28 June 2021 (Monday)

7.00pm-8.30pm (SGT) (GMT +8)
Session 2.5 – Emerging Contaminants - Practice and Science

Session Chair(s): Hadas Mamane, Tel Aviv University, Israel

Mitigating PFAS - An Emerging Concern For The Global Community, Demanding Technical Solutions

K. Amstaetter, R. Bufler, D. Chiang, J. Frangos. CDM Smith Consult GmbH (Germany)

CDM Smith is working with its global network of specialists on technical and regulatory solutions for handling the emerging compounds Per- and polyfluoroalkyl substances (PFAS). We are leading in development of fate and transport characterization, novel treatment techniques to clean-up water, designing treatment plants for drinking water, groundwater, waste water and solid waste landfill leachate and support authorities in decision-making for legal regulations.

AMOZONE: A Novel Kinetic Ozonation Model For Prediction Of Bromate Formation, Bromate Mitigation and Trace Organic Contaminant Removal

W. Audenaert, G. Bellandi, M. Pearce, I. Takacs. AM-TEAM (Belgium)

A novel kinetic ozonation model is presented that predicts trace organic contaminant (TrOC) removal and bromate formation in real water and wastewater matrices. The model was developed in the framework of the large scale indirect potable reuse project SWIFT (swiftva.com) by the utility HRSD (VA, US). The model was developed and calibrated based on real plant data. Based prediction of ozone and hydroxyl radicals (HO*), and equations describing the interaction with the bulk organic matrix, oxidation of TrOCs of interest can be assessed. Bromate is calculated based on ozone and HO* exposure. Different bromate suppression strategies, such as monochloramine addition, can be assessed with the model. The model will be used for optimal train configuration and better reactor design, maximizing TrOC removal while minimizing bromate formation.

State Of The Art On Suspended Ion Exchange (SIX®): Essential Design Parameters For A Full-scale Application

E. Vaudevire, E. Koreman, M. Sijm. PWNT (Netherlands)

Extensive research at the PWNT R&D department (Andijk, The Netherlands) has provided a solid basis for an appropriate design and proper operation of (full scale) Suspended Ion Exchange (SIX®) treatment systems, allowing reduction of Dissolved Organic Matter (DOM) and color with 60% or more. With resin dosages between 10 and 25 mL/L a “near equilibrium sorption’ state is reached within about 25 - 30 minutes contact time. A series of five completely mixed tank reactors is sufficient to achieve satisfactory results. DOM adsorption kinetics can be accurately described according to a first order Lagergren differential equation. The (chloride) counter anion demand during regeneration is mainly determined by both alkalinity and sulphate anions. As a result, SIX® is in particular ideally suited for the treatment of ‘peaty waters’ (high DOC and color) with low anion content, because of limited regenerant volumina, needed for a proper regeneration of the resin.