

DehaloCon III 2021

SEPT 27- SEPT 30, ROME



ITALY

Third International Conference on Anaerobic Biological Dehalogenation

PROGRAMME

DehaloCon III Virtual Conference

- All times in CEST (UTC +02:00) -

Monday, 27th September 2021

13:00 – 13:10 Welcome and opening

SESSION 1: ANAEROBIC DEHALOGENATION IN PRISTINE AND CONTAMINATED ENVIRONMENTS

Session 1.1 - Chair: Dr Frank Loeffler

13:10 – 13:40 Keynote lecture – Dr. Jianzhong He “A Journey to Discover Microorganisms that Respire Persistent Organic Pollutants”

Oral and flash-poster presentations

13:40 – 14:00 “Alleviation of N₂O-induced inhibition of organohalide respiration by clade I and clade II N₂O reducers” Yin Y, Kara Murdoch F, Xie Y, Sun Y, Löffler FE - *Networking Room #1*

14:00 – 14:20 “Organohalide-respiring bacteria in polluted urban rivers employ novel bifunctional reductive dehalogenases to dechlorinate polychlorinated biphenyls and perchloroethene” Wang S, Qiu L, Liang Y, Lu Q, Mai B - *Networking Room #2*

14:20 – 14:40 “Dehalococoides enrichments reductively dechlorinate two chlorinated organophosphate esters” Zhong Y, Zhu X, Peng P - *Networking Room #3*

14:40 – 15:00 “The synergistic associations between methanogenesis and reductive dechlorination of chlorinated organic pollutants (COPs) in situ” He Y, Yuan J, Cheng J, Yang X, Xu J - *Networking Room #4*

15:00 – 15:04 “Complete reductive dechlorination of TCE with wood mulch-based amendment as electron donor in bench-scale microcosm studies” Masut E, Ferioli L, Legnani A, Battaglia A, Tucci M, Maturro B, Rossetti S, Aulenta F (Flash-poster) - *Networking Room #5*

15:05 – 15:20 Networking Session 1.1, Meet the authors

Session 1.2 - Chair: Dr Ivonne Nijenhuis

15:20 – 15:50 Keynote lecture – Prof Max M. Häggblom “Organohalide-respiring bacteria in the marine environment”

Oral and flash-poster presentations

15:50 – 16:10 “Reductive dechlorination sustained by microbial chain elongation” – Robles A, Yellowman TL, Rangan SM, Joshi S, Delgado AG - *Networking Room #6*

16:10 – 16:30 “Biogeography of organohalide-respiring bacteria and their roles in biotransforming halogenated persistent organic pollutants in wastewater treatment plants” – Xu G, He J - *Networking Room #7*

16:30 – 16:50 “Dual C-Cl isotope analysis for characterizing anaerobic transformation of hexachlorocyclohexanes by different consortia enriched from contaminated soil” – Liu Y, Zheng Y, Kümmel S, Nijenhuis I, Richnow H-H - *Networking Room #8*

16:50 – 17:10 “Effects of temperature on trichloroethene dechlorination potential, methanogenesis, and microbial community in contaminated sediment” - Bin Hudari MS, Deb S, Gargini A, Filippini M, Richnow HH, Vogt C, Nijenhuis I - *Networking Room #9*

17:10 – 17:14 “Dual element (C/Cl) isotope analysis and proteomics during trichloromethane degradation by a Dehalobacter-containing culture” Soder-Walz JM, Torrentó C, Wasmund K, Adrian L, Rosell M, Vicent T, Marco-Urrea E (Flash-poster) - *Networking Room #10*

17:15 – 17:30 Networking Session 1.2, Meet the authors

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Tuesday, 28th September 2021

SESSION 2. ORGANOHALIDE RESPIRATION: BIOCHEMISTRY, ARCHITECTURE, REGULATION AND ECOPHYSIOLOGY

Chair: Dr. Shanquan Wang

13:00 – 13:30 Keynote lecture - Dr. Jun Yan "Corrinoid metabolism and utilization in organohalide-respiring bacteria"

Oral and flash-poster presentations

13:30 – 13:50 "Organohalide respiration with vinyl chloride by a novel anaerobic bacterium, 'Candidatus Dehalogenimonas etheniformans'" **Chen G**, Kara Murdoch F, Xie Y, Yang Y, Yan J, Löffler FE - *Networking Room #1*

13:50 – 14:10 "Substrate-dependent competition and cooperation relationships between Geobacter and Dehalococcoides for their organohalide respiration" **Lu Q**, Liang Y, Wang S - *Networking Room #2*

14:10 – 14:30 "On the hot track of the membrane-bound organohalide respiration complex from Dehalococcoides mccartyi strain CBDB1" **Deobald D**, Budhraj R, Adrian L - *Networking Room #3*

14:30 – 14:50 "Absolute quantification of pceABCT gene products and characterization of the membrane protein complex responsible for the reduction of tetrachloroethene in Dehalobacter restrictus" **Cimmino L**, Duarte AG, Schmid A, Pereira IAC, Holliger C, Maillard J - *Networking Room #4*

14:50 – 15:10 "Complex I-like enzymes in organohalide-respiring bacteria" **Willemin M**, Armand F, Hamelin R, Holliger C, Maillard J - *Networking Room #5*

15:10 – 15:14 "Electron density is not an only factor governing microbial reductive dechlorination of polychlorinated biphenyls" **Zhang S**, Wang S (Flash-poster) - *Networking Room #6*

15:15 – 15:30 Networking Session 2, Meet the authors

SESSION 3. OMICS AND META-OMICS OF ORGANOHALIDE-RESPIRING AND NON-RESPIRING BACTERIA

Chair: Prof Elisabeth Edwards

15:35 – 16:05 Keynote lecture – Prof. Lorenz Adrian "Metabolic integration of organohalide respiration in Dehalococcoides-related Chloroflexi (Dehalococcoidia)"

Oral and flash-poster presentations

16:05 – 16:25 "Genetic basis for anaerobic dichloromethane catabolism" **Murdoch RW**, Chen G, Kara Murdoch F, Mack EE, Villalobos Solis MI, Hettich RL, Löffler FE - *Networking Room #1*

16:25 – 16:45 "Ecology and evolution of organohalide-respiring Dehalococcoidia: a genomic perspective" **Yang Y**, Yan J, Löffler FE, Chen G, Li X, Cápiro NL - *Networking Room #2*

16:45 – 17:05 "Dehalogenation of lindane (γ -hexachlorocyclohexane) by Dehalobacter sp. HCH1" **Puentes Jácome LA**, Nesbø C, Wang PH, Picott K, Perera D, Lomheim L, Gaspard S, Tang X, Edwards EA - *Networking Room #3*

17:05 – 17:25 "Phage-inducible chromosomal islands identified in Dehalococcoides mccartyi and Dehalogenimonas alkenigignens" **Morson N**, Molenda O, Maxwell KL, Edwards EA - *Networking Room #4*

17:25 – 17:29 "Metagenomic analysis of dehalogenating microorganisms from a polychlorobiphenyl (PCB) contaminated sediment in Mar Piccolo (Taranto, Italy)" **Firriacieli A**, Zanolli G, Cappelletti M (Flash-poster) - *Networking Room #5*

17:30 - 17:45 Networking Session 3, Meet the authors

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Wednesday, 29th September 2021

SESSION 4. BIOELECTROCHEMICAL OHR: FUNDAMENTAL ASPECTS AND ENGINEERED SOLUTIONS

Session 4.1 - Chairs: Dr Aulenta Federico, Dr Tobias Goris

13:00 – 13:30 Keynote lecture – Prof. Mauro Majone “Fundamentals and advances on bioelectrochemical dechlorination”

Oral and flash-poster presentations

13:30 – 13:50 “Exploring the microorganisms for achieving the bioelectrochemical dechlorination of Dehalococcoides via extracellular electron transfer”
Meng L, Yoshida N - *Networking Room #1*

13:50 – 14:10 “Exogenous electronic regulation enhances the decomposition and transformation of TBBPA and the related microbial mechanism” **Li Z, Lin X, Wang A** - *Networking Room #2*

14:10 - 14:30 “Metagenomics of a bioelectroremediation system treating TCE and Cr(VI) co-contamination: revealing microbial diversity and interactions”
Matturo B, Zeppilli M, Lai A, Majone M, Rossetti S - *Networking Room #3*

14:30 – 14:50 “Electrode material selection and voltage operation in a Dehalogenimonas-containing bioelectrochemical system degrading 1,2-dichloropropane” **Fernández-Verdejo D, Cortés P, Blázquez P, Marco-Urrea E, Guisasaola A** - *Networking Room #4*

14:50 – 15:05 Networking Session 4.1, Meet the authors

Session 4.2 - Chairs: Dr Aulenta Federico, Dr Tobias Goris

Oral and flash-poster presentations

15:05 – 15:25 “A Sequential Reductive/Oxidative Bioelectrochemical process for chlorinated aliphatic hydrocarbons (CAHs) Removal: Evaluation of the process with a real contaminated Groundwater” **Dell’Armi E, Zeppilli M, De Santis F, Majone M, Petrangeli Papini M** - *Networking Room #5*

15:25 – 15:45 “Microbiome composition and dynamics in a reductive/oxidative bioelectrochemical system for perchloroethylene (PCE) removal: the effect of feeding composition. **Di Franca ML, Matturo B, Zeppilli M, Dell’Armi E, Petrangeli Papini M, Majone M, Rossetti S** - *Networking Room #6*

15:45 – 16:05 “Bioelectrochemical treatment of groundwater containing oxidable and reducible contaminants” **Cruz Viggì C, Tucci M, Milani A, De Laurentiis C, Resitano M, Crognale S, Matturo B, Rossetti S, Aulenta F** - *Networking Room #7*

16:05 – 16:20 Networking Session 4.2 – Meet the authors

16:20 – 16:50 e-POSTER SESSION

ePOSTER ROOM#1

- “Soil management plan to sustain PFAS degradation by novel Acidimicrobia” (Appeldoorn P, Brogioli F, **van Bommel M**)
- “Expression and Investigation of the Reductive Dehalogenase Enzyme Family” (**Picott KJ**, Edwards EA)
- “Cofactor selectivity of a minimized cobamide-binding protein (**Petre E**, Kruse S, Schubert T)
- “Insights into the structure of the organohalide respiratory complex from Dehalococcoides mccartyi strain CBDB1 by using chemical modifications” (**Hellmold N**, Eberwein M, Deobald D, Adrian L)
- “RNA Sequencing of Dehalococcoides mccartyi Strain CBDB1 Reveals Differential Expression of Reductive Dehalogenase Genes with 1,2,4- and 1,2,3-Trichlorobenzene” (**Greiner-Haas F**, Goris T, Förstner K, Türkowsky D, von Bergen M, Sawers G, Lechner U).
- “Metagenomic analysis of a novel Dehalococcoides mccartyi enrichment culture capable of PCE-to-ethene dechlorination” (**Matturo B**, Rossetti S)

ePOSTER ROOM#2

- “Dichloromethane degradation by an anaerobic microbial community used for chloroform bioremediation” (**Bulka O**, Webb J, Dworatzek S, Mahadevan R, Edwards EA)
- “The effect of humic acids on perchloroethene dechlorination by Dehalococcoides strains under anaerobic conditions” (**Wan J**, Shen C, Adrian L)
- “Colonization and growth of dehalorepiring biofilms on sportive amendments” (**Capozzi SL**, Payne RB, Sowers KR, Kjellerup BV).
- “Host Specificity of Sponge-Associated Dehalogenating Bacteria” (**Hall LA**, Decker K, Scott K, Kerkhof L, Haggblom M)
- “Potential factors affecting dichloromethane biodegradation upon water table fluctuation” (**Lazaro Sanchez C**, Prieto M, Vuilleumier S, Imfeld G, Muller EELI)
- “Using cryo-EM to probe structures of hydroalkylation enzymes with potential use in bioremediation of crude-oil polluted regions” (**Andorfer MC**, King-Roberts DT, Levitz TS, Drennan CL)

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ePOSTER ROOM#3

- “Meta-analysis and Experimental Studies on Anaerobic Biodegradation and Biotransformation of Simple and Polyfluorinated Compounds” (Skinner J, Robles A, Raderstorf A, Palar S, Allen C, Delgado A)
- “Reductive Dehalogenation of Tetrabromobisphenol A in an Enrichment Culture Dominated by Dehalobacter spp.” (Liu G, Qiao W, Li Z, Jiang J)
- “Effect of e- donors on the Chloroethene Dechlorination and Pathogenic Risk in Groundwater Augmented with Dehalococcoides” (Tomita R, Meng L, Yoshida N)
- “Molecular characterization of microbial communities in a peat-rich aquifer system contaminated with chlorinated aliphatic compound” (Fedi S, Filippini M, Cappelletti M, Firrincieli A, Gargini A, Ghezzi D)
- “Enhancement of perchloroethene dechlorination by a mixed dechlorinating culture via magnetic nanoparticle-mediated isolation method” (Chen K, Liu Z, Wang X, Yu C, Ye J, Yu C, Wang F, Shen C)

Thursday, 30th September 2021

SESSION 5. OHR field-scale application

Session 5.1 - Chair: Prof Marco Petrangeli Papini

13:00 – 13:30 Keynote Lecture – Prof. Birthe Veno Kjellerup “Biofilm based bioremediation of chlorinated contaminants”

Oral and flash-poster presentations

13:30 – 13:50 “PHA-based material from pure and mixed microbial culture as slow-release electron donor for sustainable in situ biological reductive dechlorination” Amanat N, Andreini F, Rossi MM, Matturro B, Rossetti S, Majone M, Petrangeli Papini M - *Networking Room #1*

13:50 – 14:10 “Cultivation of Dehalococcoides mccartyi strain CBDB1 in a continuous stirred tank reactor” Reino C, Ding C, Adrian L - *Networking Room #2*

14:10 - 14:30 “Using a biosolids-amended trench to enhance reductive dehalogenation of TCE contaminated groundwater in a biowall” Safari Ghandehari S, Boyer J, Ronin D, Hapeman CJ, Schanzle D, Torrents A, Kjellerup BV - *Networking Room #3*

14:30 – 14:50 “Field application of a reagent for the ISC and ERD treatment of an aquifer contaminated with tetrachlorethylene, dichloropropane E R-130” Leombruni A, Mueller M, Collina L - *Networking Room #4*

14:50 – 14:54 “Natural-occurring microbial community in an organohalide polluted aquifer: preliminary evaluation of the effectiveness of permeable reactive bio-barriers for decontamination” Bertolini M, Zecchin S, Beretta G, Masetti M, Pietrangeli B, Cavalca L (Flash-poster) - *Networking Room #5*

14:55 – 15:10 Networking Session 5.1 – Meet the authors

Session 5.2 - Chair: Prof Birthe Kjellerup

Oral and flash-poster presentations

15:10 – 15:30 “Lessons learned from the study of microbial communities in sediment for the design of bioremediation strategies” Herrero J, Puigserver D, Nijenhuis I, Carmona JM - *Networking Room #6*

15:30 – 15:50 “A Coupled Adsorption and Biodegradation (CAB) process employing PHB and Biochar as bio-based materials for TCE contaminated groundwater in-situ bioremediation” Rossi MM, Andreini F, Caruso P, Amanat N, Matturro B, Rossetti S, Petrangeli Papini M - *Networking Room #7*

15:50 – 16:10 “Dehalococcoides-mediated in situ remediation of vinyl chloride contaminated site” Wu R, Wang S - *Networking Room #8*

16:10 – 16:14 “Bioremediation of chlorinated compounds: examples of practical approaches using Next Generation Sequencing” Brogioli F, van Bommel M, Appeldoorn P (Flash-poster) - *Networking Room #9*

16:15 – 16:30 Networking Session 5 – Meet the authors

16:30 – 16:45 Prizes for the best oral presentations and posters

16:45 – 17:00 Closure

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