

## HUMIC SCIENCE & TECHNOLOGY VIII

Maureen and Richard J Egan Research Center  
Northeastern University, Boston, Massachusetts, USA

**March 16-18, 2005**

**Wednesday, March 16**

**8:00** Breakfast

### **Welcome and Opening Ceremony**

G. Davies and E. A. Ghabbour, Presiding

**8:30** University Welcome: Richard M. Freeland, Northeastern University President.  
Recognition of Honorary Chair Nicola Senesi, University of Bari, Past Honorary  
Chairs, Distinguished Guests and the Dedicatee, Ladislau Martin Neto of  
Embrapa. Agricultural Instrumentation Center, Brazil

### **Remarks and Opening Session: Characterization**

N. Senesi, Presiding

**8:55** **APPLICATIONS OF SPECTROSCOPIES IN HUMIC SUBSTANCES  
RESEARCH**

Ladislau Martin-Neto, Marcelo L. Simões, Julieta A. Ferreria, Débora M.B.P.  
Milori, Wilson T. L. da Silva, Martha G. Perez, Otaciro R. Nascimento, Cimélio  
Bayer and João Mielniczuk

**9:20** **NATURE AND ABUNDANCE OF ORGANIC RADICALS IN NATURAL  
ORGANIC MATTER (NOM) OBTAINED BY REVERSE OSMOSIS**

Andrea Paul, Reinhart Stöber and Christian E.W. Steinberg

**9:45** **COMPLEXATION KINETICS IN HUMIC COLLOIDAL SYSTEMS**

Martina Klucáková, Pavla Žbánková and Miloslav Pekar

**10:10** *Break*

### **Spectroscopy and Metals**

**10:25** **TIME-RESOLVED AND STOPPED-FLOW FLUORESCENCE  
INVESTIGATIONS OF THE INTERACTIONS BETWEEN  
LANTHANIDE IONS AND HUMIC SUBSTANCES**

Michael U. Kumke, Sascha Eidner and Tobias Krüger

**10:50** **THE EC HUPA PROJECT “HUMICS IN PERFORMANCE  
ASSESSMENT”’: MAIN CONCLUSIONS**

Gunnar Buckau

**11:15**            **CAPILLARY ELECTROPHORESIS/ION CHROMATOGRAPHY-INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY (CE/IC-ICP-MS) DETERMINATION OF As AND Pb COMPLEXED TO SOIL HUMIC ACIDS AND SOIL ARSENIC SPECIES IN AN APPLE ORCHARD CONTAMINATED WITH LEAD ARSENATE PESTICIDE**  
Kimberly Newton, Dula Amarasiriwardena, John Danku, Ramon Barnes and Baoshan Xing

**11:40**            **HIGH RESOLUTION ULTRASOUND SPECTROSCOPY IN HUMIC RESEARCH**  
Miloslav Pekar, Jiri Kucerik, Daniela Smejkalova and Martina Klucakova

**12:05**            *Lunch, Curry Student Center*

### **HS Origins and Interactions**

**14:00**            **AGENT-BASED STOCHASTIC SIMULATION OF THE FORMATION AND TRANSFORMATION OF HUMIC SUBSTANCES**  
Stephen E. Cabaniss, Greg R. Madey, Laura G. Leff, Patricia A. Maurice and Robert G. Wetzel

**14:25**            **WATER REDISTRIBUTION AND XENOBIOTIC SIZE FACTORS IN UPTAKE INTO SOIL ORGANIC MATTER**  
Cooper H. Langford and Tiona R. Todoruk

**14:50**            **RECYCLING OF TSE CONTAMINATED ANIMAL MEALS: PRELIMINARY RESULTS ON SORPTION AND PERSISTANCE OF SCRAPIE INFECTIVE AGENT IN SOILS**  
Liviana Leita, Maria De Nobili, Alessandro Bertoli, Sacha Genovesi, Catia Sorgato and Paolo Sequi

**15:15**            *Break*

### **Soil Interactions**

**15:30**            **COMPARISON OF TOXICITY OF COUPLING COMPOUNDS BETWEEN PENTACHLOROPHENOL AND HUMIC ACID OR CYCLODEXTRIN**  
Masami Fukushima and Kenji Tatsumi

**15:55**            **SOIL ORGANIC MATTER AND AGGREGATE STABILITY UNDER CONTRASTING MANAGEMENT IN EASTERN SOUTH DAKOTA**  
Joseph L. Pikul Jr., Kristine Nichols, Anna Eynard and Thomas E. Schumacher

**16:20**            **Discussion**

**16:30**            *Adjourn for Reception at 17:00 PM in 440 Egan Research Center*

Thursday, March 17

A symposium in honor of Dr. Robert Wershaw on his retirement

**HUMIC AGGREGATES: MEASUREMENT, MECHANISMS & PROPERTIES**

**8:00**            *Breakfast*

**8:30**            *Remarks*

M. M. Reddy, Presiding

**8:40**            **WHAT ARE HUMIC MOLECULES, SUPRAMOLECULAR  
AGGREGATES, AND PRECIPITATES?**

Jerry A. Leenheer

**9:05**            **PROPERTIES OF HUMIC SUBSTANCES THAT ARE INCONSISTENT  
WITH AGGREGATE-BASED MODELS**

E. Michael Perdue

**9:30**            **RECONCILING NEW HIGH RESOLUTION MASS SPECTROMETRY  
INFORMATION WITH CLASSICAL MODELS OF HUMIC AND  
FULVIC ACID STRUCTURE**

William T. Cooper, Lori Milligan, and Timothy Filley

**9:55**            *Break*

**10:15**          **EVIDENCE FOR THE OLIGOMERIC CHARACTER OF FULVIC ACIDS  
FROM SIZE EXCLUSION-ELECTROSPRAY IONIZATION HIGH  
RESOLUTION MASS SPECTROMETRY**

Thorsten Reemtsma and Anja These

**10:40**          **FLOW FIELD-FLOW FRACTIONATION OF DISSOLVED ORGANIC  
MATTER AGGREGATES IN SOLUTION**

Martha J.M. Wells

**11:05**          **ISOLATION, FRACTIONATION, AND SIZES OF SOIL HUMIC  
COMPONENTS**

Michael H.B. Hayes, Andre J. Simpson and Jingdong Mao

**11:30**          **MOLECULAR IMPLICATIONS OF HYDROPHOBIC ORGANIC  
PARTITIONING**

R. F. Christman and F.K. Pfaender

**11.55**          *Lunch, Curry Student Center*

**13:45**          **HPLC STUDIES OF POSSIBLE HEMI-MICELLE FORMATION BY  
NATURAL ORGANIC MATTER ON MINERAL SURFACES**

Stephen E. Cabaniss and Ksenija Namjesnik-Dejanovic

- 14:10**            **EFFECTS OF IRON ON THE MOLECULAR WEIGHT AND AGGREGATION OF NATURAL ORGANIC MATTER**  
Patricia A. Maurice
- 14:35**            **INTERACTIONS OF MERCURY WITH DISSOLVED ORGANIC MATTER IN THE EVERGLADES: EVIDENCE FOR STABILIZATION OF COLLOIDAL MERCURIC SULFIDE**  
George Aiken and Joseph N. Ryan
- 15:00**            **CALCITE CRYSTAL GROWTH INHIBITION BY AQUATIC HUMIC SUBSTANCES – CAN HUMIC SUBSTANCES SERVE AS CARBONATE SCALE INHIBITORS?**  
Michael M. Reddy
- 15:25**            *Break*
- 15:45**            **ROLE OF DISSOLVED ORGANIC MATTER AND IRON IN PROMOTING THE INDIRECT PHOTOTRANSFORMATION OF HERBICIDES**  
Penney L. Miller and Yu-Ping Chin
- 16:10**            **HUMIC QUINONES AND ENVIRONMENTAL REDOX PROCESSES**  
Diane McKnight, Rose Cory, Matthew Miller and Colin Stedmon
- 16:35**            **PROBING THE PHOTOREACTIVITY OF DISSOLVED ORGANIC MATTER ISOLATED BY DIFFERENT METHODS USING 2,4,6-TRIMETHYL PHENOL**  
Kaelin M. Cawley and Yu-Ping Chin
- 17:00**            *Adjourn for Banquet in Faculty Club at 6 PM*

**Friday, March 18**

**8:00**            *Breakfast*

**Spectroscopy**

**8:30**            **HIGH FIELD ELECTRON PARAMAGNETIC RESONANCE STUDIES OF HUMIC ACIDS AND RELATED COMPOUNDS**  
Costantinos Chrostoforidis, Marios Dros, Sun Un and Yiannhs Deligiannakis

**Biochemistry & Physiology**

**9.25**            **CHARACTERISTICS OF DECOMPOSING RESIDUES FROM PLANTS WITH GENETIC MODIFICATIONS TO LIGNIN BIOSYNTHESIS**

D.W. Hopkins, Elizabeth A. Webster, Emma L. Tilston, J.A. Chudek and Claire Halpin

**9:50 HUMIC SUBSTANCES ARE ECOPHYSIOLOGICAL CONTROLS IN FRESHWATER ECOSYSTEMS**

Christian E.W. Steinberg

**10:15 *Break***

**Biochemistry & Physiology**

**10:40 CHEMOATTRACTION AND WHOLE GENOME TRANSCRIPTIONAL RESPONSES IN THE NEMATODE *CAENORHABDITIS ELEGANS* EXPOSED TO HUMIC MATERIAL**

Ralph Menzel, Stephen Stürzenbaum, Jana Kulas, Anne Bärenwaldt and Christian E. W. Steinberg

**11:05 ROLE OF SOIL HUMIC AND FULVIC ACIDS IN THE REGULATION OF ALLELOPATHIC ACTIVITY OF BENZOIC AND CINNAMIC ACID DERIVATIVES ON THE EARLY GROWTH OF *LACTUCA SATIVA* L.**

Elisabetta Loffredo, Linda Monaci and Nicola Senesi

**11:30 BIOLOGICAL ACTIVITIES OF HUMIC SUBSTANCES: MECHANISMS AND EFFECTS**

Yona Chen

**11:45 *General Discussion***

**12:10 HS&T VIII Closes**

**12:15 *Lunch, Curry Student Center***