (As) exposure associated with long-term exposure to the arsenic in groundwater. Almost 176 million people are at risk due to exposure to contaminated water. This study captures and assessed the knowledge, behaviour, and practices of people exposed to As unknowingly in the selected villages in Bihar which are exposed to arsenic contamination. The technique included information accumulation using a stratified questionnaire, an interaction with local block centers, health facilities and discussion with the school staff. The data was analyzed using the Statistical Package for Social Science 20. The study revealed that the level of knowledge about arsenic presence was relatively high (75±.04%), but knowledge on its source and routes was inadequate. The majority of the respondents had no knowledge when it comes severity of the diseases occurring due to arsenic contamination and their prevention (15±.57%). The awareness level about the exposure and duration was found to be low (19±.03%). The attitude and practice on protecting their source of drinking water was also found to be low (25±.45%). Some educated people from the economically higher backgrounds had proper drinking and cleaning facilities, but there was no awareness regarding lowering arsenic exposure. The borehole water quality dug by government for rural schools appeared to be cleaner with respect to arsenic contamination, but the microbial quality is unknown. Moreover, the water supply and community facilities were inadequate in rural areas, with no rainwater harvesting and low sanitation. Some households had toilets whose drainage were going open outside houses, which may contaminate the groundwater source. Moreover, they had broken doors which did not offer privacy. There was no government water supply scheme available in these villages, due to smaller household sizes.

Recent Publications

1. Singh C K, Kumar A and Bindal S (2018) Arsenic contamination in Rapti River Basin, Terai region of India. Journal of Geochemical Exploration DOI: 10.1016/j.gexplo.2018.06.010.
2. Bindal S, Tiwari A and H B Bohidar (2009) Kinetics of protein-protein complex coacervation and biphasic release of salbutamol sulfate from coacervate matrix. Biomacromol 10(1):184-189.
3. Shubhangi Kumar A, Balha A, Bindal S and Singh C K (2018) A comparative analysis of fluoride contamination in a part of Western India and Indus River Basin. In: Mukherjee A (eds.), Groundwater of South Asia. Springer ISBN 978-981-10-3889-1.

Biography

Sonal Bindal is perusing her PhD from Teri School of Advanced Studies and is interested in building a career in academics. Her thesis focused on studying arsenic contamination at grassroot level and applying geospatial modelling tools to predict for the same for Indo-Gangetic plains. She is also focused to understand the dynamics of socio-economic impacts on the rural population. She worked on other projects in the University based on community participation to implement adaptive strategies for arsenic free drinking water, watershed modelling, water resource management and land use/land change studies using remote sensing and GIS. It is on the basis of this extensive experience that I write a letter of my unequivocal support. She had completed her pre-PhD course work successfully. This program is designed to create a cadre of trained professionals who are equipped to deal with scientific, legal, socio-economic and policy aspects related to environment and resource management.

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4th International Conference on **Pollution Control & Sustainable Environment**

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6th Edition of International Conference on **Water Pollution & Sewage Management**

July 26-27, 2018 Rome, Italy

Role of surface functional groups in functionalized biochar for environmental remediation of antibiotics in single and competitive mode

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Functionalized biochar (fBC) was prepared through pyrolysis of woody biomass and functionalized using *o*H_3PO_4 acid. Characterizations of fBC were carried out using Fourier Transmittance Infrared spectroscopy (FTIR), Raman spectroscopy, X-ray photoelectron spectroscopy (XPS), ζ potential measurement, and scanning electron spectroscopy (SEM) with energy dispersive spectroscopy (EDS) analysis. FTIR result revealed that fBC contained –OH, -CH, C=O, C=C and –COOH functional groups, whereas Raman spectra clearly indicated the development of highly disordered structure (e.g. C-O, D band) along with graphitic structure (C=C i.e. G band) with increased intensity ratio (ID/IG). XPS result also confirmed that the present of C=C (at 284.8 eV), C-O (at 286.3 eV), C=O (at 287.8 eV), and -COOH (at 289.0 eV). ζ potential value was found to be at pH ~2.5. SEM showed development of microspore structure onto fBC surface. EDS data suggested that fBC mostly contained carbon (~75%), oxygen (~10%), nitrogen and phosphorous. The application of fBC at different pH to remove emerging contaminants antibiotics such as sulfathiazole (STZ), sulfamethazine (SMT), sulfamethoxazole (SMX) and chloramphenicol (CP) antibiotics in both single and competitive mode from water was found very effective. Maximum sorption capacity was observed at the pH range of 4.0-5.0 for all antibiotics. Functional groups of fBC played a vital role for removing those antibiotics at different pH. H-bond formation, π-π electron donor acceptor and electrostatic interactions were the main sorption mechanisms at different pH. The application of prepared fBC for treatment of antibiotics from different water and wastewater was successful. Therefore, fBC is a potent sorbent for removing antibiotics from water.

Image

Recent Publications

1. Mohammad Boshir Ahmed, Hao Ngo, Md. Abu Hasan Johir and Kireesan Sornalingam (2018) Sorptive removal of phenolic endocrine disruptors by functionalized biochar: competitive interaction mechanism, removal efficacy and application in wastewater. Chem. Eng. J. 335:801-811.
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3. Mohammad Boshir Ahmed, John L Zhou, Huu Hao Ngo, Wenshan Guo, Md. Abu Hasan Johir and Dalel Belhaj (2017) Competitive sorption affinity of sulfonamides and chloramphenicol antibiotics toward functionalized biochar for water and wastewater treatment. Bioresour. Technol. 238:306-312.
4. Mohammad Boshir Ahmed, John L Zhou, Huu Hao Ngo, Wenshan Guo, Md. Abu Hasan Johir and Kireesan Sornalingam (2017) Single and competitive sorption properties and mechanism of functionalized biochar for removing sulfonamide antibiotics from water. Chem. Eng. J. 311:348-358.

Biography

Mohammad B Ahmed is a final year PhD student at University of Technology Sydney (UTS), Australia. He is also serving as Technical Assistant at Environmental Engineering Research Laboratories. Before that, he has completed his graduation and post-graduation from Department of Applied Chemistry and Chemical Technology from University of Rajshahi, Bangladesh. He has published more than 20 papers (including 12 as first author) in reputed journals. He has received several awards including publication awards and award for finalist in NSW Young Water Profession of the Year 2017 awarded by UTS and Australian Water Association, respectively.

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Proposal and application of a new method to evaluate the odour impact index for high-impact activities.

Roberta Lotito and **Maria Laura Mastellone**
University of Campania Luigi Vanvitelli, Italy

Air quality has already an important role in the agenda of the worldwide organisations and government due to the presence of some compounds that could impact the ecosystem as well as the human health. Another interesting aspect related to the atmospheric quality is the odour nuisance. Indeed, there is the possibility that, even if the single compound does not exceed the limit imposed, the odour creates malaise among the population. To quantify the odour concentration from sources or near the receptor, it is common to use the dynamic olfactometry system for the first case and the field inspection for the second. However, both of these techniques require competent laboratories, long time analysis and cannot be used to predict the impact of future source. Therefore, since odour is a molecule characteristic, the chemical conversion it also used not only to evaluate the local impact but also to estimate potential impact from future facilities. This work presents a comparison of these conversion methods applied to a specific case study. In particular, the assessment of air quality is carried out on a highly industrialised area and in the near municipalities by passive sampler analysers. In addition, based on the well-known conversion and in consideration of the hedonic tone of single compound, it is proposed a new factor to evaluate the odour impact. The comparison between the official method and the new one proposed shows that the latter seams to assess better the odour impact perceived by the research group during the local inspection.

Biography

Roberta Lotito is a ph.D. student at University of Campania Luigi Vanvitelli in Environmenatl, Design and Innovation. Her thesis focuses on the integration of the odour impact evaluation in the envirmontal impact assessment procedures. She spent sixth months as visiting ph.D. student at Institue for Chemical and Fuels from Alternative Resource (ICFAR) of the Western Ontario University (Canada – 2017/2018) where she studied the local emission of the Landfill by using inverse modelling methodology. She won the "Best Italian Paper" award during the "Sardinia_2017 symposium" presenting part of her thesis work.

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