

European Association of Chemistry and the Environment

March 2002

Welcome! to this, the second issue, of the newsletter, designed to distribute information and news relating to chemistry and environment. We hope you enjoy reading. Please forward this letter to colleagues you think may be interested.

European Association of Chemistry and the Environment Newsletter, n°2, pp. 1-8, 2002.

CONTENTS OF THIS ISSUE

1. What is the ACE?
2. A novel Award for young scientists
3. ACE Environmental Chemistry Award 2001
4. A novel ACE collaboration network
5. Employment: positions available
6. Reports from the 2nd ACE meeting, Dijon, 2001
7. Past meetings reviews
8. Next ACE meetings
9. Other forthcoming meetings
10. ACE member publications
11. Thesis reviews
12. Forthcoming ACE Springer book
13. European projects update
14. Feedback request
15. New ACE members
16. Humour
17. Editorial information

1. WHAT IS THE ACE?

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A very warm welcome to all members of the Association of Chemistry and the Environment (ACE) and everyone who joined us at the recent symposium held in Dijon. If you are hearing about the association for the first time then please read on. We encourage you to participate in this highly successful and rapidly expanding organisation. New members to the association are always welcome and details regarding membership are available at: <http://www.u-bourgogne.fr/ACE>

The ACE is primarily educational training focused, providing a responsive, enthusiastic and open forum encompassing all aspects of environmental chemistry. We concentrate on the promotion of interaction between different disciplines, and provide backing to a number of European and International projects. For example, we are collaborating with Molecular Diversity Preservation International (MDPI) to establish an International archive centre for pure compound samples of pollutants, operated by the MDPI samples handling centre in Basel, Switzerland.

The diverse scope of interest of our members is highlighted at the ACE symposium, held in December each year. The meeting is renowned as a leading forum for the communication of ideas, promoting new collaborative projects and making

new friends. We hope you will join us at the 2002 meeting in Geneva, Switzerland.

Best wishes,
Stephanie DUDD (Editor)
<http://www.u-bourgogne.fr/ACE>

2. A NOVEL AWARD FOR YOUNG SCIENTISTS

ACE European Young Researcher of the Year Award
Deadline for nominations: **July 1, 2002**

A special Stable Isotope session was organised at the 2001 ACE symposium in Dijon in the memory of Dr. Gareth RIELEY (1969 – 1998). Gareth was a bright and committed young British scientist who's outstanding contribution to environmental and biogeochemical sciences (e.g. *Nature* **352**, 425, 1991) should stand as a benchmark to other young researchers. In his memory, the ACE European Young Researcher of the Year Award has been established. The award is aimed at recognising the achievements of young researchers in improving our scientific understanding of environmental processes. Nominations for the award are invited before 1st July 2002. The award together with a prize of 500 Euro and a free meeting registration, will be presented at the 2002 meeting in Geneva. For further details see: <http://www.u-bourgogne.fr/ACE/>



3. ACE ENVIRONMENTAL CHEMISTRY AWARD 2001

The 2nd ACE Environmental Chemistry Award, in the form of a Daum artwork, was presented during the 2001 meeting to **Céline XHROUET**, Caroline NADIN and Edwin De PAUW from the University of Liège, Belgium, in recognition of their poster presentation entitled "**Prevention of dioxins de novo formation on sintering process fly ash using amine compounds**". Congratulations to you Céline and good luck writing up your PhD!

4. A NOVEL ACE COLLABORATION NETWORK

An International Collaboration Network Database maintained by the ACE will be installed in 2002. The aim of the Network is to be an information-based platform for collaborations among ACE members. It will be particularly useful for members who are willing to build international projects; for young scientists who are looking for employment and useful contacts; and for members who are willing to work abroad. The database will be available to all ACE members. The basis of any scientific co-operation is useful information about potential co-operation partners, e.g. about research fields, future research interests, and analytical or technical equipment/facilities. Therefore the database will contain all such information as electronic files with a restricted access for ACE members.

Contact: **Dr. Jan SCHWARZBAUER**
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5. EMPLOYMENT: POSITIONS AVAILABLE

Look at the ACE web site for our full list of vacancies...
<http://www.u-bourgogne.fr/ACE>

Ph.D. Fellowship

The Botanical Institute, University of Bergen, Norway is offering Visiting Fellowships for 3 - 9 months duration for doctoral students as part of the European Union 5th Framework Marie Curie Host Fellowship Scheme. Fellowships are available for 2002 and 2003 in the quantitative palaeoecology and ecology in northern and arctic areas (QPALLEN) and quantitative palaeoclimatic reconstruction from lake sediments (QPALCLIM) training sites. Applicants must be nationals of a European Union Member State or be able to provide proof of having resided in a Member State for at least the last five years prior to their application and must be under the age of 35.

<http://www.uib.no/bot/mcts/qpalen/index.htm>
<http://www.uib.no/bot/mcts/qpalclim/index.htm>
John.Birks@bot.uib.no, Einar.Heegaard@bot.uib.no

Post-Doctoral Position

A one year position for a plant biologist in the field of photosynthesis and leaf gas exchange is available beginning 2002 in the framework of a European Community program. The research is based at the Laboratoire d'Ecophysiologie de la Photosynthèse, UMR 163 CNRS-CEA, DEVM, CEA/Cadarache, 13108 St-Paul-lez-Durance cedex, France. The project will use original biophysical approaches developed by the host laboratory combining gas exchange measurements, mass spectrometry and leaf chlorophyll fluorescence. Project will benefit from resources of the host laboratory for biochemical and molecular approaches. Candidate should possess some background in the field of photosynthesis and interest in gas exchange or in mass-spectrometry. As it is an European Community position, the candidate must be a national from EC or from an Associated State or have resided in the EC for at least five years prior to his appointment. Applications should be addressed to Bernard Genty or Gilles Peltier. CV, summary of research experience and names, addresses, e-mail and phone numbers of two academic

referees, should be included. Review will begin immediately and continue until the position is filled.

Bernard.Genty@cea.fr, Gilles.Peltier@cea.fr

6. REPORTS FROM THE 2nd ACE MEETING, DIJON, 2001



Environmental Chemistry

Participants enjoyed steaming local mulled wine at the opening "ice-breaking" party of the 2nd European Meeting on Environmental Chemistry in Dijon in December 2001. The conference attracted representatives from thirty-one European and other nations, with 280 participants in total. Around 50% of the attendees were Ph.D. students and younger scientists, attracted by the low registration fee for students (149 Euros), the promise of quality job opportunities in the environmental sciences, and the opportunity to keep up to date with all the major themes topical in environmental science today.

The meeting and poster sessions covered both fundamental and applied aspects of the environment: air, water, soil, sediment and food pollution, green chemistry, ecotoxicology, toxic metals, organic pollutants, stable isotope, and analytical methods for environmental science. In an invited lecture, Prof. Dr. Antonius KETTRUP from the Inst. of Ecological Chemistry, Munich, described environmental sample banking in Germany. He stressed the need to couple trace analysis and ecotoxicological tests in order to give a realistic evaluation of pollutant toxicity.

In an era where organisations are retreating into quite narrow areas of environmental chemistry, it was refreshing to see such a breadth of interesting topics, which also demonstrated the importance of integrating chemical research with other environmental processes. This is a real strength of ACE and participants found it enjoyable and thought provoking to listen to talks on subjects outside of their own area of specialisation.

Mark FITZSIMONS



Green Chemistry

The topics covered in the "Green chemistry" sessions of the recent 2nd European Meeting of Environmental Chemistry (Dijon 2001) are particularly noteworthy, as they brought to the fore the importance of green synthesis in the minimisation of pollution, particularly for industrial organic synthesis.

The use of the carbon dioxide as a reactant was presented by Angela DIBENEDETTO and Michele ARESTA (Bari, Italy) in the synthesis of cyclic carbonates, either from optically active or racemic epoxides. A further application of CO₂ in green synthesis was shown by the groups from Dijon and Toulouse, France, concerning the industrial syntheses of urea, cyclic carbonates, salicylic acid and methanol. The main advantages of carbon dioxide are that it is non toxic, easy to handle, to transport and to store, and CO₂ is a renewable resource of carbon. The replacement of organic solvents (frequently expensive, environmentally undesirable and difficult to remove from the reaction products) by supercritical carbon dioxide was developed in Korea by J.O. BAEK (Yusong). The method involves the hydroformylation of olefins in supercritical carbon dioxide using a novel regioselective rhodium-catalyst.



Michel LACROIX (Villeurbanne, France) presented an oral communication on zero emission process for the catalytic transformation of dimethylsulfide into methylmercaptan. The challenge of this research was to find a selective catalytic process that would work in mild conditions and where the catalyst was stable in a sulfur-containing atmosphere. In addition, the valorisation of biomass wastes like vegetable oils can be considered a green syntheses process. A research group of the University of Poitiers (France) have replaced classical catalysts used for the reactions of transesterification and esterification of glycerol, by some basic solids such as metal oxides. These solid catalysts are reusable, do not generate toxic wastes and can perform similar activities and selectivities as those of homogeneous catalysts.

Flavio Aparecido RODRIGUES and Lucilene Butega De PAIVA (Brazil) presented a poster on the physical and chemical behaviour of cements obtained from rice hull ash, illustrating the intelligent use of a natural resource.

In addition to the use of biomass as a natural resource, solar energy was also discussed. This renewable energy can be used for the generation of hydrogen through the photocatalysis of water by a novel Sn₃Cu₂S semiconductor. In this work, Dae-Chul PARK et al. from Korea have sought to photochemically generate hydrogen from water, under illumination with UV or visible light. Indeed, the semiconductor-mediated conversion of solar energy into electric or chemical energy has attracted considerable research efforts in recent years. This has been substantiated by the oral presentation of a young Polish researcher (J. WISNIOWSKI) in collaboration with a French

team, who together studied the photocatalytic degradation of humic acids in aqueous solution with illuminated titanium dioxide.

Didier ROBERT

50% of young scientists

Despite the cold weather and with the help of a local hot wine at the "ice-breaking party", 280 participants attended the second European Meeting on Environmental Chemistry, which was held at the historic Grévin Cellar of Dijon, France. 31 European and International nations were represented: Argentina, Algeria, Austria, Belgium, Brazil, Canada, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Iran, Israel, Italy, Mexico, Morocco, Netherlands, Nigeria, Poland, Romania, Serbia, Slovenia, South Korea, Switzerland, Tunisia, United Kingdom, United States of America, Spain. Noteworthy, around 50% of the attendees were Ph.D. students and young scientists. This can be explain by the low registration fee for students (149 Euros), by the promotion of employment by ACE (advert on website), and by the presence of one Ph.D. student (Nathalie GROVA) as well as several talented young scientists in the ACE Board, e.g. Dr. Stephanie DUDD (*Science* **282**, 1478, 1998). Several job positions were posted during the meeting. The organisers also provided help to participants from poor and southern countries, e.g. Egypt, Russia and Mexico. Many fruitful contacts were established during the meeting, one of the most remarkable being a contract between a French academic laboratory and an Italian industrial partner for the use of a novel method to remediate polluted soils.



74 Conferences, 161 Posters

74 Conferences and 161 posters covered the fundamental and applied aspects of the following topics: air, water, soil, sediment and food pollution, green chemistry ecotoxicology, toxic metals, organic pollutants, stable isotope, and analytical methods for environmental science. An agreement has been settled with the international publisher Springer to publish selected articles from the meeting in book, which is scheduled to be issued in 2002.

Eric LICHTFOUSE

Comments from the meeting's participants

"I wish to congratulate you for the quality of the organisation of this European meeting. In fact, it was an international meeting because I discussed with colleagues from other continents"

Jean-Pierre LE MOING
Micromass FRANCE

"Thanks for your welcome and for the good meeting organisation"

Marie-Joëlle MENU
University of Toulouse, FRANCE

"Thanks for the meeting mug"

Gisèle BOUCHARD
University of Burgundy, FRANCE

"Many thanks for this well-organised meeting"

Eric MEUX
Electrochemistry lab., University of Metz, FRANCE

"Just a note to thank you for the Dijon meeting, which went very well, giving us a lot to live up to. You and Brigitte did a great job and it gives great hope for the future of ACE"

Mark FITZSIMONS
University of Plymouth, UNITED KINGDOM

"Many thanks for this well-organised meeting, congratulations and cheers from Attaching!"

Philippe SCHMITT-KOPPLIN
Inst. for Ecological Chemistry, Attaching, GERMANY

"Thank you very much for your help at Dijon. I arrived at Aswan at 18/12/2001 at 12 30 am. The travel was very easy and the stay at Dijon was very nice. All greetings for the all peoples at France and Dijon and all thanks for you and your wife. I hope to see you and your wife at Aswan, Egypt. Thank you again."

Soltan MONTASER
Faculty of Science, Aswan, EGYPT

"Just to say thanks for all the organising you did for the conference last week. I really enjoyed it, but I'm sure it was very hard work for you!"

Nicky WARREN
Inst. for Sedimentology, Reading,
UNITED KINGDOM

"I was at the ACE conference in Dijon last week and would like to thank you for organising a very interesting conference."

Daniel HUNKELER
Centre for Hydrogeology, University of Neuchatel,
SWITZERLAND

"Thank you much for organisation of the ACE meeting. In addition I wish to say that I was impressed by your nice town Dijon. Merry Christmas and best wishes."

Anatoly RESHETILOV
Inst. of Biochemistry and Physiology of
Microorganisms, Moscow, RUSSIA

"Let me first congratulate and thank you for the organisation of a remarkable meeting in Dijon. I really enjoyed the meeting which was held both on a high scientific and social level."

Roland KALLENBORN
Norwegian Inst. for Air Research, Tromsø, NORWAY

"The purpose of this note is to thank you, your staff and the organising committee for the Herculean efforts that you made to produce a very successful, enjoyable and stimulating conference. Dijon is an excellent place for such a meeting. Many thanks."

Keith B. LODGE
Dept. of Chemical Engineering, University of
Minnesota Duluth, UNITED STATES OF AMERICA

"I would like to wish you and your colleagues a belated Happy New Year and prosperous Holiday season. Also I have to announce my best thanks for the 2nd European Conference on Environmental Chemistry held last month in Dijon. With my best wishes for the New Year."

Mehran HABIBI-REZAEI
Faculty of Science, University of Tehran, IRAN

"My best wishes and congratulation for the Dijon meeting".

Edwin DE PAUW
Mass Spectrometry Lab., Univ. of Liege, BELGIUM

"First of all let me thank you for having organised the ACE meeting: it was interesting for its

multidisciplinary character. I found great the participation of Junior Scientists. This aspect is very positive and should be encouraged. Best wishes for the New Year."

Michele ARESTA
METEA Research Centre, Bari, ITALY

"Bravo for your enthusiasm and dynamism which have fully contributed to the success of this meeting."

Pascal ROCHE
Anjou Research Vivendi Water Ltd.,
Maisons-Laffitte, FRANCE

"I think that the idea of ACE and this kind of European meeting is something very good and I hope that it will have success."

Bernd NOWACK
Inst. of Terrestrial Ecology, Schlieren, SWITZERLAND

"Thank you and your colleagues for organizing that interesting and useful ACE meeting."

Uuve KIRSO
National Institute of Chemical Physics and
Biophysics, Tallinn, ESTONIA

Scientific program

The meeting scientific program can be downloaded for free. The meeting's abstracts on CD-ROM can be purchased via the ACE website: <http://www.u-bourgogne.fr/ACE>.

7. PAST MEETINGS REVIEWS

September 2001

Radioecology and Ecotoxicology

The French Nuclear Protection and Safety Institute (IPSN) organised an international congress on the Radioecology and Ecotoxicology of Continental and Estuarine Environments (EcoRad). The meeting took place in Aix en Provence in September 2001. A wide spectrum of research topics on the subject of the transfer of radionuclides in soils, plants, aquatic systems and also biotic transfer in animals, was presented to more than 500 participants from all continents.

Radioecology has developed as a need to understand the impact of radioactivity on humans. In most countries it is still attached to the departments or ministries of energy that partition it from other environmental fields. The need to remove radioecology from such isolation was discussed during several topical sessions. The other major aspect of this meeting was ecotoxicology, which deals with the environmental impact of all toxins, with the exception of radionuclides. Synergies between radioecology and ecotoxicology are obvious, but rarely endeavored. The move to a consideration of multi-pollution scenarios, as discussed on several occasions, may help in developing stronger links between the two fields. Notable at this meeting was the new focus of radioecology on the environment, rather than on Man alone and the shift from studies of acute to chronic exposures to contamination highlights the effort of radioecologists to move away from classical ideas.

<http://www.ipsn.fr/ecorad2001/default.htm>

Achim ALBRECHT

September 2001 - Environmental Geochemistry

In September 2001 more than 400 participants met at the 20th International Meeting on Organic Chemistry in Nancy. This five-day meeting organised by the European Association of Organic Geochemistry included presentations to all aspects of organic geochemistry. A special



environmental session included both oral and poster presentations and addressed aspects of petroleum pollution, anthropogenic molecular markers and their application, transport processes and interactions of organic pollutants in soils, occurrence and fate of individual organic pollutants (e.g. DDT, musks, PAH, fluorescent whitening agents), microbial degradation processes and isotopic studies. Notably, all contributions demonstrated the usefulness of 'traditional' geochemical methods in order to improve our insight into the fate of organic pollutants within the geosphere.

The quantity of high quality presentations to the environmental sessions and the high number of participants demonstrated a growing interest of organic geochemists in environmental research. Organisers expect an even greater number of "environmental" contributions at the next IMOG in Krakow (2003)

<http://www.eaog.org>

Jan SCHWARZBAUER

November 2001 - Rhizosphere Research

The French Societies of microbiology and phytopathology organized a scientific meeting on the multidisciplinary subject of rhizosphere research, held in Dijon. Besides issues of biological interest, several aspects relevant to environmental chemists were discussed, in particular, the chemical environment in the root zone and fluxes and exchanges in the rhizosphere are of utmost importance, not only for soil-root-plant transfer of chemical substances (nutrients and/or contaminants) but also for contaminant leaching to groundwater. This issue is particularly relevant for pesticides and nitrates in agricultural soils. Discussions also focussed on the use of bioremediation using plants to clean up contaminated soils or to stabilize contamination.

<http://www.dijon.inra.fr/congres/rhizosphere/programme.htm>

Achim ALBRECHT

January 2002 - Non-CO₂ Greenhouse Gases

The 3rd International Symposium on Non-CO₂ Greenhouse Gases (NCGG-3) took place in Maastricht, The Netherlands. Topics included: (1) emission inventories, scenarios and scientific understanding of sources, sinks and atmospheric processes, (2) technological options, and (3) policy aspects. During the conference a round table discussion took place, to discuss International co-operation in the mitigation of emissions of greenhouse gases. The discussion rounded up the major climate issues faced in the developing world, focussing on three agenda: issues surrounding greenhouse gas emissions and initiatives to reduce climate change, the specific needs of developing countries, and areas where developing countries could have something to offer in return.

Major points that emerged included the necessity to address the lack of real measures for reducing greenhouse gas emissions in some countries, and the clear increase in non-CO₂ greenhouse gas emissions in developing countries, regarding which much interest was expressed in initiating extensive research. The need for rapid implementation of the Kyoto Protocol in light of the recent agreement reached in Marrakech was also discussed; steps meant primarily for vulnerable countries have been urged for immediate execution (with emphasis

on phasing out CFC, HCFC & HFCs). Clear needs of developing countries were mapped out, including networking, funding and technical assistance for surveys to develop and implement measures on climate change mitigation.

Stephanie DUDD

8. NEXT ACE MEETINGS

11-14 December 2002
3rd European Meeting on Environmental Chemistry
GENEVA, SWITZERLAND



The conference will take place from the 11th to the 14th December 2002 and NOT from the 18th to the 21st December 2002, as initially announced. The University of Geneva was founded in 1559, and has a truly International attendance, with students from 130 different countries and a long tradition in environmental scientific study. This lively city and the outstanding natural beauty that surrounds it promises to provide the perfect setting for the next European Meeting on Environmental Chemistry.

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10-13 December 2003 - 4th European Meeting on Environmental Chemistry PLYMOUTH, UNITED KINGDOM

Looking ahead to December 2003, Mark FITZSIMONS from the Department of Environmental Science, Plymouth, UK is already making preparations for the 4th ACE meeting. Allow yourself to be stunned by picturesque Dartmoor, the breathtaking coastline and combine that with deliciously fresh seafood, traditional beers and ciders and seasonal entertainment from Christmas classical concerts. Not to be missed!

Dr. Mark FITZSIMONS
mfitzsimons@plymouth.ac.uk

December 2004 - 5th European Meeting on Environmental Chemistry BARI, ITALY

Dr. Michele ARESTA
aresta@metea.uniba.it

9. OTHER FORTHCOMING MEETINGS

4-8 March 2002 - International seminar on nuclear waste management

Saclay, France
cieint@cea.fr
http://www-instn.cea.fr/html/F_inter/adeni/Start.htm

7-8 March 2002 - Advances and perspectives in radiotracer development

Dresden, Germany
<http://www.fz-rossendorf.de/FWB>

20 March 2002 - Sustainable Development and the Environment Seminar

A day meeting to be held at Loughborough University, Loughborough, UK. The seminar aims to promote the development of business and industry whilst protecting the environment.
L.E.Child@lboro.ac.uk
http://www.lboro.ac.uk/research/cens/susdev_sem.htm

4-19 April 2002 - MECT 02

Antalya, Turkey
International Symposium on micro/nanoscale energy conversion and transport
arinc@metu.edu.tr
<http://ichmt.me.metu.edu.tr/Mect-02>

17 April 2002 - Environment and Health Seminar

The Institute for Environment and Health in Leicester is hosting a one-day seminar at Leicester University to debate how public, special interest groups, scientific and policy concerns and decisions made in developed countries can influence decision-making and subsequent impacts on environment and health in developing countries.
http://www.le.ac.uk/ieh/news/courses_opensems.html

15-20 April 2002 - TEFRATRACE

Towards a European Framework for Correlating Records of Abrupt Environmental Change. Department of Geography, Royal Holloway, University of London, UK
c.turney@qub.ac.uk
<http://www.gg.rhul.ac.uk/inquatephra/tefratrace>

21-26 April 2002 - European Geophysical Society XXVII General Assembly

Nice, France
<http://www.copernicus.org/EGS/egsga/nice02/nice02.htm>

1-3 May 2002 - ECE 2002

External combustion engines 2002: new strategies for efficient, green power generation. Los Angeles, CA USA
chuck@intertechusa.com
<http://www.intertechusa.com>

2-5 September 2002 - International Conference on Radioactivity in the Environment

Monaco
<http://www.iur-uir.com/>

8-13 September 2002 - Gordon Research Conference on Green Chemistry

Queen's College, Oxford, UK
grc@grc.org
www.grc.uri.edu/programs/2002/green.htm

21-26 September 2002 - Soil-plant transfer workshop

Monte Verita near Ascona, Switzerland
Rhizosphere, preferential flow and bioavailability: A holistic view of the soil-plant transfer. The goal of the workshop will be to raise conscience of scientists regarding the multidisciplinary complexity of the soil-to-plant transfer and to make a major step forward in formulating an overall synthesis relevant to risk assessment studies for contaminated sites.
achim.albrecht@ipw.agrl.ethz.ch
<http://www.csf-mv.ethz.ch/>

7-10 November 2002 - 5th Conference of Environmental Chemistry and Transboundary pollution

Belgrade, Yugoslavia
Organised by the Balkanian Association of

Environmental Chemistry (B.EN.A), the meeting will accommodate around 450-500 participants from all the Balkanian countries. The conference will bring together scientists, politicians and public administrators from the S.E. European Countries with the aim of improving mutual relations as well as to enhance scientific cooperation, and to create and maintain better environmental conditions for all countries in the region.
ppolic@chem.bg.ac.yu
www.gen.teithe.gr/~bena/

10. ACE MEMBER PUBLICATIONS

A. Albrecht, U. Schultze, M. Liedgens, H. Flüher, and E. Frossard (2002). Incorporating soil structure and root distribution into plant uptake models of radionuclides; toward a more physically based transfer model.
J. Environ. Radioactivity **59**, 329-350.

H. Arakawa, M. Aresta, J.N. Armor et al. (2001) Catalysis research of relevance to carbon management: progress, challenges, and opportunities. *Chem. Rev.* **101**, 953-996.

M. Aresta, M. Boscolo and D.W. Franco (2001) Copper(II) Catalysis in cyanide Conversion into Ethyl Carbamate in Spirits and Relevant Reactions. *J. Agric. and Food Chem.* **49**, 2819-2824.

M. Aresta, A. Dibenedetto and I. Tommasi (2001) Developing Innovative Synthetic Technologies of Industrial Relevance based on Carbon Dioxide as Raw material. *Energy & Fuels* **15**, 269-273.

M. Aresta, A. Dibenedetto, E. Quaranta, M. Boscolo and R. Larsson (2001) The Kinetics and Mechanism of the Reaction between Carbon Dioxide and a series of Amines. Observation and interpretation of an Isokinetic Effect. *J. Mol. Catalysis* **174**, 7-13.

M. Aresta, I. Tommasi, C. Dileo, A. Dibenedetto, M. Narracci, J. Ziolkowski and A. Jezierski (2001) Synthesis and spectroscopic (¹H NMR, ESR) characterization of new aryloxy-Mn(II) complexes: steric control over O- vs phenyl- π -coordination of ArO- ligands (ArO- = C₆H₅O-, 4-methyl-C₆H₄O-, 3,5-dimethyl-C₆H₃O-, 2,6-di-tert-butyl-C₆H₃O-, 2,6-dimethyl-C₆H₃O-) to the Mn(II)Cp moiety and their reactivity with carbon dioxide. *J. Canad. Chem.* **9**, 570-577.

M.A. Borowiak, M.H. Jamroz, J.Cz. Dobrowolski, K. Bajdor, J.K. Kazimirski, J. Mascetti, M. Aresta, I. Tommasi and E. Quaranta (2001) Application of the impulse oscillation model for modelling the formation of peroxocarbonates via carbon dioxide reaction with dioxygen transition metal complexes. A comparison with the experimental results obtained for R η (h²-O₂)CIP3 [P = phosphane ligand]. *J. Mol. Catalysis*, **165**, 45-54.

C. Cayet, E. Lichtfouse (2001) ¹³C/¹²C variations of plant-derived n-alkanes in soil particle-size fractions. *Organic Geochemistry* **32**, 253-258.

P. J. Harvey, B. F. Campanella, P. M. L. Castro, H. Harms, E. Lichtfouse, A. R. Schaeffner, S. Smrcek, D. Werck-Reichhart (2002) Phytoremediation of polyaromatic hydrocarbons, anilines and phenols. *Environmental Science and Pollution Research* **9**, 29-47.

A. Piscopo, D. Robert and J.V. Weber (2001) Comparison between the reactivity of commercial and synthetic TiO₂ photocatalysts. *J. of Photochem. Photobiol. A: Chemistry*, **139**, 253-256.

A. Piscopo, D. Robert and J.V. Weber (2001) Influence of pH and chloride anion on the photocatalytic degradation of organic compounds. Part 1. Effect on the benzamide and parahydroxybenzoic acid in TiO₂ aqueous solution. *Applied catalysis B*. **35**, 117-124.

J. Schwarzbauer, M. Ricking, S. Franke and W. Francke (2001) Halogenated organic contaminants in sediments of the Havel and Spree rivers (Germany). Part V of organic compounds as contaminants of the Elbe river and its tributaries. *Environ. Sci. Technol.* **35**, 4015-4025.

R.T.W. Siegwolf et al. (2001) Stable isotope analysis reveals differential effects of soil nitrogen and nitrogen dioxide on the water use efficiency of hybrid poplar leaves. *New Phytologist* **149**, 233-246.

11. THESIS REVIEWS

Synthesis of the mammalian lignans enterolactone and enterodiol and related compounds.

Taru MÄKELÄ, University of Helsinki, Finland
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The present research is part of an international project entitled Lignans, Phytoestrogens and Human Health. Lignans of medicinal and biological interest were synthesised for use as reference compounds in studies aimed at clarifying the metabolism of dietary based lignans in mammals, and in humans in particular, and the effect of these lignans on human health. A series of various substituted lignan lactones and diols, theoretical precursors of enterolactone and enterodiol, were prepared for identification and assay in human fluids and tissues. All compounds, along with enterolactone and enterodiol, were found to be moderate or weak inhibitors of human aromatase activity. A sensitive and specific analytical method was developed for the quantitative detection of enterolignans in human body fluids and food samples, based on isotope dilution gas chromatography-mass spectrometry using deuterated standards. Time-resolved fluoro-immunoassay was also found particularly suitable for epidemiological studies. Enterolactone derivatives were prepared for the purpose of creating an antiserum and a tracer with europium label.

Biogenic volatile organic compounds (VOCs) emissions from boreal deciduous trees and their atmospheric chemistry.

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Plants emit various kinds of volatile organic compounds into the atmosphere. The amount of biogenic VOCs is estimated to surpass the anthropogenic emissions, although emission rates from many plant species are yet unknown. Accurate estimates of the emissions of the biogenic hydrocarbons are needed because they have an important effect on atmospheric chemistry. They are highly reactive toward hydroxyl and nitrate radicals and ozone and in the presence of nitrogen oxides they contribute to ozone and aerosol formation. The rates of emission of isoprene and monoterpene from boreal deciduous trees were measured, and were affected by treebreak, genetic origin, and temperature. Products formed from the gas-

phase reaction of hydroxyl radical and ozone with monoterpene were analysed by high-performance liquid chromatography (HPLC) and by ¹H-nuclear magnetic resonance (NMR).

Synthesis of isoflavonoid metabolites

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This study forms part of the research project Phytoestrogens and Human Health. The first task of this study was to clarify how isoflavones are reduced by various hydride reducing agents. The second task was to synthesise potential isoflavone metabolites, which could be used as authentic reference compounds in clinical studies analysing them in human fluids and tissues. Two new metabolites of daidzein were synthesised and demonstrated effective antitumour activity against human prostate cancer cell.

Identification, characterisation and mechanism of formation of hydroxyaluminosilicates (HAS) of biological and geological significance.

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The inorganic chemistry of silicic acid with aluminium to form hydroxyaluminosilicates (HAS) has recently emerged as a scientific challenge. This is essentially due to the widely acknowledged toxicity of aluminium in biota and the flourishing evidence of the role for HAS in the abolition of aluminium toxicity by silicon. However to date there is little consensus concerning the chemistry underlying the formation of HAS. A better understanding of its chemistry could certainly help to comprehend the full extent of their role in controlling the biological availability of aluminium in the natural environment and ultimately the solubility of aluminium in soil and surface waters.

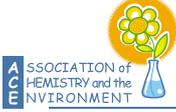
The present research has revealed a unique insight into the formation of HAS in acidic solution both in the laboratory and in the natural environment. Firstly the formation of the fluorescent morin-aluminium complex has been successfully applied as an indirect method of identifying HAS formation in acidic solution and has unveiled that their formation was dependent upon the prior formation of hydroxyaluminium templates. Secondly atomic force microscopy has been used to provide the first direct visualisation of HAS of varying morphology in solution and to confirm the applicability of the morin-reactive aluminium method to identify their formation. Thirdly the detailed structures of a number of precipitated HAS have been elucidated and their stability towards dissolution in both acidic and near-neutral conditions has been tested. These three studies have combined to reveal a unique insight into the hitherto unproven mechanism of formation of HAS of varying structure and stoichiometry both in the laboratory and in the natural environment. Finally, the new knowledge that has been gained on the chemistry of HAS has been used to both explain and predict their role in controlling aluminium solubility in soil and surface waters.

Geochimica et Cosmochimica Acta **65**, 2461-2467.

Journal of Inorganic Biochemistry **87**, 71-79.

Atmospheric Environment **35**, 21, 3681-3690.

12. FORTHCOMING ACE SPRINGER BOOK

Springer-Verlag, Berlin, and the ACE will publish a selection of the proceedings from the 2nd European Meeting on Environmental Chemistry (Dijon, 2001) in a book, due to be issued in 2002.

16. HUMOUR

Novel theories

From a newspaper in Johannesburg there was a column with the following: Results of a 'contest' for people to submit their theories on any subject. I do not want to withhold these great theories from you, scientists. Science can be awful simple, just read and see. Winners were:

Runner-up - Subject: Probability theory.

If an infinite number of rednecks riding in an infinite number of pick-up trucks fire an infinite number of shotgun rounds at an infinite number of highway signs, they will eventually produce all the world's great literary works in Braille.

Runner-up - Subject: Bio-mechanics.

Why yawning is contagious: You yawn to equalise the pressure on your eardrums. This pressure change outside your eardrums unbalances other people's ear pressures, so they then yawn to even it out.

Runner-up - Subject: Newtonian mechanics.

The earth may spin faster on its axis due to deforestation. Just as a figure skater's rate of spin increases when the arms are brought in close to the body, the cutting of tall trees may cause our planet to spin dangerously fast.

Grand prize winner - Subject: Perpetual motion.

When a cat is dropped it always lands on its feet and when a toast is dropped it always lands buttered side down. It was proposed to strap giant slabs of hot buttered toast to the back of a hundred cats; the two opposing forces will cause the cats to hover, spinning inches above the ground. Using the giant buttered toast/cat array, a highspeed monorail could easily link New York with Chicago.

17. EDITORIAL INFORMATION

New subscribers to the newsletter or contributions in the form of announcements, reviews or comment are invited and should contact the e-news desk at:

ACE.news@totalise.co.uk

To UNSUBSCRIBE from this Newsletter at any time please write to: ACE.news@totalise.co.uk stating "REMOVE" as the subject. If you would like to contribute to the next edition of the newsletter or have any comments or suggestions please contact us. Details of ACE board member are available on the web site. We hope you have enjoyed reading!

Stephanie DUDD

ACE.news@totalise.co.uk

PS. If you think that a friend or colleague might find <http://www.u-bourgogne.fr/ACE/> useful, don't forget to forward them this message.

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13. EUROPEAN PROJECTS UPDATE

Launch of the URBSOIL project

On 21-22 January 2002, the URBSOIL project was launched at a kick-off meeting held at the City of Glasgow Council Chambers in George Square, Glasgow, jointly organised by the Universities of Paisley and Strathclyde. URBSOIL is a research project funded by the EU Fifth Framework Programme theme Energy Environment and Sustainable Development, through the 4th Key Action: the City of Tomorrow & Cultural Heritage. The project will study urban soils as a potential source or sink for pollution and investigate methods of evaluating soil quality across Europe as an aid to sustainable urban management. The project will compile and generate new environmental data and provide novel methods to support the diverse groups responsible for management of urban environments. Funding for the project totals 1.66 million Euro. Over a three year period, the project, co-ordinated by the University of Turin, Italy, will involve the study of the urban soils of the cities of Glasgow, Seville, Aveiro, Uppsala and Turin.

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14. FEEDBACK REQUEST

Feedback/discussion from anyone attending the meeting on "Chemistry of Clean Reactions and Processes", 28th February – 1st March 2002 in Milan, or any other recent symposia on aspects of Environmental Chemistry are invited.

Please forward to: ACE.NEWS@totalise.co.uk

15. NEW ACE MEMBERS

New members to the association are always welcome and details regarding membership are available at: <http://www.u-bourgogne.fr/ACE>

ACE welcomes new members

RODRIGUES Flavio A. MOGI DAS CRUZES, BRAZIL
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