

## SOCIAL AND SCIENTIFIC PROGRAMME

### Saturday 21<sup>st</sup> February 2009

- 17.00 Registration and Poster Assembly
- 20.00 Welcome to Meeting / Welcome Buffet

### Sunday 22<sup>nd</sup> February 2009

The Conference is Open!

\*Graduate/Postgraduate Presentation

\$ Graduate/Postgraduate Bursary

### Session 1 Aluminium Chemistry

Chair: Oleg Antzutkin (Luleå University of Technology, Sweden)

- 8.55 Introduction by the Chair
- 9.00 Platform 1  
**Interfacial behaviour of sapphire basal planes**  
*Johannes Lützenkirchen* (Karlsruhe Institute of Technology, Germany)
- 9.20 Discussion
- 9.30 Poster 1  
**Interaction of trivalent ions with various aluminium minerals**  
*Tomas Kupcik\** (Karlsruhe Institute of Technology, Germany)
- 9.35 Discussion
- 9.40 Platform 2  
**Glyphosate complexation to aluminium(III). Equilibrium and structural study in solution by potentiometry, multinuclear NMR, ESI-MS and DFT calculation.**  
*Imre Tóth* (University of Debrecen, Hungary)
- 10.00 Discussion

The Eighth Keele Meeting on Aluminium; 21-25 February 2009; Czech Republic

10.10 Poster 2

**Evaluation of hydroxypyridinecarboxylic acids as new possible chelating agents for aluminium: solution chemistry, cytotoxicity, octanol/water partitioning, and chelation efficiency**

*Annalisa Dean* (University of Padova, Italy)

10.15 Discussion

10.20 Platform 3

**Supramolecular assemblies of Al<sup>3+</sup> complexes. Encapsulation and complexation studies of B-cyclodextrin with cholecalciferol (vitamin D3) and phenothiazine**

*Ana Lucia Ramalho Mercê* (Federal University of Paraná, Brazil)

10.40 Discussion

10.50 Poster 3

**Computational studies on surface complexation of aluminum nanoparticles with biomolecules**

*Xianlong Wang* (University of Electronic Science and Technology of China)

10.55 Discussion

11.00 **COFFEE**

## Session 2 Aluminium Geochemistry

Chair: *Luboš Borůvka* (Czech University of Life Sciences in Prague, Czech Republic)

11.25 Introduction by the Chair

11.30 Platform 4

**Aluminium export from acidified, nitrogen-saturated forest soils to waters**

*Jiří Kopáček* (Institute of Hydrobiology, Czech Republic)

11.50 Discussion

12.00 Poster 4

**A new method for speciation analysis of aluminium in soil samples by the hyphenated technique HPLC/IC-FAAS**

*Marcin Frankowski\**<sup>\$</sup> (Adam Mickiewicz University, Poland)

12.05 Discussion

The Eighth Keele Meeting on Aluminium; 21-25 February 2009; Czech Republic

12.10 Platform 5

**High concentrations of inorganic aluminum in streamwaters were observed in catchments covered by old spruce stands**

*Jakub Hruška* (Czech Geological Survey, Czech Republic)

12.30 Discussion

12.40 Poster 5

**Silicon solubility control in curative mineral waters, the Sudetes Mts., SW Poland. Role of aluminosilicate solid phases**

*Dariusz Dobrzyński* (University of Warsaw, Poland)

12.45 Discussion

12.50 Poster 6

**Study of interactions of relevant organic acids and aluminium in model solutions using HPLC**

*Ondřej Drábek* (Czech University of Life Sciences in Prague, Czech Republic)

12.55 Discussion

13.00 **LUNCH**

### Session 3 Aluminium and Plants

Chair: Paula Gonçalves (University of Aveiro, Portugal)

14.15 Introduction by the Chair

14.20 Platform 6

**Simulation modeling in an effort to account for disparate electrical and ion-flux effects of Al upon plant cells**

*Tom Kinraide* (Agricultural Research Service, USDA, USA)

14.40 Discussion

14.50 Poster 7

**Influence of Al<sup>3+</sup> on membrane bioelectrical parameters of *Nitellopsis obtusa* cell**

*Vilma Kisnierienė* (Vilnius University, Lithuania)

14.55 Discussion

15.00 Platform 7

**Plasma membrane fluidity is the target of aluminum ions in plants**

*Kateřina Schwarzerová* (Charles University Prague, Czech Republic)

15.20 Discussion

The Eighth Keele Meeting on Aluminium; 21-25 February 2009; Czech Republic

15.30 Poster 8

**Studies on aluminium absorption in protoplasts isolated from *C. arabica* L. suspension cells**

*Armando Muñoz- Sanchez* (Centre for Scientific Investigation of Yucatán, Mexico)

15.35 Discussion

15.40 Platform 8

**Aluminium toxicity and plant signal transduction in cell suspensions of *Coffea arabica***

*Tere Hernández-Sotomayor* (Centre for Scientific Investigation of Yucatán, Mexico)

16.00 Discussion

16.10 Platform 9

**Distinctive - constitutive and aluminium-induced - patterns of phenolic compounds in two maize varieties differing in aluminium tolerance**

*Charlotte Poschenrieder* (Autonomous University of Barcelona, Spain)

16.30 Discussion

16.40 **TEA**

#### Session 4 Aluminium and the Environment

Chair: Ondřej Drábek (Czech University of Life Sciences in Prague, Czech Republic)

16.55 Introduction by the Chair

17.00 Platform 10

**Tissue accumulation of aluminium cannot be used to predict its toxicity in *Lymnaea stagnalis***

*Rachel Walton* (University of Manchester, UK)

17.20 Discussion

17.30 Poster 9

**Toxicity of aluminium originating from zeolite A on the *Acinetobacter junii***

*Tomislav Ivankovic* (University of Zagreb, Croatia)

17.35 Discussion

17.40 Platform 11

**Mobilisation of river transported colloidal aluminium in estuaries and the impact on migrating Atlantic salmon smolts (*Salmo salar* L.)**

*Hans-Christian Teien* (Norwegian University of Life Sciences, Ås, Norway)

18.00 Discussion

The Eighth Keele Meeting on Aluminium; 21-25 February 2009; Czech Republic

18.10 Poster 10

**Fate and behaviour of aluminium used in lake restoration**

*Gerlinde Wauer* (Liebniz-Institute of Freshwater Ecology and Inland Fisheries, Berlin, Germany)

18.15 Discussion

18.20 Poster 11

**New developments in the analysis of aluminium fluoride complexes using HPLC coupled with F-AAS detection**

*Anetta Ziola-Frankowska* (Adam Mickiewicz University, Poznań, Poland)

18.25 Discussion

18.30 **END OF FIRST DAY**

20.00 **DINNER**

21.30 POSTER SESSION AND LOCAL WINE TASTING WITH SOMMELIER

**Monday 23<sup>rd</sup> February 2009**

**Session 5 Aluminium and Biochemistry**

Chair: Tamas Kiss (University of Szeged, Hungary)

8.55 Introduction by the Chair

9.00 Platform 12

**Speciation of aluminium in biological samples**

*Radmila Milacic* (Jožef Stefan Institute, Ljubljana, Slovenia)

9.20 Discussion

9.30 Platform 13

**Combination of CIM<sup>®</sup> monolithic chromatography with UV and ICP-MS detection for speciation of Al in human serum**

*Simona Murko*\*<sup>§</sup> (Jožef Stefan Institute, Ljubljana, Slovenia)

9.50 Discussion

10.00 Platform 14

**Aluminum toxicity and energy production in human astrocytoma cells:  
Molecular clues to aluminum-induced neurological diseases**

*Joseph Lemire*\*<sup>\$</sup> (Laurentian University, Ontario, Canada)

10.20 Discussion

10.30 **COFFEE**

10.50 Platform 15

**Fusion pore properties and aluminium in rat pituitary lactotrophs**

*Paula Gonçalves* (University of Aveiro, Portugal)

11.10 Discussion

11.20 Poster 12

**Evaluation of cell viability in the presence of aluminium in rat pituitary  
lactotroph cultures**

*Ana Calejo*\*<sup>\$</sup> (University of Aveiro, Portugal)

11.25 Discussion

11.30 Platform 16

**Therapeutic potential of bak gene silence in aluminum induced neural cell  
degeneration**

*Qiao Niu* (Shanxi Medical University, China)

11.50 Discussion

12.00 Poster 13

**Inhibition of glia apoptosis induced by aluminium as a potential therapeutic  
strategy in degenerative diseases.**

*Qin-li Zhang* (Shanxi Medical University, China)

12.05 Discussion

12.10 Platform 17

**New insight on DNA topological changes induced by aluminum: Relevance to  
Alzheimer's disease**

*Mohammed Mustak* (Mangalore University, India)

12.30 Discussion

12.40 Poster 14

**Effect of Al(III) on the conformations of reduced and oxidised glutathione**

*Xiaodi Yang* (Nanjing Normal University, China)

12.45 Discussion

The Eighth Keele Meeting on Aluminium; 21-25 February 2009; Czech Republic

12.50 Poster 15

**The effects of aluminum on neuron development of the hippocampus in neonatal rats**

*Chia-Yi Yuan* (Fu-Jen University, Taipei, Taiwan)

12.55 Discussion

13.00 **LUNCH**

**FREE AFTERNOON**  
**Organised Bus Trips to Sights of Local Interest**

20.00 **DINNER**

*Classical Concert (Kapr Quartet)*

**Tuesday 24<sup>th</sup> February 2009**

Session 6 Animal Models of Aluminium Toxicity

Chair: Tere Hernández Sotomayor (CICY, Mexico)

8.55 Introduction by the Chair

9.00 Platform 18

**Up-regulation in the expression of renin gene by the influence of aluminum**

*Shunsuke Meshitsuka* (Tottori University, Yonago, Japan)

9.20 Discussion

9.30 Poster 16

**Influence of thyroid hormones in aluminium's effect on intestinal calcium transport in a mammalian model**

*Daniel Orihuela* (National University of the Littoral, Santa Fe, Argentina)

9.35 Discussion

9.40 Platform 19

**Aluminum hydroxide and Gulf War ALS: An *in vivo* model of motor neuron death**

*Christopher Shaw* (University of British Columbia, Vancouver, Canada)

10.00 Discussion

The Eighth Keele Meeting on Aluminium; 21-25 February 2009; Czech Republic

10.10 Poster 17

**The effects of high aluminum load on oxidative status in gastrostomy tube-fed neonatal rats**

*Guoo-Shyng Wang Hsu* (Fu-Jen University, Taipei, Taiwan)

10.15 Discussion

10.20 Platform 20

**Amyloid precursor protein, acetylcholine metabolism, and ApoE in an aluminum-based rat model for AD**

*Judie Walton* (Australian Institute for Biomedical Research, Sydney, Australia)

10.40 Discussion

10.50 **COFFEE**

Session 7 Human Exposure to Aluminium

Chair: Radmila Milacic (Jožef Stefan Institute, Ljubljana, Slovenia)

11.05 Introduction by the Chair

11.10 Platform 21

**An *in silico* model of aluminium binding by transferrin in serum**

*James Beardmore* (Keele University, UK)

11.30 Discussion

11.40 Platform 22

**Aluminium and congophilic amyloid angiopathy; the 200+ brains study.**

*Christopher Exley & Emily House* (Keele University, UK)

12.00 Discussion

12.10 Poster 18

**Effects of sex, age, and oral status on Mn, Cu, and Al concentrations in mixed saliva of elementary school children**

*Koji Watanabe* (Kyushu Dental College, Kitakyushu City, Japan)

12.15 Discussion

12.20 Platform 23

**Improving the non-invasive measurement of aluminium in bone**

*David Chettle* (McMaster University, Hamilton, Canada)

12.40 Discussion

12.50 Poster 19

**Towards a new diagnostic tool to measure bone aluminum levels**

*Ana Pejović-Milić* (McMaster University, Hamilton, Canada)

12.55 Discussion

13.00 **LUNCH**



Session 8 Aluminium, Alzheimer's and other Neurological Diseases

Chair: Ana Mercê (Federal University of Paraná, Brazil)

14.15 Introduction by the Chair

14.20 Platform 24

**Structural speciation studies in binary aqueous Al(III) systems of relevance to neurodegenerative disease**

*Thanos Salifoglou* (University of Thessaloniki, Greece)

14.40 Discussion

14.50 Poster 20

**Interactions between Al(III) and phosphonate-carboxylate substrates relevant to Alzheimer's disease**

*Bill Georgantas\** § (University of Thessaloniki, Greece)

14.55 Discussion

15.00 Platform 25

**A critical review of the Al-literature aiming at the missing research strategies for the evaluation of neurotoxic risk of high Al-exposures in humans**

*Ernst Kiesswetter* (University of Dortmund, Germany)

15.20 Discussion

15.30 Platform 26

**Macrophagic myofasciitis-associated cognitive dysfunction**

*François-Jérôme Authier* (INSERM, Paris 12 University, France)

15.50 Discussion

16.00 Platform 27

**Characterization of a miRNA-146a-mediated inflammatory circuit in Alzheimer's disease (AD) brain also up-regulated in aluminum-sulfate-stressed human brain cells**

*Walter Lukiw* (Louisiana State University, USA)

16.20 Discussion

16.30 Platform 28

**Demonstration of aluminium in the brains of patients with Alzheimer's disease**

*Sakae Yumoto* (Yumoto Institute of Neurology, Tokyo, Japan)

16.50 Discussion

17.00 **TEA**

Final Session Chair: Chris Exley (Keele University)

17.30 Introduction by the chair to the JD Birchall Memorial Lecture

17.40 The JD Birchall Memorial Lecture

**Chemical speciation, solubilities and surface complexation in  
Al(hydr)oxide systems**

*Staffan Sjöberg*

Umeå University, Sweden

18.40 Discussion

18.55 **CONCLUSION OF MEETING**

*20.00 Conference Dinner*

*Moravian Folk Music!*

ADDITIONAL POSTERS

Session 1 Aluminium Chemistry

1. **Interaction of polyacrylic acid with dissolved aluminium and boehmite ( $\gamma$ -AlOOH)**  
*Johannes Lützenkirchen, John D. Wells, Staffan Sjöberg*
2. **Fluorimetric study of the interaction between oxidized coenzyme II and Al(III)-ciprofloxacin complex in aqueous solutions**  
*Xiaodi Yang, Lingling Wang, Li Li, Renfang Shen*
3. **Aluminium adsorption on titanium phosphate and silica-modified titanium phosphates.**  
*Marina Maslova, Daniela Rusanova, Oleg Antzutkin*
4. **Distribution of aluminium water treatment chemicals.**  
*Jaakko Rämö, Arja Sarpola, Vesa Hietapelto*

Session 2 Aluminium Geochemistry

1. **Laboratory assay of compounds transport through intact soil sample in controlled conditions**  
*Marek Batysta\*, Radka Kodešová, Luboš Borůvka, Ondřej Drábek*
2. **Soil aluminium pools assessment along three mountainous elevation gradients**  
*Luboš Borůvka, Antonín Nikodem\*, Ondřej Drábek, Petra Vokurková\*, Václav Tejnecký\*, Lenka Pavlů*
3. **Comparison of meadows, forested meadows and forests soil characteristics in the Giant Mountains**  
*Šárka Dlouhá\*, Luboš Borůvka, Lenka Pavlů, Ondřej Drábek*
4. **Forms of Al in a soil in NW Spain amended with different sized limestone**  
*A Viade, TC Ferreira, ML Fernandez Marcos, E Alvarez*
5. **Chemistry of soluble aluminium in forest and pasture soils upon fluoride addition**  
*A Romar, C Gago, ML Fernandez Marcos, TC Ferreira, E Alvarez*
6. **Spatial relationship and pools of acidificants in forest soils with different plant cover**  
*Jan Kopáč\*, Václav Tejnecký\*, Luboš Borůvka, Ondřej Drábek, Antonín Nikodem\**

7. **Aluminium pools and fluxes in forested catchments of two acidified mountain lakes**  
*Jiří Kaňa, Jiří Kopáček*
8. **Aluminum biogeochemistry of a forest catchment underlain by leucogranite in western Bohemia**  
*Pavel Krám, Jakub Hruška*
9. **Aluminum biogeochemistry of a forest catchment underlain by serpentine in western Bohemia**  
*Pavel Krám, Jakub Hruška*
10. **Aluminium mobility in representative forest soil profiles in the Jizera mountains**  
*Antonín Nikodem\*, Radka Kodešová, Ondřej Drábek, Luboš Borůvka, Lenka Pavlů, Václav Tejnecký\**
11. **Trends of aluminium concentration and acidity of soil solution at highly acidified spruce stand in Ore Mts.**  
*Filip Oulehle, Jakub Hruška*
12. **Changes of Al and Fe forms in the scope of pedogenic processes in naturally developing fir–beech forest**  
*Václav Tejnecký\*, Pavel Šamonil, Luboš Borůvka, Antonín Nikodem\*, Ondřej Šebekc*
13. **Aluminium, cation exchange capacity and the percentage of base saturation of forest floor in various stand types of the Dražanská vrchovina Upland in the Czech Republic.**  
*Tomáš Fabiánek, Ladislav Menšík, Ida Drápelová, Jiří Kulhavý*

### Session 3 Aluminium and Plants

1. **Relationship between aluminum and major metals in root zone soil solutions of buckwheat (*Fagopyrum esculentum* Moench), an Al-accumulator**  
*Rong Fu Chen, Ren Fang Shen, Xiaodi Yang, Xianlong Wang*
2. **The effects of aluminium toxicity and low pH on early ontogenesis of *Isoetes echinospora***  
*Martina Čtvrtlíková, Jaroslav Vrba, Petr Znachor, Petr Hekera*

### Session 4 Aluminium and the Environment

1. **Determination of trace amounts of total aluminium and aluminium species in environmental samples by spectrometric methods**  
*Ingrid Hagarová, Peter Matúš, Pavel Diviš, Marek Bujdoš, Jana Kubová*
2. **Study of aluminium biosorption and bioaccumulation by fungal biomass**  
*Peter Matúš, Ingrid Hagarová, Pavel Diviš, Marek Bujdoš, Jana Kubová*
3. **Use of sodium silicate to reduce aluminium toxicity towards fish**  
*H.-C. Teien, F. Kroglund, B. Salbu, Å. Åtland, B.O. Rosseland*
4. **Comparison of aluminium in alkaline and acid water due to accumulation on fish gills**  
*H-C. Teien, G. Wauer*

### Session 5 Aluminium and Biochemistry

#### Session 6 Animal Models of Aluminium Toxicity

1. **Aluminum combined chelation with a glycosyl-mono- and a bis-hydroxypyridinone. Solution and biodistribution studies**  
*Paul I. Dron, Silvia Chaves, Florina A. Danalache, Diana Sacoto, Lurdes Gano, M. Amélia Santos*
2. **Role of deferoxamine in some enzymatic stress markers in AβPP transgenic mice exposed to aluminium.**  
*Esparza JL, Garcia T, Gómez M, Nogués MR, Romeu M, Domingo JL*
3. **Lesions comprised of aluminium-rich pyramidal cells without microtubules may be associated with cognitive damage in Alzheimer disease**  
*Judie Walton*

#### Session 7 Human Exposure to Aluminium

1. **Dietary aluminium in coffee as affected by coffee type and beverage preparation method**  
*Adéla Fraňková\*, Jaroslav Havlík, Ondřej Drábek, Jiřina Száková*
2. **Aluminium in the water of the neogene-paleogene aquifer of Wielkopolska, Poland**  
*M. Siepak, M. Frankowski, A. Ziota-Frankowska, K. Novotný, T. Vaculovič*
3. **Aluminium in tea, coffee and other plant stimulants and their decoctions**  
*Jan Malík\*, Ondřej Drábek, Jiřina Száková, Ladislav Kokoška*

4. **Evidence of aluminium in newly-formed bone of osteoporotic patients**  
*JR Walton, TH Diamond, S Kumar, GAC Murrell*
5. **Aluminium serum levels and X-ray diffraction analyses (SAXS) in patients with interstitial lung disease or COPD**  
*Salvatore Polizzi, M Bugiani, D Barbero, G Corino*

Session 8 Aluminium, Alzheimer's and other Neurological Diseases

1. **Aluminum interaction with human brain microvessel endothelial cells (hBMECs), neurocapillaries and the neural vasculature of transgenic (Tg2576) mice fed aluminum-supplemented diets**  
*Yuan Yuan Li, Jian-Guo Cui, Yuhai Zhao, Theodore P. A. Kruck, Maire E. Percy, Aileen I. Pogue, Darlene Guillot, Mathew A. Tarr, Walter J. Lukiw*