

## Sustainable Agri-Food Industry – Use of Ozone & Related Oxidants

### DETAILED CONFERENCE PROGRAMME

#### Monday 29 October

8h30 – 9h30	<b>REGISTRATION AND WELCOME COFFEE</b>
9h00	<b>EXHIBITION OPEN</b>
9h30 – 11h00	<b>SCIENTIFIC SESSION 1 - PLENARY SESSION</b>
9h30 - 9h45	<b>1.1 Introduction</b> <i>P. Liechti, S. Baig</i> , IOA-EA <sub>3</sub> G
9h45 - 10h05	<b>1.2 Challenges in the agri-food industry</b> <i>S. Subirats</i> or <i>M. Blasco</i> , Research Association on Food Industry (ainia Technological Centre), Paterna, Valencia (Spain)
10h05 - 10h25	<b>1.3 Context and basics for ozone application</b> <i>S. Baig</i> <sup>1</sup> , <i>M. Roustan</i> <sup>2</sup> , <sup>1</sup> Degrémont SA, Rueil-Malmaison (France), <sup>2</sup> Institut National des Sciences Appliquées, Toulouse (France)
10h25 - 11h00	<b>1.4 IOA-PAG user success reports – Commercial applications of ozone in agri-Foods</b> <i>R. G. Rice</i> , RICE International Consulting Enterprises, Sandy Spring, MD (USA)
11h00 – 11h30	<b>Coffee break</b>
11h30 – 13h30	<b>SCIENTIFIC SESSION 2 - BASIC PRINCIPLES</b>
11h30 - 11h50	<b>Introduction to exhibition</b> Adamant, Airsep Corporation, Copersa - Mazzei Injector Corporation, ITDI - MGC Limpiezas, ITT - Wedeco
11h50 - 12h10	<b>2.1. Simulation of nitrogen effect on the ozone production</b> <i>K. Hadji, A. Hadji, S. Hadj-Ziane</i> and <i>A. Belasri</i> , IBN Khaldoun University, Tiaret (Algeria)
12h10 - 12h30	<b>2.2. Ozonation process for removal and transformation of Pharmaceuticals and Personal Care Products (PPCPs) and Endocrine Disrupting Compounds (EDCs) in source waters of Detroit River watershed</b> <i>S. Tabe</i> <sup>1 &amp; 2</sup> , <i>C. Yue</i> <sup>2</sup> , <i>R. Seth</i> <sup>2</sup> , <i>P. Yang</i> <sup>3</sup> , <i>X. Zhao</i> <sup>3</sup> , <i>C. Hao</i> <sup>3</sup> , <i>L. Schewitzer</i> <sup>4</sup> , <i>T. Jamal</i> <sup>1</sup> , <sup>1</sup> Ministry of the Environment, Toronto (Canada); <sup>2</sup> University of Windsor (Canada); <sup>3</sup> Ministry of the Environment, Etobicoke (Canada); <sup>4</sup> Oakland University, Rochester (USA)
12h30 - 12h50	<b>2.3. Biogas production of ozone and/or microwave pretreated canned maize production sludges</b> <i>S. Beszédes, S. Kertész, Z. László, C. Hodúr, G. Szabó</i> , University of Szeged (Hungary)
12h50 - 13h10	<b>2.4. Effectiveness of advanced oxidation processes with O<sub>3</sub> and O<sub>3</sub>+H<sub>2</sub>O<sub>2</sub> in pesticides degradation</b> <i>N. Miguel, M. P. Ormad, M. Lanao, C. Ibarz, J. L. Ovelleiro</i> , University of Zaragoza (Spain)
13h10 - 13h30	<b>2.5. The biologically processes modelating by using high intense electric fields with ozone generation</b> <i>I. Munteanu</i> <sup>1</sup> , <i>I. Suarasan</i> <sup>2</sup> , <i>A. Iuga</i> <sup>2</sup> , <i>R. Iuoras</i> <sup>3</sup> , <i>M. Munteanu</i> <sup>4</sup> , <i>E. Merce</i> <sup>3</sup> , <i>A. Mischian</i> <sup>1</sup> ; <sup>1</sup> Ecological Research Center, Turda (Romania), <sup>2</sup> Technical University, Cluj-Napoca (Romania), <sup>3</sup> University of Agricultural Science and Veterinary Medicine, Cluj-Napoca (Romania), <sup>4</sup> Agricultural Development Research Station, Turda (Romania)

## Sustainable Agri-Food Industry – Use of Ozone & Related Oxidants

### Monday 29 October

13h30 – 15h00

Lunch

15h00 – 16h40

### SCIENTIFIC SESSION 3 - GROWING OF FOODS

15h00 - 15h20

#### 3.1 The PhytO3 Tech Crop protection technology for microorganism and insect control using ozone, UV, and dipole-electrical air jet spray technologies – Technical basis and chemistries involved

*H. Steffen*<sup>1</sup>, *R. G. Rice*<sup>2</sup>, <sup>1</sup>Hanspeter Steffen, Utzensdorf (Switzerland); <sup>2</sup>RICE International Consulting Enterprises, Sandy Spring, MD (USA)

15h20 - 15h40

#### 3.2 The PhytO3 Tech Crop protection technology - Trial Results in a 2,700 ha (6,500 acre) soy farm in Brazil

*H. Steffen*<sup>1</sup>, *R. G. Rice*<sup>2</sup>, <sup>1</sup>Hanspeter Steffen, Utzensdorf (Switzerland); <sup>2</sup>RICE International Consulting Enterprises, Sandy Spring, MD (USA)

15h40 - 16h00

#### 3.3 Effects of ozonated water on antioxidant and phytohormones level of vegetable

*G. Y S Chan*<sup>1</sup>, *Y. Li*<sup>2</sup>, *E. K H Lam*<sup>3</sup>, *C. Y Chen*<sup>1</sup>, *L. Lin*<sup>2</sup>, *T. Luan*<sup>2</sup>, *C. Lan*<sup>2</sup>, *P. H W Yeung*<sup>4</sup>, <sup>1</sup>Hong Kong Polytechnic University (PR China); <sup>2</sup>Zhongshan (Sun Yat-Sen) University, Guangzhou (PR China); <sup>3</sup>Great Lucky Holdings Group Limited, Hong Kong & Bio-Treat Technology Limited, Hong Kong (PR China); <sup>4</sup>China Agriculture Development Company Limited, Guangzhou (PR China)

16h00 - 16h20

#### 3.4 Increase of corn seeds germination by oxygen and ozone treatment

*F. Violleau*<sup>1</sup>, *K. Hadjeba*<sup>1</sup>, *J. Albet*<sup>2</sup>, *R. Cazalis*<sup>1</sup>, *O. Surel*<sup>1</sup>, <sup>1</sup>El-Purpan, Toulouse (France); <sup>2</sup>ENSIACET, Toulouse (France)

16h20 – 16h50

### SCIENTIFIC SESSION 4 – POSTER INTRODUCTION

16h20 - 16h25

#### 4.1 Intelligent Gap System for industrial ozone generation

*S. Baig*<sup>1</sup>, *B. Paolini*<sup>2</sup>, <sup>1</sup>Degrémont, Rueil-Malmaison (France), <sup>2</sup>Degrémont Technologies, Dubendorf (Switzerland)

16h25 - 16h30

#### 4.2 Control of *Pyrenochaeta Lycopersici* on tomato by ozone disinfection

*F. Ciccicarese*<sup>1</sup>, *N. Sasanelli*<sup>2</sup>, *A. Ciccicarese*<sup>3</sup>, *T. Ziadi*<sup>1</sup>, *A. Ambrico*<sup>3</sup>, *I. Papajova*<sup>4</sup>, <sup>1</sup>Department of Biology and Plant Pathology, University of Bari (Italy); <sup>2</sup>Institute for Plant Protection, C.N.R., Bari (Italy), <sup>3</sup>Agrimed s.a.s., Le Cavallino (Italy), <sup>4</sup>Parasitological Institute, SAV, Košice (Slovak Republic).

16h30 - 16h35

#### 4.3 Effect of gaseous ozone on quality and shelf-life of fresh COD (*Gadus Morhua*)

*M.J. Cantalejo*, Public University of Navarre (UPNA), Pamplona (Spain)

16h35 - 16h40

#### 4.4 Advanced oxidation processes for the organic matter removal of agro-food brine wastewater

*M. Fiter*<sup>1</sup>, *A. Canut*<sup>1</sup>, *G. Badal*<sup>2</sup>, *A. Pascual*<sup>1</sup>, <sup>1</sup>Association on Food Industry (ainia Technological Centre), Paterna, Valencia (Spain); <sup>2</sup>ATECMA, Grupo G&C Group, Castelló (Spain)

16h40 - 16h45

#### 4.5 Ozonation process for the regeneration and recycling of spanish greentable olive fermentation brines

*P. Garcia-Garcia*, *A. Garrido-Fernández*, *K. A. Segovia-Bravo*, *F. N. Arroyo-López*, *A. López-López*, Instituto de la Grasa, Sevilla (Spain)

16h45 - 16h50

#### 4.6 Seed disinfection by ozone treatments

*F. Ciccicarese*<sup>1</sup>, *N. Sasanelli*<sup>2</sup>, *A. Ciccicarese*<sup>3</sup>, *T. Ziadi*<sup>1</sup>, *A. Ambrico*<sup>3</sup>, *L. Mancini*<sup>1</sup>, <sup>1</sup>Università degli Studi di Bari (Italy); <sup>2</sup>Istituto per la Protezione delle Piante, CNR, Bari (Italy); <sup>3</sup>Agrimed s.a.s., Le Cavallino (Italy)

## Sustainable Agri-Food Industry – Use of Ozone & Related Oxidants

Tuesday 30 October

8h30

EXHIBITION OPEN

8h30 – 13h30

SCIENTIFIC SESSION 5 - STORAGE OF FOODS

8h30 - 8h50

**5.1 Exposure of cold-stored fresh fruit to ozone gas: effect on the development of postharvest diseases**

L. Palou<sup>1</sup>, C. H. Crisosto<sup>2</sup>, J. L. Smilanick<sup>3</sup>, <sup>1</sup>Centre de Tecnologia Postcollita, Montcada, València (Spain); <sup>2</sup>University of California, Parlier, (USA); <sup>3</sup>USDA-ARS San Joaquin Valley Agricultural Sciences Center, Parlier (USA)

8h50 - 9h10

**5.2 Comparison of the effects of ozone, UV and combined ozone/UV treatment on the colour and microbial counts of wheat flours**

Z. László, Z. Hovorka-Horváth, S. Beszédes, S. Kertész, C. Hodúr, E. Gyimes, University of Szeged (Hungary)

9h10 - 9h30

**5.3 High intense electric fields and ozone - Inhibiting or biostimulating factors of the seeds treated and food security**

I. Suărăsan<sup>1</sup>, I. Munteanu<sup>2</sup>, I. Ghizdavu<sup>2</sup>, D. O. Oros<sup>1</sup>, M. Munteanu<sup>2</sup>, L. Ghizdavu<sup>3</sup>, <sup>1</sup>Technical University, Cluj-Napoca (Romania); <sup>2</sup>University of Agricultural Sciences & Veterinary Medicine, Cluj-Napoca (Romania); <sup>3</sup>Babes-Bolyai University, Cluj-Napoca (Romania)

9h30 - 9h50

**5.4 Controlled atmosphere storage technique using ozone for delay ripening and extend the shelf life of tomato fruit**

M. A. Shalluf<sup>1</sup>, C. Tizaoui<sup>1</sup>, N. Karodia<sup>2</sup>, <sup>1</sup>School of Engineering, Design and Technology, <sup>2</sup>School of Life Sciences, University of Bradford (UK)

9h50 - 10h10

**5.5 Ozonization process: saturation time, decomposition kinetics and quality of maize grains (*Zea mays* L)**

J. E. dos Santos, M. A. Martins, L. R. D'Antonino Faroni, M. P. de Andrade, M. C. S. Carvalho, Federal University of Viçosa (UFV), Viçosa, MG (Brazil)

10h10 - 10h30

**5.6 Ozonization of stored corn grain: biological efficacy and grain quality**

L. R. D'Antonino Faroni, A. de Melo Pereira, A. H. de Sousa, W. I. Urruchi, Federal University of Viçosa (UFV), Viçosa, MG (Brazil)

10h30 - 10h50

**5.7 Ozone as an alternative to manage phosphine-resistant populations of *Rhyzopertha Dominica* (Coleoptera: Bostrichidae)**

A. H. de Sousa, L. R. D'Antonino Faroni, R. N. Carvalho Guedes, W. Irrazabal-Urruchi, F. D. M. Rezende, Federal University of Viçosa (UFV), Viçosa, MG (Brazil)

10h50 – 11h30

Coffee break

11h30 - 11h50

**5.8 Influence of corn grain mass temperature on ozone toxicity to *Sitophilus Zeamais* (Coleoptera: Curculionidae) and quality of oil extracted from ozonized grains**

L. R. D'Antonino Faroni<sup>1</sup>, A. de Melo Pereira<sup>1</sup>, A. H. de Sousa<sup>1</sup>, M. T. C. da Silva<sup>1</sup>, W. I. Urruchi<sup>2</sup>, <sup>1</sup>Federal University of Viçosa (UFV), Viçosa, MG (Brazil); <sup>2</sup>University of Paraíba Valley, Sao José dos Campos, SP (Brazil)

11h50 - 12h10

**5.9 Control of potato skin disorders using atmospheric ozone-enrichment**

J. Barnes, I. Singleton, E. Tallentire, Institute for Research on the Environment & Sustainability, Newcastle University (UK)

12h10 -12h30

**5.10 Evaluation of ozone as a single and synergistic oxidant for improvement of chemical and microbial safety of Lowbush Blueberries (*Vaccinium angustifolium*)**

K. M. Crowe<sup>1</sup>, R. J. Bushway<sup>2</sup>, A. A. Bushway<sup>2</sup>; <sup>1</sup>Southern Progress Corporation, Birmingham, AL (USA); <sup>2</sup>University of Maine, Dept. of Food Science & Human Nutrition, Orono, ME (USA)

## Sustainable Agri-Food Industry – Use of Ozone & Related Oxidants

### Tuesday 30 October

12h30 - 12h50	<b>5.11 Effect of low level ozone-enrichment on the quality and condition of citrus fruit under semi-commercial conditions</b> <i>C. Metzger<sup>1</sup>, J. D. Barnes<sup>1</sup>, I. Singleton<sup>1</sup>, P. Andrews<sup>2</sup></i> , <sup>1</sup> Newcastle University, Newcastle (UK); <sup>2</sup> MMG Global Citrus, Kent (UK)
12h50 - 13h10	<b>5.12 Fruit and vegetables disinfection at SAMRO, Ltd. using hygienic packaging by means of ozone and UV radiation</b> <i>H. Steffen<sup>1</sup>, P. Zumstein<sup>2</sup>, R. G. Rice<sup>3</sup></i> , <sup>1</sup> Hanspeter Steffen, Utzensdorf (Switzerland); <sup>2</sup> SAMRO Ltd., Burgdorf (Switzerland); <sup>3</sup> RICE International Consulting Enterprises, Sandy Spring, MD (USA)
13h10 - 13h30	<b>5.13 Shelf life extension of carrots and potatoes: A comparison of H<sub>2</sub>O<sub>2</sub>, laser, UV, and microwave treatments</b> <i>I. Watson<sup>1</sup>, B. K. Tan<sup>1</sup>, G. Armstrong<sup>2</sup>, D. Stewart-Tull<sup>2</sup>, R. Marshall<sup>3</sup></i> ; <sup>1</sup> Laser and Optical Systems Engineering Centre, Department of Mechanical Engineering, University of Glasgow (UK), <sup>2</sup> Division of Infection and Immunity, University of Glasgow (UK), <sup>3</sup> Robert Marshall and Associates, Glasgow (UK)
13h30 – 15h00	<b>Lunch</b>
15h00 – 17h00	<b>TECHNICAL TOUR</b>
20h00	<b>BANQUET</b>

### Wednesday 31 October

8h30	<b>EXHIBITION OPEN</b>
8h30 – 13h30	<b>SCIENTIFIC SESSION 6 - FOOD PROCESSING</b>
8h30 – 9h50	<b>A. Water treatment</b>
8h30 - 8h50	<b>6.1 Different advanced oxidation processes for disinfection of wash waters from the fresh-cut industry</b> <i>M. V. Selma, A. Allende, F. López-Gálvez, M. I. Gil</i> , Food Science and Technology Department, CEBAS-CSIC, Espinardo (Spain)
8h50 - 9h10	<b>6.2 Effectiveness of four types of disinfectants on <i>Clostridium perfringens</i> viability: NaClO, O<sub>3</sub>, O<sub>3</sub>/H<sub>2</sub>O<sub>2</sub> and O<sub>3</sub>/TiO<sub>2</sub> comparison</b> <i>M. Lanao, M.P. Ormad, P. Goñi, N. Miguel, J.L. Ovelleiro</i> , University of Zaragoza (Spain)
9h10 - 9h30	<b>6.3 DiaCell<sup>®</sup> - latest water disinfecting technology based on electrochemistry</b> <i>P. Rychen<sup>1</sup>, C. Provent<sup>1</sup>, N. Hermant<sup>1</sup>, H. Steffen<sup>2</sup></i> , <sup>1</sup> Adamant Technologies SA, La Chaux-de-Fonds (Switzerland); <sup>2</sup> Hanspeter Steffen, Utzensdorf (Switzerland)
9h30 - 9h50	<b>6.4 Use of ozone for Legionella reduction in water systems</b> <i>B. Ruiz<sup>1</sup>, J. Bauzá<sup>1</sup>, J. Benito<sup>2</sup>, A. Pascual<sup>1</sup></i> , <sup>1</sup> ainia Technological Centre, Paterna, Valencia (Spain); <sup>2</sup> ITDI, S.L., Valencia (Spain)
9h50 – 10h50	<b>B. Clean-in-Place applications in food plants:</b>
9h50 - 10h10	<b>6.5 Multitasking Ozone – benefits in the beverage industry</b> <i>F. Axt, J. Mielcke</i> , ITT-WEDECO GmbH, Herford (Germany)
10h10 - 10h30	<b>6.6 OzoneCip: ozone cleaning in place in food industries</b> <i>A. Canut, A. Pascual</i> , Research Association on Food Industry (ainia Technological Centre), Paterna, Valencia (Spain)
10h30 - 10h50	<b>6.7 The use of aqueous ozone for cleaning operations in breweries</b> <i>M. Á. Prieto Arranz, G. Schories</i> , Technologie Transfer Zentrum, Bremerhaven (Germany)

## Sustainable Agri-Food Industry – Use of Ozone & Related Oxidants

### Wednesday 31 October

10h50 – 11h30	<b>Coffee break</b>
11h30 – 13h30	<b>C. Commercial case examples</b>
11h30 - 11h50	<b>6.8 Improving Fish Quality By Means of Ozone at Fresher than Fresh, Inc.</b> <i>R. G. Rice<sup>1</sup>, R. H. Wrenn<sup>2</sup></i> , <sup>1</sup> RICE International Consulting Enterprises, Sandy Spring, MD (USA); <sup>2</sup> Fresher Than Fresh, Inc., Gastonia, NC (USA)
11h50 - 12h10	<b>6.9 Six years of ozone processing of fresh cut salad mixes</b> <i>W. Strickland<sup>1</sup>, C. D. Sopher<sup>2</sup>, R. G. Rice<sup>3</sup>, G. T. Battles<sup>4</sup></i> , <sup>1</sup> Strickland Produce, Inc. Nashville, TN (USA); <sup>2</sup> Global Energy Partners, LLC, Washington, NC (USA); <sup>3</sup> RICE International Consulting Enterprises, Sandy Spring, MD (USA); <sup>4</sup> Tennessee Valley Authority, Memphis, TN (USA)
12h10 - 12h30	<b>6.10 User experiences with ozone, electrolytic water (Active Water) and UV-C light (Ventafresh technology) in production processes and for hygiene maintenance in a Swiss SUSHI factory</b> <i>H. Steffen<sup>1</sup>, M. Duerst<sup>2</sup>, R. G. Rice<sup>3</sup></i> , <sup>1</sup> Hanspeter Steffen, Utzensdorf (Switzerland); <sup>2</sup> SUSHI MANIA, S.A., Vuadens (Switzerland); <sup>3</sup> RICE International Consulting Enterprises, Sandy Spring, MD (USA)
12h30 - 12h50	<b>6.11 User experiences with neutral electrolytic water generated with ADAMANT diamond electrodes (NEOW Active Water) in production processes and for hygiene maintenance in a swiss SUSHI factory</b> <i>H. Steffen<sup>1</sup>, P. Rychen<sup>2</sup>, R. G. Rice<sup>3</sup>, M. Durst<sup>4</sup></i> , <sup>1</sup> Hanspeter Steffen, Utzensdorf (Switzerland); <sup>2</sup> ADAMANT Technologies Ltd., La Chaux-de-Fonds (Switzerland); <sup>3</sup> RICE International Consulting Enterprises, Sandy Spring, MD (USA); <sup>4</sup> SUSHI MANIA, S.A., Vuadens (Switzerland)
12h50 - 13h10	<b>6.12 New restaurant concept relies on ozone, UV radiation, electrolyzed water and ultrasound</b> <i>H. Steffen<sup>1</sup>, R. G. Rice<sup>2</sup></i> , <sup>1</sup> Hanspeter Steffen, Utzensdorf (Switzerland); <sup>2</sup> RICE International Consulting Enterprises, Sandy Spring, MD (USA)
13h10 - 13h30	<b>Comments and discussion</b>
13h30 – 15h00	<b>Lunch</b>
15h00 – 17h00	<b>CLOSING</b>
15h00 - 15h15	<b>Special Prize of the Programme Committee</b> <i>M. Roustan<sup>1</sup>, R. G. Rice<sup>2</sup></i> , <sup>1</sup> IOA-EA <sub>3</sub> G, <sup>2</sup> IOA-PAG
15h15 - 15h30	<b>Conference conclusion</b> <i>P.A. Liechti</i> , IOA-EA <sub>3</sub> G
15h30 -17h00	<b>Round-table discussion on Issues, solutions, further actions</b> <i>A. Pascual<sup>1</sup>, R. G. Rice<sup>2</sup>, H. Steffen<sup>3</sup></i> , <sup>1</sup> Association on Food Industry (ainia Technological Centre), Paterna, Valencia (Spain); <sup>2</sup> RICE International Consulting Enterprises, Sandy Spring, MD (USA); <sup>3</sup> Hanspeter Steffen, Utzensdorf (Switzerland)