



NEWSLETTER

INTERNATIONAL HUMIC SUBSTANCES SOCIETY

Number 38

Winter 2007/08

Dear IHSS Members,

The IHSS had a very good year in 2007. We had an extraordinary increase in sales of our HA, FA and NOM Standard and Reference samples (see article in this newsletter) and we now have new bylaws. Also the new computer based financial accounting system is in place and we are beginning to see how it benefits us. With our very strong financial condition comes the challenge on how to best spend our money to promote our science.

In 2007 the Board of Directors looked at how we can better communicate to the public about humic substances and IHSS. On the homepage of our website there is a statement that says, "The Society is recognized as a world leader in fostering scientific education and research, and promoting public understanding of humic substances." We have not done much to "promote public understanding". As a start, we recently posted a page on the website entitled "What are humic substances ?" (see this newsletter or click on the link on the left of our homepage). The statement is aimed a non-technical audience and is intended to be very general. Yona Chen, a former IHSS president, prepared the initial draft, which was presented to the Board for lengthy discussion. Mike Perdue and Ed Huffman also contributed to the discussion.

This being an even numbered year, it is time for elections of Vice President, Secretary and one Board Position. The following are the board positions and the candidates:

Position	Candidates	
Vice-President	Ladislau Martin-Neto	Rolf Vogt
Secretary	Gudrun Abbt-Braun	Maria Jerzykiewicz
Board member	Claudio Ciavatta	Akira Watanabe

The candidates' statements and CV's are enclosed. Envelopes with the ballots will be sent to each of you by airmail soon. Please return the ballots to me, in the pre-prepared envelopes, by the deadline of March 31, 2008.

The Board would like to thank the nomination committee, Dan Olk (US), chair, Jerzy Drozd (Poland), Kay Spark (Australia) and Claire Richard (France) for their effective search for candidates. We gratefully acknowledge their effort.

With best wishes
 Prof. Paul Bloom
 President IHSS

BOARD ACTIVITIES

What are Humic Substances?

Humic substances (HS) are major components of the natural organic matter (NOM) in soil and water as well as in geological organic deposits such as lake sediments, peats, brown coals and shales. They make up much of the characteristic brown color of decaying plant debris and contribute to the brown or black color in surface soils. They are major components of NOM in surface waters and at higher concentrations can impart a dark color, especially in brown fresh water ponds, lakes, and streams. In leaf litter or composts, the color may be yellowish-brown to black, depending on the degree of decay and concentration.

Humic substances are very important components of soil that affect physical and chemical properties and improve soil fertility. In aqueous systems, like rivers, about 50 % of the dissolved organic materials are HS that affect pH and alkalinity. In terrestrial and aquatic systems HS affect the chemistry, cycling and bioavailability of chemical elements, as well as transport and degradation of xenobiotic and natural organic chemicals. They affect biological productivity in aquatic ecosystems, as well as the formation of disinfection by-products during water treatment.

Humic substances are complex and heterogeneous mixtures of polydispersed materials formed by biochemical and chemical reactions during the decay and transformation of plant and microbial remains (a process called humification). Plant lignin and its transformation products, as well as, polysaccharides, melanin, cutin, proteins, lipids, nucleic acids, fine char particles, etc., are important components taking part in this process.

Humic substances in soils and sediments can be divided into three main fractions: humic acids (HA or HAs), fulvic acids (FA or FAs) and humin. The HA and FA are extracted from soil and other solid phase sources using strong base (NaOH or KOH). Humic acids are insoluble at low pH, and they are precipitated by adding strong acid (adjust to pH 1 with HCl). Humin cannot be extracted with either a strong base or a strong acid.

Aquatic HS contain only HA and FA and these components are generally removed from water by lowering the pH to 2 and adsorbing both components on a suitable resin column. The HA and FA are extracted from the resin with strong base followed by lowering the pH to 1 to precipitate HA. The resin column separation is also used to separate FA from the non-humic materials (amino acids, peptides, sugars, etc.) extracted from soils. At low pH the FA adsorbs on the resin, but non-humic materials pass through the column.

Humic substances are highly chemically reactive yet recalcitrant with respect to biodegradation. Most of the data on HA, FA and humin refer to average properties and structure of a large ensemble of components of diverse structure and molecular weight. The precise properties and structure of a given HS sample depends on the water or soil source and the specific conditions of extraction. Nevertheless, the average properties of HA, FA and humin from different sources are remarkably similar.

December 2007, IHSS Board

New National Coordinators

There have been changes in the positions of the National Coordinators:

Prof. Jerzy Drozd, Wroclaw University of Environmental and Life Sciences, will follow Prof. Slawomir Gonet as coordinator of the Polish IHSS Chapter. Additional information about the activities of the Polish chapter is given on <http://ptsh.iir.edu.pl>.

Dr. Deborah Pinheiro Dick, from Federal University of Rio Grande do Sul will follow Dr. Ladislau Martin-Neto as coordinator of the Brazilian IHSS Chapter.

TRAVEL SUPPORT 2008

Students can apply for a **Travel Support Award** to attend next year's conference in Moscow. The complete application for the award should follow the guidelines for travel support reported on the IHSS web page and has to be sent before **February 28, 2008** to **Dr. Jerzy Weber** (jerzy.weber@up.wroc.pl, jerzyweber@gmail.com, and see address below).

For more information please look below and into the website of the IHSS: <http://www.ihss.gatech.edu>; "Travel Support".

The aim of an IHSS Travel Support Award is to:

Allow students to present their work and participate in the biannual International IHSS meetings. Ten awards will normally be granted. The number and amount of the awards will be determined by the President in consultation with the Treasurer and members of the travel support selection committee.

The award normally covers all or part of the costs of travel and subsistence for the conference. Recipients of travel support awards will be honored at the conference banquet, where they will receive a cash award, a certificate and a one year membership in IHSS.

Malcolm Award: The committee will select the top applicant for a special award: the Malcolm Award. This individual will receive a certificate and cash award of 250 US\$ in addition to the regular travel bursary.

Evaluations and notifications of awards will be given to the applicants four (4) months prior to the IHSS International Meeting.

Eligibility Guidelines for Travel Support to participate in IHSS meetings

Travel support will be granted only to students. Investigators who have completed their PhD degrees are not eligible.

Awards will be based primarily on the quality and originality of the scientific content of the manuscript and the applicant's record of scientific achievement. It should be made clear that the

student has had a major part in designing and conducting the research and wishes to pursue a career in a field in which humic substances science is important.

A committee consisting of the IHSS President, Vice President, Past President and Board Members will evaluate the applications for travel support awards.

IHSS Travel Support - How to apply

The electronic application should be sent to the Vice President of IHSS, to the email address indicated below.

The deadline for receipt of the applications is **February 28, 2008**

Applications must include:

- a letter of application

- Curriculum Vitae including a record of studies, (courses and grades)

- a letter of evaluation from the applicant's main supervisor

- a manuscript of the paper to be presented (4 pages in total).

Dr. Jerzy Weber

jerzy.weber@up.wroc.pl, jerzyweber@gmail.com

Institute of Soil Science and Environmental Protection

Wroclaw University of Environmental and Life Science

Wroclaw, Poland

STANDARD AND REFERENCE COLLECTION

Sales of humic standard and reference samples increase by 44% in 2007

The dollar value of the IHSS sales of HA, FA and NOM samples increased from \$82000 in 2006 to \$118000 in 2007. We made 358 individual sales in 2007, up from 277 in 2006. Over the last 10 years we have seen a generally steady increase but the increase this year was by far the largest we have seen. Most of the increase was for materials from aquatic sources, which accounted for \$98,000 of our sales. This compares to \$20,000 for HA and FA from mineral soil, peat and leonardite. The new Pony Lake FA, which we started selling in January 2007, accounted for \$4950 of the sales.

Paul Bloom

PAST CONFERENCES

Humic Substances in Ecosystems 7, Bachotek, Poland

The 7th International Scientific Conference on "Humic Substances in Ecosystems" was held in Bachotek, Poland, from June 17th to 21th 2007. The conference was organized by the Polish

Chapter of the IHSS (registered in Poland as Polish Humic Substances Society), as well as by the Nicolaus Copernicus University in Torun (Prof. Dr. Slawomir Gonet, Department of Soil Science) and the Slovak University of Agriculture in Nitra (Doc. Dr. Anton Zaujec, Department of Pedology and Geology). The meeting place was the Nicolaus Copernicus University training centre by Lake Bachotek.

The main conference topics were:

1. Transformation of organic matter in soils, sediments and water.
2. Soil organic matter as a factor determining soil genesis.
3. Structure and properties of terrestrial and aquatic humic substances.
4. Humic substances in soil protection strategies.
5. Humic substances and soil organic matter in university education.

The Conference was attended by more than 60 scientists from Poland, Slovak Republic, Czech Republic, Russia and Thailand. With 24 oral and 36 poster presentations the five main topics were well covered. Also a field session took place; it was dedicated to issues concerning humus in typical forest soils.

The addressees as well as the posters mentioned above outlined the role that humic substances play in natural and anthropogenic ecosystems. General issues, i.e. functions of humic substances in soil-formation processes, were brought up. However, also more detailed subjects were discussed, as the interpretation of NMR and EPR data for characterization of humic substances.

To our special delight, Prof. Dr Jerzy Weber, Vice-President of the IHSS, outlined in his welcome address the development of the IHSS and presented objectives of the Society.

In parallel to the conference, the General Assembly of the Polish Chapter of the IHSS took place. It began the fourth term of founded in 1995 Polish Humic Substances Society. For the term of 2007-2011 the following Board members were elected: Prof. Dr. Jerzy Drozd (the President, serving as the coordinator of the Polish Chapter of the IHSS), Prof. Dr. Sławomir Gonet (Vice-President), Dr. Maria Jerzykiewicz (Secretary) and Dr. Elzbieta Jamroz (Treasurer), Prof. Dr Bozena Debska (member).

Besides the conference, the participants were offered a wide variety of leisure activities. Boats and kayaks were provided to explore the nearby lake. In the evening the party met around a campfire or barbecue and on Wednesday, there was a trip to Brodnica city, which included visiting the Old town and a museum.



VII Brazilian Meeting of Humic Substances

The VII Brazilian Meeting of Humic Substances, realization of Brazilian Chapter of IHSS, was held last October 30th, to November 01st, in the city of Florianópolis, Santa Catarina State, localized in the very beautiful island in the South of Brazil. The chairman of the meeting was Prof. Bruno Spoganicz, from Federal University of Santa Catarina. The Brazilian Meetings of Humic Substances started in 1996, followed by other meetings in 1997, 1999, 2001, 2003, 2005 and 2007.

The event was attended by 134 participants, mainly researchers and students from different institutions of Brazil, as well as from representatives of private enterprises. 16 oral and 80 poster presentations are given in the topics:

1. carbon cycle and their association with greenhouse effect and climate changes;
2. characterization of humic substances by analytical and spectroscopic techniques;
3. tillage effects, including no-tillage, on quantitative and qualitative aspects of humic substances;
4. humic substances from anthropogenic and pyrogenic sources;
5. interactions of xenobiotics with organic matter;
6. applications of humic substances in the remediation of polluted areas and
7. physiological effects of humic substances in plants.

The invited speakers were Prof. Paul Bloom, University of Minesotta and President of IHSS, from United States of America (USA), Prof. Alessandro Piccolo, University of Napoli, Italy, Prof. Michael Spiteller, University of Dortmund, Germany, and Prof. Patrick J. Farmer, University of California, USA. Several other Brazilian researchers were also invited with a total of 16 invited contributions. Very impressive has been the participations of many graduate students. As in the previous meeting in 2005, a nomination Committee, constituted by Drs. Deborah P. Dick, Maria Martha Sierra and Etelvino H. Novotny, the best three posters were elected with support of IHSS:

Andreia Fernandes, Federal University of Santa Catarina, Florianópolis, *“Evaluation of adsorption of hormones 17 β -Stradiol e 17 α -Etinilstradiol in peat sample”*,

Lucimar Lopes Fialho and Rafael Albieri, Brazilian Agricultural Research Corporation (Embrapa) at National Center for Agricultural Instrumentation, São Carlos, *“Lignin Interference in the free radical quantification during composting process”*,

Carla Machado Rosa, Federal University of Pelotas, Pelotas, *“Development of lettuce seedling treated with humic substances from agri-industrial composted residues”*.

The next meeting was also defined during in the assembly meeting of the Conference. It will take place in October 2009, in the city of Pelotas, Rio Grande do Sul State, and will be chaired by Dr. Clenio Pillon, from Brazilian Agricultural Research Corporation (Embrapa). Also during the assembly meeting and as decided in the last meeting, in 2005, a new IHSS Brazilian Chapter Coordinator was elected to start in January, 2008. Dr. Deborah Pinheiro Dick, from Federal

University of Rio Grande do Sul, Department of Chemistry, a founder member of Brazilian Chapter of IHSS, was elected as Coordinator to substitute Dr. Ladislau Martin-Neto, which has been coordinating the Brazilian Chapter since its foundation.

Ladislau Martin-Neto, Deborah P. Dick and Bruno Spoganicz

Summer School: "Natural Organic Matter: A resource for environment and nanotechnologies"

The Summer School on "Natural Organic Matter: A resource for environment and nanotechnologies" took place on 9-14 September 2007 and was held at the former Summer Royal Palace of Bourbon Kings, that is now the site of the Faculty of Agricultural Sciences, of the University of Naples Federico II, in Portici near Naples, Italy. The Royal Palace was built on 1734 in a climate-mild site located in the middle of the coast surrounding the Gulf of Naples, enjoying a breath-taking view of Capri and Ischia Islands at sea, and Sorrento and Naples at both ends of the Gulf.

The Summer School has been organized by Professor Alessandro Piccolo, following the idea conceived together with Prof. A. Patti of Monash University, Australia, and Prof. Peter Buraue of the von Helmholtz Centre of Juelich, Germany, during a pleasant evening in a beer-garden in Kalsruhe, while resting from the works of the IHSS International meeting of August 2006. The organization has been made possible by the financial supports granted by the International Science Linkages Programme-Science Academic Program (ISL-SAP) of the Australian Government, the Consorzio Interuniversitario per "La Chimica per l'Ambiente" (INCA) of Italy, the Juelich Centre, Germany, and the IHSS.

The student response has been large. 44 students participated to the Summer School in representation of Italy, Czech Republic, Germany, Australia, Romania, USA, Brazil, Belgium, Spain, Republic of Kyrgyz, Republic of Kazakhstan, The Netherlands, India, Poland, France, and Japan. The students were lodged in a four-stars Hotel at walking distance from the Royal Palace and received a full-board treatment during their stay for the Summer School. The lectures were held in a class room of the Faculty of Agricultural Sciences in the Royal Palace. The invited lecturers to the Summer School have been 18, from Italy, Germany, Australia, France and Ireland, and lodged either in the near-by Hotel in Portici with the students or in Hotels in Naples. Lectures were given during four full working days, with a coffee break in the morning and a seated lunch set-up in the Chinese Room of the Royal Palace.

The lectures have been given as by the following programme:

Monday, 10.9.2007. Theme: *Structure and reactivity of natural organic matter*

Molecular characteristics of humic matter. (9-10) Prof. Alessandro Piccolo (University of Naples, Italy); Humin, no longer a mystery (10.15-11.15) Prof. Michael Hayes (University of Limerick, Ireland); Arts and artefacts in the derivatization of humic molecules (11.15-12.15) Prof. Laurent Grasset (University of Poitiers, France); Principles of Atmospheric Pressure Ionization Mass Spectrometry and applications to natural organic matter(14.30-15.30) Prof. M. Spiteller (University of Dortmund, Germany); Complexation of heavy metals with humic molecules. Long-term stability of complexes (15.30-16.30) Prof. Pascal Reiller (Saclay, Nuclear Energy Institute; France); Spectroscopic methods for the characterization of humic matter (16.30-17.30) Prof. Nicola Senesi (University of Bari, Italy).

Tuesday, 11.9.2007. Theme: *Green chemistry and natural organic matter - Applications and processes for environmental sustainability*

Green Chemistry and Soil Organic Matter Transformations (9.30-10.30).Prof. Tony Patti (Monash University, Centre for Green Chemistry; Australia); Molecular Modelling of Natural Organic Matter (10.45-11.45) Prof. Alan Chaffee (Monash University; Australia); Biological activity of humic substances: physiological, molecular and ecological implications (11.45-12.45) Prof. Serenella Nardi (University of Padova, Italy); Biorefineries (15.00-16.00) Prof. Giuseppe Alonzo (University of Palermo, Italy); New paints and surface coatings from renewable resources (16.00-17.00) Prof. Roy Jackson (Monash University, Australia).

Wednesday, 12.9.2007. Theme: *Nanotechnologies of natural organic carbon and nanostructured materials*

Techniques of NMR spectroscopy to elucidate chemical and conformational structures of natural organic matter and its derivatives (9.30-10.30) Prof. Pellegrino Conte (University of Palermo, Italy); DRIFT, SERS and TG-DTA analyses of natural organic matter: an approach to evaluate the quality of organic carbon (11.00-12.00) Dr. Ornella Francioso (University of Bologna, Italy); Insights into natural organic matter organisation and dynamics from studies of nanomaterial structure and production. (15.00-16.00) Prof. Mick Wilson (University of Western Sydney, Australia); Synthesis and characterization of nanometals (16.00-17.00) Dr. Gianfranco Carotenuto (National Research Council, Nanomaterials, Portici, Italy).

Thursday, 13.9.2007. Theme: *Chemical and physical technologies for the control of soil organic matter dynamics in soils and reduction of biogenic emission of greenhouse gases.*

Sustainable Soils - Reduced Impact on Climate Change (9.30-10.30) Prof. Peter Burauel (Juelich Federal Research Centre, Germany); Moderating Greenhouse Gas Levels by Carbon Sequestration in Soils (11.00-12.00) Prof. Roger Swift (The University of Queensland, Australia); Water and carbon dynamics in soils: monitoring and modelling (15.00-16.00) Prof. Harry Vereeken (Juelich Federal Research Centre, Germany); Sustainable chemical technologies for in situ

sequestration of organic carbon in soil (16.00-17.00) Prof. Alessandro Piccolo (University of Naples, Italy).

Friday, 14.9.2207. On Friday morning, a bus excursion was organized to visit the Vulcanological Institute at mid-way to the top of the Vesuvius volcano and the Vesuvius crater at 1100m of elevation. The Vulcanological Institute had been the first of this kind in the World and was funded by a Bourbon King on 1852. It maintains a vast collection of the early instruments, devised mainly by Italian Vulcanologists, to monitor and predict Vulcanos activities, as well as the documentation showing the early scientific collaborations with several countries concerned with Vulcanos monitoring (e.g. Japan). The excursion was well attended by several lecturers and students.

Some photos of the Summer School activities are enclosed.

The Summer School was a success both in terms of knowledge transfer and increasing awareness of the importance of humic matter in the discussed themes. The students interest was high and it has been asked several times to repeat this experience regularly in the future. There are already initiatives to organize such school every two years (in order not to overlap with the IHSS meeting) and in different countries.

Alessandro Piccolo

FUTURE CONFERENCES

WELCOME TO IHSS-14 IN RUSSIA

14th International Meeting of the International Humic Substances Society (IHSS) will be held on September 14-20, 2008 aboard the ship traveling from Moscow to Saint Petersburg, Russia.

The conference is entitled "From molecular understanding to innovative applications of humic substances" and will be held under auspices of the International Union of Pure and Applied Chemistry (IUPAC) .



The particular goals of this IHSS conference are to demonstrate the growing importance of humic substances in the context of global climate change, and to draw attention of industrial chemists to conversion of huge resources of humified biomass into alternative feedstock for bio-based

products. To attain the latter goal, the satellite exhibition "Humic materials - resources for the 21st century" will take place during the conference.

Important Deadlines

Registration fee:

Immediate payment - January 15, 2008

Later payment - February 15, 2008

Final payment - May 15, 2008

Accommodation payment - May 31, 2008

Notification on abstract acceptance - January 31, 2008

Materials for the Exhibition Catalogue - May 15, 2008

Travel support

Students can apply for the IHSS travel bursary. The complete application for the bursary should follow the guidelines for travel awards and has to be sent before February 28, 2008 to Vice President of IHSS Dr. Jerzy Weber (jerzyweber@gmail.com). For Eligibility Guidelines follow the link <http://www.ihss.gatech.edu>.

CIS-IHSS members can apply for a travel support from ISTC (International Science Technology Center). An application for travel support should include self-presentation and an abstract. It must be sent to the IHSS-14 conference secretariat before February 28, 2008.

Prof. Irina Perminova, Chair of the Organizing Committee

Dr. Natalia Kulikova, Conference Secretariat

E-mail: ihss@org.chem.msu.ru

<http://www.ihss-14.humus.ru>

Tel./Fax: +7(495)939-55-46

Department of Chemistry, Lomonosov Moscow State University

European Geoscience Union (EGU)

Soil Systems Science Division (SSS)

Vienna, Austria, 13-18 April 2008

European Geosciences Union is an excellent opportunity to join geoscientists from the whole world, and to discuss problems dealing with soil and other components of the Earth system. All necessary information available at <http://meetings.copernicus.org/egu2008>

Particularly, we would like to turn your attention to the following sessions:

- SSS5: Wildfire effects on carbon storage in soil and vegetation: long-term gain or loss?
- SSS8: Organic soils and carbon sink: characterization, relevance, analysis
- SSS18: Organic wastes composting and application to soil - analytical, agricultural and environmental issues

SSS20: Soil organic matter decomposition. The impact of land management practices
SSS28: Fractal structures and processes in environmental systems
SSS29: Molecular biogeochemistry: the fate of organic carbon in soils

For further information see:

<http://www.cosis.net/members/meetings/programme/view.php?prg=313>

Joint GSA-ASA/SSSA/CSA 2008 International Annual Meeting

Joint Meeting with the Geological Society of America and Gulf Coast Association of Geological Societies with the Gulf Coast Section of the Society of Economic Paleontologists and Mineralogists, hosted by the Houston Geological Society); www.acsmeetings.org

Houston, Texas, 5-9 October 2008

Symposium on

Black Carbon in Soils and Sediments: Formation, Stabilization, Abundance, and Environmental Function

In the Joint Session: Carbon Sequestration: Methods, Markets and Policy

Symposium sponsored by Divisions S2, S11 and S7 of SSSA, the International Humic Substances Society, and the Geochemical Society.

Abstract submission will open **21 January, 2008**.

For further information see:

<https://www.acsmeetings.org/programs/technical/>

Australian Organic Geochemistry Conference

Adelaide, Australia, 8-12 September, 2008

Deadline for submission of abstracts: May 31, 2008

For further information contact:

Dr. David McKirdy, Chair, Organising Committee

Email: david.mckirdy@adelaide.edu.au

Web: <http://www.ees.adelaide.edu.au/>

Humic Science & Technology Conference Eleven

at Northeastern University

Boston, MA USA , 2-4 April, 2008

Deadline for registration: January 31, 2008

For further details contact:

Geoffrey Davies and Elham Ghabbour

Co-Chairs, HS&T Conferences

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www.hagroup.neu.edu.

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International Humic Substances Society on the World Wide Web

Visit our home page at:

<http://www.ihss.gatech.edu>

Dr. E. M. Perdue coordinates the updating of the IHSS WEB page which is located on the server of the Georgia Institute of Technology, Atlanta, GA, USA.

Contributions, suggestions and comments regarding the content and organization of the WEB pages are welcome from all IHSS members.

E-mail: Dr. E. M. Perdue at michael.perdue@eas.gatech.edu.

IMPRESSUM

Editor: INTERNATIONAL HUMIC SUBSTANCES SOCIETY
Newsletter 38

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