JOINT EVENT

5th International Conference on

Pollution Control and Sustainable Environment

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10th Edition of International Conference on

Water: Pollution, Treatment & Research

March 14-16, 2019 London, UK

Keynote Forum

Day 1

5th International Conference on **Pollution Control and Sustainable Environment**

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Olga S Naymushina

The V.S. Sobolev Institute of Geology and Mineralogy of the Russian Academy of Sciences (IGM SB RAS), Russia

Geochemical modeling in solving some environmental problems: Pollution of mining regions, radioactive wastes storage

This paper has two parts. The first briefly describes geochemical and geophysical investigations at the territory of gold tailings impoundment produced with cyanidation by the abandoned Komsomolsk Gold Extraction Plant, KGEP (Kemerovo region, Russia). The second part reflects on our recent studies in the area of the low-level waste repository of the Novosibirsk Plant of Chemical Concentrates, NPCC (Novosibirsk, Russia). The relatively low sulfide content in the Komsomolsk tailings result in a low acid producing potential (AP). The situation is complicated by the displaced Berikul tailings of the former Berikul GEP. In these tailings, the sulfide content is 25%, they have high AP and the formation of acidic surface ponds (pH~2) with high concentrations of metals and metalloids (as up to 4.1 g/L). Based on electrical resistivity tomography, the uncontrolled leakage of acidic and highly mineralized solutions through a natural geological fault into groundwater horizons was revealed. Uranium contamination of groundwater is prevalent worldwide because of uranium extraction for nuclear energy and weapons. An experimental modeling has been carried out to convert U(VI) to species with low solubility *via* metabolic process. The removal of nitrates, sulfates and U(VI) reduction due to the stimulated microbiological activity was proved. Within 13 days after the start of serum injections, reducing conditions was indicated and the sharp decrease in nitrate concentrations was observed. Sulfate reduction was established approximately 50 days later as indicated by the increase in sulfide concentrations. Model calculations by computer code "HCh" have approved precipitation of β-UO2.25(s) at Eh+115 mV and precipitation of UO_2(s) after the fall of Eh to -397 mV. The developed model can be used as a starting point of assessment of the redox sensitive elements behavior in the process of bioremediation.

Biography

Olga S Naymushina completed her PhD from Tomsk Polytechnic University, Russia in geochemistry of organic reach groundwater (2014). She is currently a Senior Staff Scientist at The V.S. Sobolev Institute of Geology and Mineralogy of the Russian Academy of Sciences (IGM SB RAS), Russia. She has published more than 20 papers in reputed journals. She is the Head of the project of Russian Science Foundation named "Immobilization of heavy metals by natural and modified biosorbents".

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John Attridge

Chelsea Technologies Group Ltd, UK

Traceability and linearisation of *in situ* fluorescence measurements using the new V-Lux sensor

Fluorescence has been used to monitor water quality for many years, initially within the laboratory and more recently in the field. The technique provides benefits in both sensitivity and specificity. Targeted compounds include Algae and Dye Tracing chemicals in the visible region of the spectrum and aromatic/heterocyclic hydrocarbons, tryptophan and optical brighteners at UV wavelengths. However, field fluorometers can be challenged by interfering fluorescence from non-target compounds, which can directly impact the accuracy of the readings obtained, which has limited their use. Further, non-linearity in the response can arise when either concentrations of the targeted compounds reach a level where absorption become significant, or turbidity levels are high, which limits the range of standard *in-situ* fluorometers.

To overcome these issues, CTG has developed the V-Lux multiparameter fluorometer. This *in-situ* sensor provides 3 fluorescence channels combined with optical absorbance and turbidity measurements. The latter two parameters are used to correct the fluorescence readings to provide a linear response over an extended dynamic range. The provision of three fluorescence channels allows non-specific background interferences to be assessed and eliminated.

A new calibration methodology has also been developed that reports fluorescence output intensity relative to a traceable Quinine Sulphate fluorescence standard. This approach ensures that the outputs from all fluorometer channels can be compared directly, without reference to the specific calibration compounds used. The approach also allows different fluorometers to be compared directly, which has not been possible up until now and has inhibited the wider uptake of fluorescence as a monitoring tool.

Biography

John has worked in industry for 30 years developing optically based analytical instrumentation. After gaining his PhD in Optical Sensing at Imperial College in 1986, he joined the Biosensors Group at Unilever's Central Research Laboratories to develop novel optical waveguide biosensing techniques. In 1987 he moved to Serono Diagnostics to commercialize both optical biosensors and fully automated medical diagnostics systems. In 1992 he co-founded a small consultancy company with the aim of exploiting expertise in analytical instrumentation before joining the Chelsea Technologies Group (CTG) in 1997. At CTG he has managed a range of system developments including: low cost photometers for the Point of Care market, sophisticated realtime PCR instrumentation for molecular diagnostics and a portable microarray processor for security applications. As Technical Director he is also responsible the development, manufacture and support of CTG's own range of oceanographic, environmental and maritime sensor systems; leading the development of visible and UV fluorimeters for algal analysis and water quality monitoring.

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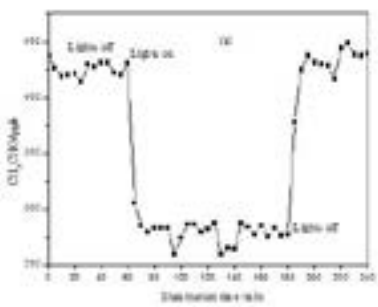
Adel A Ismail

Kuwait Institute for Scientific Research, Kuwait

A comparative study on mesoporous TiO_2 film deposited onto diverse glass substrates for photooxidation of acetaldehyde in gas phase

Mesoporous TiO_2 films were dip-coated diverse conductive glass substrates such as Indium Tin Oxide (ITO) and F-doped Tin Oxide (FTO) as well soda-lime glass (SL). The mesoporous TiO_2 films were assessed for their photodegradation for CH_3CHO oxidation in gas phase as a probe molecule and compared with both nonporous TiO_2 film deposited on FTO and commercial Pilkington Glass. The thickness and surface areas of the mesoporous TiO_2 films was determined to be around 228±10, 184 ±15 and 205 ±15 nm and 215, 352 and 295 m^2/cm^3 deposition on SL, FTO and ITO, respectively. The prepared mesoporous TiO_2 film deposited on SL, FTO and ITO are more photonic efficiency than nonporous TiO_2 film and Pilkington Glass. The photonic efficiency of mesoporous TiO_2 film is the following order FTO> ITO > SL. The photonic efficiency of TiO_2/FTO is greater 21 and 3 times than that commercial Pilkington Glass ActivTM and nonporous TiO_2/FTO, respectively. In addition, the outstanding photocatalytic activity of mesoporous TiO_2/FTO substrate is shown in recycling tests in which no significant reduce in the photonic efficiency was recognized after five repetitive times for 10 hours continuously, indicating a promising materials for potential applications.



Photocatalytic activity of mesoporous TiO_2 deposited on FTO for degradation of CH_3CHO in gas phase.

Recent Publications

1. Al-Hajji LA., Ismail AA, Faycal Atitar M (2019) Construction of heterostructured mesoporous g-C_3N_4/TiO_2 nanocrystals with enhanced photocatalytic performance, Ceramics International 45: 1265-1272 .

2. Khedr TM, El-Sheikh SM, Ismail AA (2019) Highly efficient solar light-assisted TiO_2 nanocrystalline for degradation of ibuprofen drug, Optical Materials 88: 117-127.
3. Harraz FA, Faisal M, Ismail AA, S. (2019) TiO2/reduced graphene oxide nanocomposite as efficient ascorbic acid amperometric sensor, Journal of Electroanalytical Chemistry, , 832, 225-232.
4. Ismail AA., Abdelfattah I, Faisal M, Helal A (2018) Efficient photodecomposition of herbicide imazapyr over mesoporous Ga_2O_3-TiO_2 nanocomposites, Journal of Hazardous Materials 342: 519-526.
5. Ismail AA, Faisal M, Al-hadad A (2018) Photocatalytic degradation of MB dye using WO3-Graphene photocatalyst under visible light, Journal of Environmental Sciences 66 : 328-337.

Biography

Adel A. Ismail is a Research Scientist in Nanotechnology and Advanced Materials Program, EBRC at Kuwait Institute for Scientific Research, KISR. He joined KISR two years ago. He received his PhD. degree in Chemistry from Ain Shams University in 2001, Cairo, Egypt. Ismail carried out postdoctoral research at University of Florida at Material Science Department, USA (2003), National Institute of Advanced Industrial Science & Technology, Sendai, Japan (2005-2007), and Photocatalysis and Nanotechnology Research Unit at University Hannover (2008-2010). His research interests include design development porous photocatalysts and photocatalytic applications in destruction of organic compounds, hydrogen production, chemical engineering of photocatalytic processes, and self-cleaning. He has published more than 130 international scientific papers and his publications have been cited more than 4600 times with h-Index: 40. He is acted (or still acts) as project coordinator or project leader in many academic and industrial programs.

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Bassem Nassouhy Abdelrahman Attwan

Scientific Business Solutions Group of Companies, Egypt

Key success factors for applying environmental management system and its role in pollution control

Air pollution can directly or indirectly affect human health, causing physical discomfort and leading to disease or even death. Studies have shown that when the human body is exposed to highly polluted air for a long time, the mortality rate increases. Furthermore, air pollution has become the fourth primary risk factor for all deaths after heart attack, dietary risk and smoking, according to the latest statistics. In recent years, there have been frequent haze weather events in many places where the air quality was mostly between 'moderate' and 'unhealthy for sensitive groups. Studies show that under such air conditions, the mortality rate from cardiovascular and cerebrovascular diseases and the prevalence of asthma and respiratory diseases both increase. This paper's foremost objective focus on air pollutants classifications: Primary and Secondary defining its various sources like: Acid rains, Green House effect, Smog and its types, …etc. The global greenhouse effect – also called global warming – concerns us now because atmospheric CO_2 concentrations are increasing faster than ever, and because most of the increase is due to industrial growth. Many scientists predict that unless we do something to impede global warming, it may: – Increase the number and intensity of dangerous heat waves – Increase severe storm activity – Damage certain crops – Raise the average sea level. These in turn will increase weather-related deaths, damage coastal cities and towns, and ruin coastal ecosystems. It is still hard to find a consensus on global warming. Different experts use different models and even different data sets. Some believe global warming is imminent and predict that it will cause catastrophic damage. Others are far less concerned. Until the science is more definitive, the global-warming debate will continue to be governed by Robinson's Rule of Expert Testimony: "For any given PhD, there is an equal and opposite PhD. While, the at-most objective of the paper will focus on applying Environmental Management system to control air pollution.

Biography

Bassem Nassouhy is a multi-skilled Consultant, International Speaker & Trainer in various field of business, with a proven track record in particular area of business expertise such as Environment, Health & Safety as well as waste management as an expert in those fields with PhD, MBA & various post-graduate diplomas as well as various international well recognized certifications with vast expertise based on +20 years of diversified experience with multinational groups JICA, Samil, EDF, Orascom, Lafarge, LafargeHolcim, EcoCem Industrial Ecology & Geocycle in different countries in addition to delivering during previous 15 years a part-time third party & voluntary consultancy, training based on international standards and presenting research papers in various international conferences. He has the experience with a proven track record of creating great lobbying in the community, particularly with governmental authorities in addition to various awards and recognitions particularly within GCC governmental authorities.

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