



# NEWSLETTER

## INTERNATIONAL HUMIC SUBSTANCES SOCIETY

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Number 33

Summer, 2005

Dear IHSS members,

Autumn will again be time for elections: all of you will be asked to choose candidates and vote to renew the positions of Vice President, one Board Member and Treasurer of the Society. Your active participation is once again vital to make the IHSS Board truly representative of the IHSS membership.

The good functioning of the Society depends on its officers and this honour and duty should be decided in turn by the largest possible number of the membership. The regular renewal of all Board positions was wisely delineated in our bylaws by indicating in Article V, Section 4 the maximum number of years each officer should serve. However, during the past years it has become increasingly clear that the position of Treasurer is different from the others. This position requires not only dedication in terms of both time and effort, which few of us would be prepared to spare, but also a specific knowledge of laws as well as of tax regulations. It also has become increasingly evident for undeniable practical reasons, that the Treasurer should practically be a person living in the USA; it would be complicated for anyone outside the USA to deal with the financial administration of a Society based in the USA. It would also be exceedingly costly and time consuming to regularly shift from country to country the legal location and bank accounts of the Society.

For these reasons the Board of Directors asked our well-known, trustworthy Treasurer Ed Clapp to agree to be a candidate and to serve again for another term. We are all very obliged to him for accepting and be willing to go on serving the IHSS as Treasurer. Together with the ballots for the next elections you will therefore receive another ballot which will contain a request to agree to a change in Article V, Section 4 of the bylaws, which will read as follows:

“An officer, except the President, the Vice President/President Elect and the Treasurer, may hold the same office for no more than two (2) additional consecutive terms. No officer, except the Treasurer may serve more than twelve (12) consecutive years on the Board of Directors”. The old text was:” An officer, except the President and the Vice President/President Elect, may hold the same office for no more than two (2) additional consecutive terms. No officer may serve more than twelve (12) consecutive years on the Board of Directors”.

We hope to get the necessary support from the membership and allow our Society to avail itself of Ed’s invaluable expertise for some more years.

**Maria De Nobili**  
President of IHSS

## BOARD OF DIRECTORS 2005

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### **Honorary Members**

Dr. Wolfgang FLAIG †  
Dr. Morris SCHNITZER  
Dr. Frank J. STEVENSON  
Dr. Ronald L. MALCOLM †  
Dr. Michael H.B. HAYES  
Dr. Egil T. GJESSING  
Dr. Russel CHRISTMAN  
Dr. Konrad HAIDER

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## International Humic Substances Society on the World Wide Web

Visit our home page at:

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

### NEW UPDATES!!!

Information on  
the new IHSS TRAINING BURSARIES,  
IHSS TRAVEL BURSARIES,  
MEMBERSHIP FEES.

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](mailto:michael.perdue@eas.gatech.edu).

## ELECTIONS

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The President has appointed the new elections nominating committee. Members of the committee are: Chair Jerzy Drozd of the Agricultural University of Wrocław, Faculty of Agriculture, Institute of Pedology and Agricultural Environment Protection (Poland), Dan Olk of the USDA-ARS National Soil Tilth Laboratory, Ames, IA (USA), and Deborah Pinheiro Dick of the Instituto de Química, UFRGS, Porto Alegre – RS (Brazil).

Members are invited to send candidate names to the committee through their chapter coordinators or directly to the committee.

Jerzy Drozd: [drozd@ozi.ar.wroc.pl](mailto:drozd@ozi.ar.wroc.pl) Dan Olk: [olk@nstl.gov](mailto:olk@nstl.gov) Deborah Pinheiro Dick: [dpdick@iq.ufrgs.br](mailto:dpdick@iq.ufrgs.br)

## BOARD ACTIVITIES 2005

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### **BOARD MEETING, JUNE 2005**

The last Board meeting was held after the EMSI/NOM workshop, on June 17 and 18, 2005 in Columbus, Ohio, USA. Many topics were discussed during the meeting:

- Elections in 2005: voting for the renewal of the positions of Vice President, one Board Member and Treasurer of the Society. It was decided that concomitantly to the next elections, the membership will be asked to vote a change in bylaws to allow the present Treasurer of the society to be re-elected. Details are given in the President's introduction on page 1.
- 13<sup>th</sup> meeting of IHSS in Karlsruhe, 2006: Gudrun Abbt Braun reported on behalf of the organizing committee about the arrangements made for the conference. Information can be found in the first announcement and call for papers on page 16 of this newsletter and on the website [www.wasserchemie.uni-karlsruhe.de/ihss2006/](http://www.wasserchemie.uni-karlsruhe.de/ihss2006/).
- Reference and Standard Collection: the Board has decided upon a new reference sample from Antarctica. Detailed information is given on page 7.
- National Chapters: Among the items discussed during the last Board meeting was the ever increasing need for transparent and democratic organization of the larger chapters. Due to the continuing increase in Collection sales, the IHSS is in good financial standing. We are able to spend more money for Collection sample renewal and for bursaries and to contribute to the activities of Regional and National Chapters. This makes it important to set up clear rules for management and organization of Chapters with more than 50 members. The President suggested that following the example of the Nordic/Baltic Chapter, the IHSS should encourage the National Chapters to develop bylaws and hold regular elections of National Coordinators. To encourage participation from their members, the President proposed that up to 50% of the membership dues should be retained by Regional or National Coordinators for the organization of National Chapter meetings or to encourage students (prizes, bursaries, etc). These suggestions were approved by the Board.

- **Membership fees:** the Board decided to update membership fees. The new list is reported on page 4 of this newsletter.
- The secretary announced the following changes in the positions of the National Coordinators:  
 Ulla Lundstrom will follow Georg Becher as coordinator in the Nordic-Baltic Chapter,  
 Marc Benedetti will follow Claire Richard in the French Chapter,  
 Dan Olk will follow Alan Olness in the US Chapter.
- Development of the number of members and countries since 2001:

<b>Members and Countries</b>					
	2001	2002	2003	2004	2005
<b>Members, total</b>	928	873	883	898	917
National Chapters	899	831	832	855	875
RoW-Chapter	29	42	51	43	42
<b>Countries, total</b>		53	53	56	55
National Chapters		31	31	35	28
Countries in RoW		22	22	21	20
08.06.2005					

*Gudrun  
Abbt-Braun*

## MEMBERSHIP FEES

At the last Board Meeting in Columbus, the Board of Directors of the IHSS agreed to update the membership dues and to hasten the process of updating and completing the general membership list:

- Members of the ROW-Chapter should send their dues directly to the Secretary (in US\$).
- The National Coordinators should update the membership lists at least at the beginning of each year. Each National Coordinator should use the form for the membership list which was already sent by the Secretary. The form should be sent to the Secretary.
- Up to 50 % of the membership dues of the National Chapters can from now on be retained by Regional or National Coordinators of Chapters with more than 50 members for students prizes, bursaries, etc and for National Chapter meetings (see the decision of the Board on page 3 BOARD MEETING, JUNE 2005, National Chapters).

**IHSS Members are reminded that membership dues are payable at the beginning of each year directly to their National Coordinators.**

**Membership fees 2005, in US\$**

Chapter, Country	Regular	Student/ Retired
Argentina	\$12,50	\$7.00
Australia- New Zealand	\$25.00	\$12.50
Austria	\$25.00	\$12.50
Belgium	\$25.00	\$12.50
Brazil	\$12.50	\$7.00
Bulgaria	\$12,50	\$7.00
Cameroon	\$12,50	\$7.00
Canada	\$25.00	\$12.50
China	\$12,50	\$7.00
Columbia	\$12,50	\$7.00
Costa Rica	\$12,50	\$7.00
Croatia	\$12,50	\$7.00
Czech Republic	\$12,50	\$7.00
Denmark	\$25.00	\$12.50
Egypt	\$12,50	\$7.00
Estonia	\$12,50	\$7.00
Finland	\$25.00	\$12.50
France	\$25.00	\$12.50
Germany	\$25.00	\$12.50
Greece	\$25.00	\$12.50
Hungary	\$12,50	\$7.00
India	\$12,50	\$7.00
Indonesia	\$25.00	\$12.50
Iran	\$12,50	\$7.00
Ireland	\$25.00	\$12.50
Israel	\$25.00	\$12.50
Italy	\$25.00	\$12.50
Japan	\$25.00	\$12.50
Jordan	\$12,50	\$7.00
Kazakhstan	\$12,50	\$7.00
Latvia	\$12,50	\$7.00

Chapter, Country	Regular	Student/ Retired
Lithuania	\$12,50	\$7.00
Malaysia	\$25,00	\$12,50
Mexico	\$12.50	\$7.00
Monaco	\$25.00	\$12.50
Morocco	\$12.50	\$7.00
Netherlands	\$25.00	\$12.50
Norway	\$25.00	\$12.50
Philippines	\$12.50	\$7.00
Poland	\$12.50	\$7.00
Portugal	\$25.00	\$12.50
Romania	\$12,50	\$7.00
Russia, Commonwealth of Independent States (CIS),	\$12,50	\$7.00
Serbia	\$12,50	\$7.00
Slovakia	\$12,50	\$7.00
Slovenia	\$12,50	\$7.00
South Africa	\$25.00	\$12.50
South Korea	\$25.00	\$12.50
Spain	\$25.00	\$12.50
Sweden	\$25.00	\$12.50
Switzerland	\$25.00	\$12.50
Taiwan	\$25.00	\$12.50
Turkey	\$25.00	\$12.50
Ukraine	\$12,50	\$7.00
U. K.	\$25.00	\$12.50
USA	\$25.00	\$12.50
Venezuela	\$25.00	\$12.50
Developing countries in Africa, Asia and Central and South America	\$12,50	\$7.00

## TRAVEL BURSARIES 2006

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Students can apply for a Travel Bursary to attend next year's conference in Karlsruhe. Pre-applications should be made before **Dec. 01, 2005** and must contain the abstract. They must be sent to the IHSS 2006 conference secretariat at the following address,.

**E-mail: [IHSS2006@ebi-wasser.uni-karlsruhe.de](mailto:IHSS2006@ebi-wasser.uni-karlsruhe.de),  
[www.wasserchemie.uni-karlsruhe.de/ihss2006/](http://www.wasserchemie.uni-karlsruhe.de/ihss2006/)**

The complete application for the bursary should follow the guidelines for travel awards reported on the IHSS web page and has to be sent before **Dec. 31, 2005** to **Dr. Paul Bloom** ([prb@umn.edu](mailto:prb@umn.edu)).

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

## TRAINING BURSARIES

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### AIM

Starting this year, for the first time, these bursaries will allow students to spend 1-3 months training/research periods at leading laboratories with the aim of enhancing their PhD work and becoming acquainted with new techniques and new aspects of HS and NOM research.

### GUIDELINES and APPLICATION

Proposals may be submitted by graduate students (MSc, PhD) and young scientists.

Detailed information is given in NEWSLETTER 22 or on the webpage of the society (<http://www.ihss.gatech.edu>).

All applications must be received by May 15 of each odd year. Please note that there will not be any call for training bursaries in 2006 as the IHSS will give only travel bursaries for participation of students to the Karlsruhe meeting. **The next call for training bursaries will be in January 2007.**

For more information see the website of the IHSS: <http://www.ihss.gatech.edu>; "Travel awards".

### TRAINING BURSARIES for 2005

Seven applications were received by 15<sup>th</sup> of July 2005. The bursaries committee is examining them and will notify results to applicants within the second half of September.

## IHSS STANDARD AND REFERENCE COLLECTION

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### **New Reference Sample from the Antarctica**

At the recent meeting of the IHSS Board we approved a grant of \$21,000 to purchase supplies and help support a graduate student for a sampling trip to Antarctica to obtain 50 g of fulvic acid (FA) for the Collection, from Pony Lake. The IHSS funding is supplementary to a major grant from the US National Science Foundation to a team led by Yo Chin of The Ohio State University and Diane McKnight of the University of Colorado. They will be leaving in December 2005 to do the sampling.

Pony Lake is in an environment that lacks higher plants and there is no input from soil organic matter to the lake. The FA from Pony Lake represents a zero terrestrial input end-member of aquatic NOM and it has no input of lignin residues. The importance of this type of FA derives from the fact that because no higher plants can grow in this environment the FA is derived from alga and microbes.

Samples of microbially-derived fulvic acid from Lake Fryxell in the McMurdo Dry Valleys in South Victoria Land, Antarctica were isolated during an earlier trip in the late 1980's. The C13 nuclear magnetic resonance (NMR) spectra of fulvic acids from Lake Fryxell showed a predominance of aliphatic and carbohydrate carbons. Although a large decrease in the DOC concentration occurred during the transition to ice-free conditions (from 7.7 to 2.7 mM), the changes in the DOM fractionation were relatively small. The nitrogen content of all fulvic acid and transphilic acid fractions decreased significantly during the transition and the  $\delta(15)\text{N}$  values became heavier for all fractions. The only discernible change in the C-13 NMR spectra of all the fractions was a decrease in a peak in the region corresponding to amide carbons. These results suggest that preferential loss of N-containing molecules of fulvic acids and transphilic acids are associated with the considerable loss of DOM in midsummer. The reference sample that they will prepare for IHSS will be isolated from DOM in Pony Lake, Cape Royds, Antarctica. The Pony Lake fulvic acid is similar to the Lake Fryxell sample and the site has several advantages in terms of the logistics involved in collecting a large volumes sample:

- high DOC concentrations (30-95 mgC/L); about 20% of the DOC is fulvic acid based on our previous studies,
- protected status because of its location near a historic hut (Shackleton's hut from the 1907 expedition),
- documentation of lake ecosystem condition being similar in the past, based on studies conducted by the biologist on the 1907 expedition,
- ice-free conditions with significant wind-mixing in summer,
- proximity to McMurdo Station, the large US research base with a modern analytical laboratory.

In the developing the plan for the larger volume collection, the group worked with the environmental group of the US Antarctic Program. To prepare the new reference sample, the water will be filtered on site and then pumped to the helicopter pad and shipped by helicopter sling load to the Crary Laboratory at McMurdo Station for processing. This approach will minimize the environmental problems associated with processing the sample in the field, such as disposing of the effluent and operating a larger camp.

### **Fulvic Acid from Elliot Soil**

Recently Michael Hayes and his group at Limerick University completed the extraction and preparation of our third batch of FA from the Elliott soil. This sample will replace the current batch of Elliott soil FA when it is sold out in about a year from now.

*Maria de Nobili, Paul Bloom*

## **IHSS MEMBERS NEWS**

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**Dr. Robert (Bob) L. Wershaw** retired in March, 2005 from the U.S. Geological Survey after 41 years of employment. His research project "Organic Polyelectrolytes" encompassed humic substances in soil, sediment, and water as well as other components of natural organic matter and their interactions with various contaminants. Beginning with some of his original attempts to measure the occurrence and fate of organic pesticides in the environment, this research quickly translated into studies of the interaction of these pesticides with natural organic matter in soils, sediments, and water. As little was known about the chemical and physical structure of natural organic matter, Bob focused on original research on organic matter structure that became a basis for understanding partitioning interactions between various organic contaminants and natural organic matter. This structural model described organic matter molecules assembling as a bipolar membrane structure on soils and sediment surfaces, and as aggregate colloids in aqueous suspension. The physical structural properties of natural organic matter are currently a topic of significant research interest, and Bob's career research on this topic has made him an acknowledged leader in this field. Bob has maintained a research interest in the fate of contaminants in the environment as evidenced by his recent research on organic arsenicals fed to poultry and the fate of these arsenicals in poultry wastes disposed on soils as fertilizer. All of these research endeavors relied on a fundamental understanding of organic biogeochemistry, through scholarship, tenacity, and a unique ability to select critical research fields that have been ignored by the researcher community. Bob's major scientific activity after retirement has been to promote and organize open access electronic publication of environmental research. *Jerry Leenheer*



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## Assessment of Concentration and Fractionation Methods for the Structural Characterization of Dissolved Organic Matter in Waters

Müller, Margit B.

Universität Karlsruhe (TH), July 2004, Supervisor: Prof. Dr. Fritz H. Frimmel

Engler-Bunte-Institut, Division of Waterchemistry, D-76131 Karlsruhe, Germany

### Abstract

Dissolved organic matter (DOM) is ubiquitous in all aquatic systems. Both the composition as well as the concentration of DOM in natural waters are highly variable and are functions of the origin, formation conditions, and age, i.e. the degree of biogeochemical modification of the precursor material. Components of the DOM can be of natural as well as of anthropogenic origin. In most aquatic systems, compounds of natural origin form the major part of the DOM. Among these, humic substances (HS) are the most abundant ones and therefore play an important role in aquatic systems as well as in water technology.

Molecular size and structure of the DOM components are key parameters for understanding their behavior both in aquatic environments and in water treatment processes. The aim of this work therefore was to investigate the structural composition of various molecular size fractions of DOM of different origin. For this purpose, two samples representative of different precursor materials and of a different degree of modification were selected: a humic-rich sample of natural origin from the brownwater lake Hohloh in the Northern Black Forest, Germany and an effluent from the wastewater treatment plant of the city of Karlsruhe, Germany (anthropogenic origin). Size exclusion chromatography (SEC) and multi-stage ultrafiltration (mst-UF) were used as fractionation methods. The structural composition of the DOM fractions was investigated using  $^{13}\text{C}$  Magic Angle Spinning Nuclear Magnetic Resonance Spectroscopy ( $^{13}\text{C}$  MAS NMR).

The preparation of samples which are suitable in amount (mass) and composition (relative content of organic carbon) for  $^{13}\text{C}$  MAS NMR analysis requires a concentration of the sample before fractionation. From the three concentration methods which were compared (adsorption onto XAD8-resin, rotary evaporation, and ultrafiltration), ultrafiltration was the most suitable method because it resulted in the highest DOC recovery and also in a removal of inorganic salts from the sample.

A comparison of the fractionation methods SEC and mst-UF showed that SEC is superior to mst-UF both in terms of separation efficiency and reproducibility. The separation efficiency was evaluated by investigating the molecular size distribution of SEC and mst-UF fractions from the same sample using asymmetric flow field-flow fractionation (AF<sup>4</sup>). Fractionation by SEC, however, has the drawbacks of diluting the sample and of introducing inorganic salts into it due to the use of

a buffered eluent. This requires an additional sample preparation step before NMR analysis to remove the salts.

For the brownwater sample, similar trends regarding the relative content of certain structural groups were observed for the SEC and mst-UF fractions: The relative content of carbohydrates and methyl groups was highest in the fractions of nominally large molecular size and decreased with decreasing size. On the other hand, the relative contents of branched aliphatic carbon, branched O-alkyl carbon, and COOR carbon increased with decreasing size. Based on extensive data which are available for the brownwater sample in the literature and on an extended interpretation of the NMR data, independent information on the molecular size of the sample components could be deduced. It was concluded that the average molecular size of the majority of the DOM components indeed did decrease from nominally large to nominally small fractions. Hence, in addition to yielding information on the structural composition of the fractions, this extended interpretation of the NMR data also confirmed that with both fractionation methods a separation according to different hydrodynamic radii ( $R_e$ ) could be achieved. Fractionation experiments with both the wastewater effluent and with selected model compounds, however, showed that interactions between the separation medium (SEC column, UF membrane) and sample components can negatively affect the separation according to different  $R_e$  values. This demonstrates that the above mentioned conclusion therefore is, however, only valid for the investigated brownwater sample and the experimental conditions used in this study.

The structural data for the brownwater fractions which have been determined in this work are useful for future studies regarding, e. g., the removal of certain fractions by different water treatment processes such as flocculation, adsorption onto activated carbon, or membrane filtration and also for the investigation of the interaction of DOM fractions/components with other water constituents. The structural data are therefore useful with respect to both water technology-oriented and scientific studies of the brownwater DOM.

#### Publications

- Müller, M. B., Schmitt, D., Frimmel F. H. (2000): Fractionation of Natural Organic Matter by Size Exclusion Chromatography – Properties and Stability of Fractions. *Environ. Sci. Technol.* 34 (23): 4867-4872.
- Schmitt, D., Müller, M. B., Frimmel, F. H. (2000): Metal Distribution in Different Size Fractions of Natural Organic Matter. *Acta hydrochim. hydrobiol.* 28 (7): 400-410.
- Müller, M. B., Frimmel, F. H. (2002): A New Concept for the Fractionation of DOM as a Basis for Its Combined Chemical and Biological Characterization. *Wat. Res.* 36 (10): 2643-2655.
- Müller, M. B., Fritz, W., Lankes, U., Frimmel, F. H. (2004): Ultrafiltration of Nonionic Surfactants and Dissolved Organic Matter. *Environ. Sci. Technol.* 38 (4): 1124-1132.

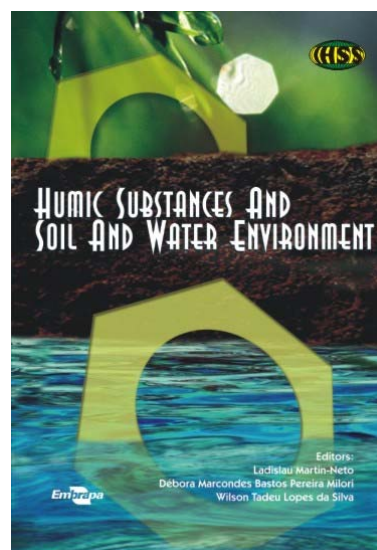
- Müller, M. B.: Bewertung von Anreicherungs- und Fraktionierungsverfahren für die strukturelle Charakterisierung der gelösten organischen Substanz in Gewässern. PhD thesis, Universität Karlsruhe, 2004, 185 p. ISSN 1612-118X. Available via: Prof. Dr. F. H. Frimmel, fritz.frimmel@ebi-wasser.uni-karlsruhe.de.

Margit B. Müller received the **IHSS MALCOLM AWARD** in São Pedro – Brazil 2004 for her contribution " Structural Characterization of Brownwater SEC Fractions by  $^{13}\text{C}$  MAS NMR Spectroscopy".

## NEW BOOKS

### HUMIC SUBSTANCES AND SOIL AND WATER ENVIRONMENT

MARTIN-NETO, L.; MILORI, D.M.B.P.;  
SILVA, W.T.L. (Eds.)  
2004



This book is a compilation of 240 World-wide abbreviated papers submitted to “XII International Meeting of International Humic Substances Society”. The Meeting was held in July, 2004, in São Pedro – Brazil. The book is divided into 10 main chapters:

- Organic matter and climate change
- Organic matter in aquatic systems
- Ecological functions of humic substances
- Organic agriculture and plant growth effects
- Structural aspects and characterization of humic substances
- Soil amendment and remediation: the role of humic substances
- Applications of humic products: commercial, composting, agriculture, environmental and pollution control, medicinal, sensors, others
- Xenobiotics and humic substances interactions
- Organic matter and properties of tropical soils
- Water treatment and natural organic matter

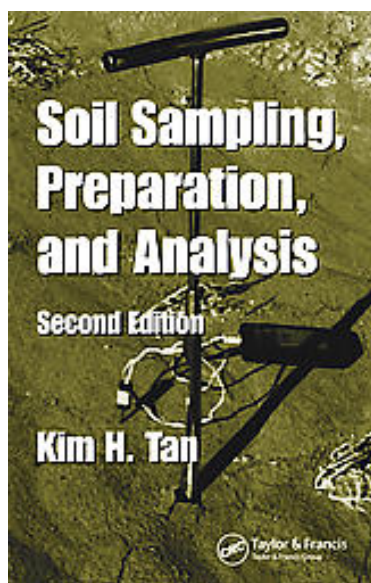
This book is an excellent tool to improve the knowledge in Humic Substance Science & Technology, as well as, to know the “State of the Art” of this important and multidisciplinary

research subject. The price is US\$ 50.00 plus shipping expense (please check the [www.ihss.gatech.edu](http://www.ihss.gatech.edu) link IHSS products/current prices of IHSS products for order and information about shipping to different countries).

*Ladislau Martin-Neto*

**Soil Sampling, Preparation, and Analysis, Second Edition, by Kim H. Tan**

hardcover book (623pp, ISBN #0849334993) by Taylor and Francis - CRC Press, Boca Raton, FL, USA.



This second edition reflects Dr. Tan's increasing ability to convey in a concise and captivating way years of first hand laboratory experience. The book provides an easy but comprehensive introduction to the methods and principles of soil sampling and analysis, including recent advances and discussion on sources of errors and variability of results. This aspect makes the book particularly useful as a teaching and easy to consult reference material. Space is also given to common procedures for extraction and analysis in soil plant testing and instrumentation. All chapters have been revised and updated and the new edition features three new chapters on soil and plant test methods, electron microscopy, and nuclear magnetic resonance.

*Maria De Nobili*

**Chemical Processes in Soils, by M. A. Tabatabai and D. L. Sparks**

"Soil - perfect home for the actual and figurative roots of all life, source of life-essential chemical elements, recycler of water and carbon, cleanser of ecosystems, essence of beauty of and comfort" R.J. Bartlett & D.S. Ross, p. 461. A thorough understanding of the chemical and biological processes taking place within the soil under our feet is critical for those studying or working in the agricultural, ecological, environmental, earth, and soil sciences. This book will serve them well. Edited by M.A. Tabatabai and D.L. Sparks. 2005, Hardcover, 723 pages, SSSA Book Ser. 8. ISBN: 0-89118-843-6. SSSA Member Price: **\$72.00** Non-member Price: **\$90.00**

Chapters by present and former **IHSS** members:

Chapter 1. Chemistry of Soil Organic Matter  
pp. 1-150, C.E. Clapp, M.H.B. Hayes,  
A.J. Simpson & W.L. Kingery

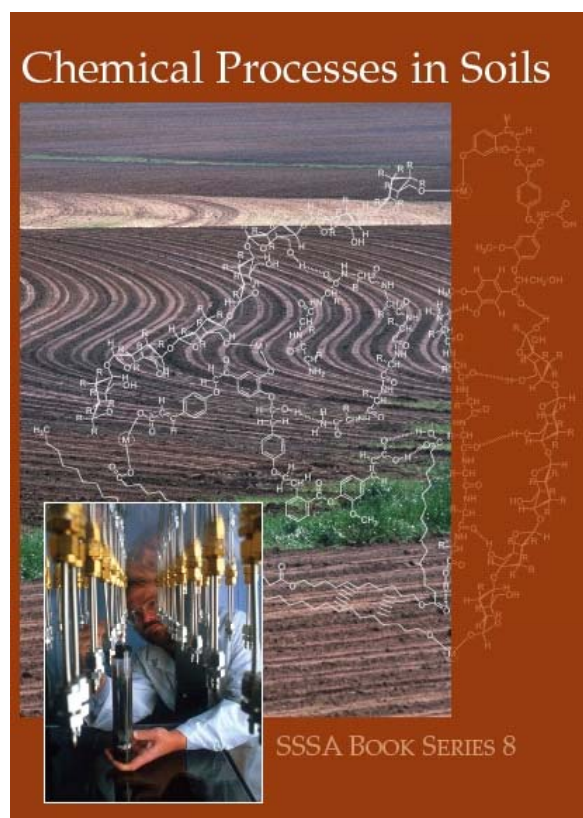
Chapter 4. Chemistry of Potassium in Soils  
pp. 227-292. P.M. Huang

Chapter 5. Chemistry of Micronutrients in Soils  
pp. 293-308, L.M. Shuman

Chapter 8. Soil Acidity pp. 411-459,  
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*C.E. Clapp*

## PAST CONFERENCES

### Humic Science & Technology Conference VIII

Northeastern University's international Humic Science & Technology Conference VIII was held from March 16 - 18 in Boston, Massachusetts. HS&T is the new name for the Humic Substances Seminars started at Northeastern in 1997. The Conference attracted researchers from 13 countries and 10 U.S. states. HS&T VIII was dedicated to Dr. Ladislau Martin Neto, Director of the EMBRAPA Agricultural Instrumentation Center, São Carlos SP, Brazil and the Honorary Chair was Professor Nicola Senesi of the University of Bari, Italy.

The program included a daylong symposium entitled "Humic Aggregates: Measurement, Mechanisms and Properties" held in honor of Dr. Robert Wershaw on his retirement from the US Geological Survey in Denver. The symposium was organized by Drs. Jerry Leenheer and George Aiken and featured the following speakers (in order of presentation): Jerry Leenheer, Mike Perdue, Bill Cooper, Thorsten Reemtsma, Martha Wells, Mike Hayes, Russell Christman, Steve Cabaniss, Patricia Maurice, George Aiken, Michael Reddy, Yo Chin, Diane McKnight and Kaelin Cawley. The program was a fine tribute to Dr. Wershaw, who has made lasting contributions to humic science and initiated the first Humic Substances Seminar at Northeastern.

Another welcome feature was a special session on HSs Biochemistry and Physiology, organized by Prof. Christian Steinberg of the Leibniz Institute of Freshwater Ecology and Inland Fisheries, Berlin, Germany. The speakers were Drs. David Hopkins, Steinberg, Ralph Menzel, Nicola Senesi and Yona Chen.

Other HS&T VIII topics included but were not limited to 1) high frequency electron paramagnetic resonance spectra of HAs and Pb(II)-HA complexes that point to a gallic acid radical site at pH > 7 (see Giannakopoulos, E., et al. *J. Phys. Chem. A* 2005, 109, 2223-2232); 2) evidence that HSs have selective affinity for prion proteins extracted from TSE-infected hamster brains, implying that SOM can immobilize prions; 3) further information on energy transfer between HS-bound lanthanide ions that monitors step-wise complexation and consequent HA conformational changes; 4) a report on the large EC HUPA project coordinated by Dr. Gunnar Buckau of Karlsruhe, Germany; and 5) a summary by Steve Cabaniss of an agent-based computer simulation of humification in which the choice of precursor molecules (tannins, terpenoids, lignins, etc.) and reaction conditions (light, pH, oxygen levels) leads to different HS products with properties consistent with field and laboratory studies. The quality of the presentations was very high and the discussion was lively. We thank the authors for attending and sharing their thoughts on future HS&T Conference themes.

*Geoffrey Davies, Elham Ghabbour, HS&T co-Chairs*

### **5<sup>th</sup> North Central NOM Workshop held at Ohio State University**

The US IHSS Chapter was one of the sponsors of the 5th North Central NOM WORKSHOP hosted by the The Ohio State University's Environmental Molecular Science Institute (EMSI), in Columbus, Ohio, USA, 15 - 17 June, 2005. Sixty scientists attended the workshop, including the IHSS Board of Directors who held their annual meeting after the workshop. The keynote speaker was Dr. Norbert Hertkorn. of the GSF Research Center for Environment and Health in the Institute of Ecological Chemistry in Germany. His topic was "Molecular level structural analysis of natural organic matter - an exercise in defining complexity." A session on functions of NOM featured a presentation by Dr. Yona Chen of the Hebrew University of Jerusalem entitled, "The role of dissolved organic matter in metal binding and plant growth".

The first IHSS US chapter business meeting was conducted by the new Coordinator, Dan Olk. The idea of Chapter meetings every few years was discussed and the participants agreed it is a good idea to have technical meetings. These meetings might be conducted with other group meetings, possibly with a research group like the EMSI, with a regional meeting, or with a national meeting of a professional society.

*Paul Bloom*

### **IHSS Participates in the 15th Annual V.M. Goldschmidt Conference**

IHSS was one of the sponsoring societies for the 15th Annual V.M. Goldschmidt Conference that was held at the University of Idaho in Moscow, Idaho, USA on May 20-25, 2005. The Goldschmidt Conference is the premier annual meeting in geochemistry and mineralogy. In recent years low temperature geochemistry in soils, groundwater, and surface water, has become very prominent in these meetings. The organizing committee invited IHSS to participate by organizing a symposium. More than 1500 scientists from 34 countries attended the conference. The organizers did an incredible job to accommodate the needs of this size conference in Moscow Idaho, which has a population of only 22,000. Meals and entertainment events were held on the University campus with an excellent selection of food, inexpensive microbrews and wine.

The IHSS sponsored symposium, "NOM-metal complexation and the mobility of metals" was organized by Vice President Paul Bloom and Past President Yona Chen. The symposium included 11 oral papers and 2 posters. Keynote speakers were Ed Tipping of the Lancaster Environment Centre, UK, and Marc Benedetti of UMR CNRS, Paris, France. Other invited speakers were George Aiken of the US Geological Survey and Mike Perdue, Georgia Technological University, USA. Willem van Riemsdijk, Wageningen University, The Netherlands, was also invited but unable to attend because of an injury in a bicycle accident shortly before the meeting. More than 60 people attended the symposium, despite being scheduled on the last day. The number of conferees interested in humics was no doubt influenced by the other symposia related to biogeochemistry including one entitled "Dissolved organic matter and its interaction with trace metals and organic pollutants in natural waters", and several focusing on microbial interactions with minerals. The IHSS organizers also had a booth in the exhibits hall to promote membership and our 2006 meeting in Karlsruhe.

*Paul Bloom, Yona Chen*

### **Character of Natural Organic Matter and its Role in the Environment - 10<sup>th</sup> Nordic IHSS**

#### **Symposium:**

From 31 May till 3 June, 2005 the 10th meeting of the Nordic (First meeting of Nordic-Baltic) chapter of IHSS was taking place in Riga, Latvia at the University of Latvia.

At the meeting representatives of 16 countries were participating and following topics were discussed: Structural aspects of NOM; potential of application of humic substances, roles of humic substances in aquatic ecosystems. The keynote speakers were Ernst Detlef Schultze (Germany), Gudrun Abbt-Braun (Germany), Jussi Kukkonen (Finland), Egil Gjessing (Norway).

The next meeting of the Nordic chapter of IHSS will take place in Joensuu, Finland in 2007.

*Maris Klavins*

## FUTURE CONFERENCES



### 13<sup>th</sup> Meeting of the International Humic Substances Society

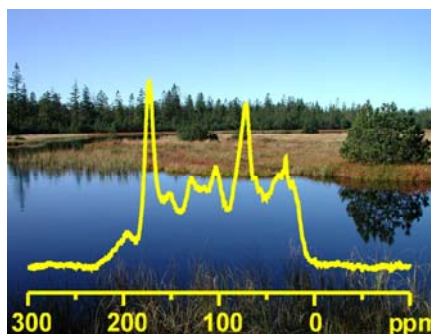
July 30 to August 4, 2006, Universitaet Karlsruhe (TH), Karlsruhe, Germany

#### Humic Substances – Linking Structure to Functions

The 13<sup>th</sup> Meeting of the International Humic Substances Society (IHSS) will be held in Karlsruhe, Germany following the conferences in Sao Pedro, Brazil (2004), Boston, USA (2002) and Toulouse, France (2000). Scientists, engineers and ecologists are invited to use this forum for intensive discussions of the recent findings in the field of humic and natural organic matter. The meeting will be held on the campus of the Universitaet Karlsruhe (TH).

Contribution to the following main topics of humic and natural organic matter research are most welcome:

- New analytical aspects
- Biological aspects and transformation
- Ecological aspects and genesis
- Physico-chemical aspects
- Applications



#### Important Deadlines

01 Dec. 2005	Deadline for submission of abstracts
until 01 Dec. 2005	Immediate registration payment
01 Mar. 2006	Notification of acceptance of abstracts
until 15 Mar. 2006	Early registration payment
until 15 Jul. 2006	Deadline for registration payment *

#### For more information, please contact

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## **VI Brazilian Meeting on Humic Substances**

18 to 20 November 2005. Rio de Janeiro, Brazil

The Brazilian Meeting on Humic Substances (EBSH) started in 1996, and was followed by the second meeting in 1997. Since then it became a biannual scientific event, promoted by the Brazilian Chapter of IHSS. The EBSH aggregates researchers working in humic substances and organic matter including chemists, agronomists, physicists, engineers and biologists, contributing with approximately 100 papers to each EBSH. Discussions are conducted on subjects such as characterization of humic substances and their role in both terrestrial and aquatic ecosystems. The 6<sup>th</sup> EBSH will be held in the Rio de Janeiro city between 18 and 20 November 2005. Embrapa Soils will be the host institution in collaboration with the Federal Rural University of Rio de Janeiro (UFRJ), Catholic University (PUC Rio), State Northeastern Fluminense University (UENF) and Embrapa Agrobiology. The EBSH will focus on the use of humic substance products in agriculture and water treatment as well as those aspects related to the general knowledge of humic substances and human sciences.

The program of the EBSH6 is available on the web page: [www.cnps.embrapa.br/ebsh6](http://www.cnps.embrapa.br/ebsh6).

Additional information can be solicited in the address: [vinicius@cnps.embrapa.br](mailto:vinicius@cnps.embrapa.br)

*Vinicius de Melo Benites, Ladislau Martin-Neto*

## **Humic Science & Technology Conference IX**

March 22 to 24, 2006, Northeastern University, Boston, USA

HS&T IX is dedicated with thanks for his work to Dr. E. Michael Thurman of the Universidad de Almería, Spain and that the Honorary Chair is Dr. Jerry A. Leenheer of the US Geological Survey in Denver.

For further information contact Geoffrey Davies and Elham Ghabbour, <[www.hagroup.neu.edu](http://www.hagroup.neu.edu)>.

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### **Impressum**

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