



**INTERNATIONAL HUMIC SUBSTANCES SOCIETY
20TH ANNIVERSARY CONFERENCE**

MONDAY, JULY 22
Blackman Auditorium

9:00 WELCOME AND OPENING CEREMONY
Y. Chen, G. Davies and E. Ghabbour, Presiding

Introductory Topics

J. Rice and N. Senesi, Presiding

9:15 A BRIEF HISTORY OF THE INTERNATIONAL HUMIC SUBSTANCES SOCIETY
Patrick MacCarthy

9:45 ESTABLISHMENT OF A WEB-BASED NOM FORUM FOR THE RAPID PUBLICATION AND DISCUSSION OF EXTENDED ABSTRACTS
Robert L. Wershaw

10:15 *Break*

10:45 SYNCHROTRON-BASED X-RAY ABSORPTION SPECTROSCOPY AND MICROSCOPY TO STUDY HUMIC SUBSTANCES IN SOIL
Andreas C. Scheinost

11:15 HUMIC COLLOIDS IN THE GORLEBEN AQUIFER SYSTEM
G. Buckau, M. Wolf, S. Geyer, R. Artinger and J.I. Kim

11:45 TRADITIONAL STRUCTURES FOR HUMIC SUBSTANCES – SHOULD WE ABANDON THEM?
James Burdon

12:15 *Lunch, Curry Student Center and Big Day Poster Session I*

BIG DAY POSTER SESSION I

Authors present 12:30 – 14:00 and 17:10 – 18:30

Curry Student Center, Ballroom

W. Ball, G. Abbt-Braun, M. Diallo, J. Drozd, K. Haider and E. Tombácz, Presiding

1. CHARACTERIZATION OF A NATURAL ORGANIC POLYMER
James Thomson, Adele Parkinson and Felicity Roddick

2. USE OF RADIOACTIVE TRACERS FOR THE CHARACTERIZATION OF HUMIC AND FULVIC ACIDS IN HIGH PERFORMANCE SIZE EXCLUSION CHROMATOGRAPHY
K. Franke, D. Rößler and H. Kupsch

3. **HIGH AND LOW MOLECULAR WEIGHT COMPONENTS OF SOIL HUMIC ACIDS AS AFFECTED BY PLANT RESIDUE APPLICATIONS**
Masakazu Aoyama and Naonori Kumakura
4. **ELECTROPHORETIC CHARACTERIZATION OF DOM: A FREE FLOW ELECTROPHORESIS (FFE) APPROACH**
J. Junkers, Ph. Schmitt-Kopplin and N. Hertkorn
5. **INVESTIGATION OF HUMIC SUBSTANCES BY HIGH-PERFORMANCE SIZE EXCLUSION CHROMATOGRAPHY AND CAPILLARY GEL ELECTROPHORESIS**
Jessica A. L. Blomberg and Linda B. McGown
6. **THE MACROMOLECULAR OR SUPRAMOLECULAR NATURE OF HUMIC SUBSTANCES: A DYNAMIC LIGHT SCATTERING STUDY**
Gustavo González-Gaitano and Josemaría García-Mina
7. **PHOTOLUMINESCENCE SPECTROSCOPY TO EVALUATE SOIL HUMIC ACIDS UNDER DIFFERENT TILLAGE SYSTEMS**
Débora M. B. P. Milori, Ladislau Martin-Neto, Vanderlei S. Bagnato, Cimélio Bayer and João Mielniczuck
8. **TOTAL LUMINESCENCE FLUORESCENCE SPECTRA OF IHSS STANDARD AND REFERENCE FULVIC ACIDS, HUMIC ACIDS AND NATURAL ORGANIC MATTER (NOM)**
James J. Alberts and Monika Takács
9. **SPECTROFLUOROMETRIC PROPERTIES OF MOLECULAR SIZE FRACTIONS OF DOM FROM THE MAXIMUM TURBIDITY ZONE OF THE GIRONDE AND SEINE ESTUARIES**
Lilian Vacher and Edith Parlanti
10. **FROM HUMIC SUBSTANCES IN ACADEMIA TO THE NEEDS OF INTERNATIONAL COMMERCE**
William R. Jackson, J. K. Zapico, R. J. Jackson, L. M. DeVaney and E. G. Hall
11. **CHEMICAL ORIGINS OF HUMIC-LIKE SUBSTANCES**
Boris Eyheraguibel, Philippe Morard, Jérôme Silvestre and Georges Merlina
12. **CHEMICAL CHARACTERIZATION OF THE ORGANIC MATTER IN PARTICLE SIZE SEPARATES OF THE MINERAL SOIL HORIZONS OF TWO FOREST SOILS**
Cornelia Rumpel, Karin Eusterhues and Ingrid Kögel-Knabner
13. **DYNAMICS OF SOIL ORGANIC MATTER IN ALPINE SPRUCE AND ALDER STANDS**
Luisella Celi, Alberto Agnelli, Frank Hagedorn, Jörg Luster, Eleonora Bonifacio, Michele Freppaz, Riccardo Scalenghe and Peter Blaser
14. **PREPARATION OF AN AQUATIC FULVIC ACID STANDARD SAMPLE**
Koyo Yonebayashi and Hiroki Kodama

15. **DISTRIBUTION OF ACID-DISSOCIATION CONSTANTS IN HUMIC MOLECULES**
Hiroki Kodama and Koyo Yonebayashi
16. **MOLECULAR WEIGHT DISTRIBUTION OF METHYLATED HUMIC ACIDS IN ORGANIC SOLVENTS**
Nobuhide Fujitake, Mark J. Strynar, Taketoshi Mishima, Mayuko Tsukamoto, Takeshi Suzuki, Hiroo Otsuka, Jerzy Dec and Jean-Marc Bollag
17. **VOLTAMMETRIC INVESTIGATIONS OF NATURAL ORGANIC MATTER**
James T. Nurmi and Paul G. Tratnyek
18. **CHARACTERIZATION OF LANDFILL LEACHATE DOM USING DIFFERENT MASS SPECTROMETRIC TECHNIQUES**
Tomas Alsberg, Linn Persson, Anna Ledin and Göran Odham
19. **ELECTROSPRAY MASS SPECTROMETRY DETERMINATION OF MOLECULAR WEIGHTS OF A SOIL HUMIC ACID AND RELATIVE SIZE-FRACTIONS ISOLATED BY PREPARATIVE HPSEC**
A. Piccolo, P. Conte and M. Spiteller
20. **STUDY OF HUMIC SUBSTANCES STRUCTURE AND INTERACTIONS BY ELECTROSPRAY IONISATION MASS SPECTROMETRY**
Gabriel Plancque, Badia Amekraz, Valérie Moulin and Christophe Moulin
21. **CHARACTERIZATION OF PERSISTENT COMPONENTS IN FOREST SOILS**
Karl J. Dria and Patrick G. Hatcher
22. **FRACTIONATION AND SPECTROSCOPIC CHARACTERIZATION OF NATURAL ORGANIC MATTER**
Baohua Gu, Jie Chen and Eugene J. LeBoeuf
23. **CHARACTERIZATION OF HUMIC SUBSTANCES USING REDUCTION AND ACID CATALYSED TRANSESTERIFICATION**
Ineta Rozenbaha, Göran Odham, Ulf Järnberg, Linda Eglite and Maris Klavins
24. **SPECTROSCOPIC AND SEM CHARACTERIZATION OF HUMIC ACIDS EXTRACTED FROM CHILEAN ANDISOLS**
J. Canales, M. Mora, H. Rocha, E. Guiérrez, P. Etcheverría, J. Alarcon, J. Aguirre, R. Gaviño and B. Lotina-Hensen
25. **ORGANIC MATTER IN BRAZILIAN OXISOLS UNDER NATIVE VEGETATION: CHARACTERISTICS AND DISTRIBUTION IN THE PROFILE**
Deborah Pinheiro Dick, Cristiano Gonçalves, Ricardo Dalmolin, Egon Klamt, Heike Knicker and Ingrid Kögel-Knabner
26. **STUDIES OF SEMIQUINONE FREE RADICALS BY EPR IN WHOLE SOIL, HA, FA AND HUMIN**

Sérgio da Costa Saab, Ladislau Martin-Neto and Mauro da Conceição

27. **CHARACTERIZATION OF WHEAT STRAW-DERIVED DOM**
Robert L. Wershaw and Kay R. Kennedy
28. **MOLECULAR STRUCTURES AND ASSOCIATIONS OF HUMIC SUBSTANCES IN THE TERRESTRIAL ENVIRONMENT**
André J. Simpson, William L. Kingery, Michael H. B. Hayes, Manfred Spraul, Eberhard Humpfer, Peter Dvortsak, Rainer Kerssebaum, Markus Godejohann and Martin Hofmann
29. **THE EFFECT OF DILUTE HF TREATMENT ON THE RESOLUTION OF ¹³C CP/MAS NMR SPECTRA AND ON THE QUALITY OF ORGANIC MATTER IN OXISOLS**
Cristiano Nunes Gonçalves, Ricardo S. D. Dalmolin, Deborah Pinheiro Dick, Egon Klamt, Heike Knicker and Ingrid Kögel-Knabner
30. **COMPARISON OF CP-MAS ¹³C-NMR SPECTRA OF AQUATIC HUMICS EXTRACTED WITH HYDROPHOBIC (XAD-8) AND HYDROPHILIC (DEAE-CELLULOSE) ADSORBENTS**
Abdul R. Khwaja, Paul Bloom, Patrick Brezonik, Bin Chen and Eric Munson
31. **TRANSMISSION ELECTRON MICROSCOPY OF HUMIC SUBSTANCES**
Luisella Celi, Alberto Agnelli, Maddalena Piccaluga and Elisabetta Barberis
32. **CHARACTERIZATION OF SODIUM PYROPHOSPHATE SOLUBLE SOIL ORGANIC MATTER USING FT-IR**
Ruth H Ellerbrock, Michael Kaiser, Axel Höhn and Lothar Beyer
33. **STUDY OF DISSOCIATION EQUILIBRIUM OF PARTIALLY SOLUBLE HUMIC ACIDS EXTRACTED FROM LIGNITE**
Martina Klucáková and Miloslav Pekar
34. **EXPLORING THE MOLECULAR CHARACTER AND HETEROGENEITY OF HUMIC SYSTEMS VIA THE STUDY OF THE ION BINDING PROCESS USING AN EXTENDED POLYELECTROLYTE MODEL. I. PROTON BINDING**
J. M. García-Mina
35. **EXPLORING THE MOLECULAR CHARACTER AND HETEROGENEITY OF HUMIC SYSTEMS VIA THE STUDY OF THE ION BINDING PROCESS USING AN EXTENDED POLYELECTROLYTE MODEL. II METAL BINDING**
J. M. García-Mina
36. **EVALUATION OF HUMIC SUBSTANCES FROM ORGANIC WASTES USED AS SOIL AMENDMENTS**
C.H. Bos-VanderZalm, A. Patti, R.W. Jackson and A. Surapaneni
37. **ANALYSIS OF THE HUMIC MATTER FROM ESTUARINE SEDIMENTS IN THE GUADIANA RIVER ESTUARY**
Francisco J. Gonzalez-Vila, Oliva Polvillo, Tomasz Boski, Elminda Moura, Gonzalo Almendros and

Heike Knicker

38. **CHARACTERIZATION OF C¹⁴- LABELED HUMIC SUBSTANCES**
Jussi V.K. Kukkonen
39. **PHOTOLUMINESCENCE STUDIES SOIL HUMIC ACIDS ORIGINATING FROM SOILS UNDER DIFFERENT TILLAGE SYSTEMS**
Débora M. B. P. Milori, Ladislau Martin-Neto, Vanderlei S. Bagnato, Cimélio Bayer and João Mielniczuck
40. **RELATIONSHIP BETWEEN SOIL ORGANIC MATTER, IRON CONTENT AND SOIL COLOR – A CPMAS ¹³C NMR SPECTROSCOPIC STUDY**
Sandra Spielvogel, Heike Knicker and Ingrid Kögel-Knabner
41. **VERY HIGH RESOLUTION COSY NMR SPECTRA OF HUMIC SUBSTANCES: IMPLICATIONS FOR THE ELUCIDATION OF HUMIC SUBSTRUCTURES**
Norbert Hertkorn, Irina Perminova and Antonius Kettrup
42. **INFLUENCE OF IONIC SPECIES ON HYDROPHOBIC SORPTION DOMAINS IN HUMIC MATERIALS**
Scott D. Kohl and James A. Rice
43. **A NEW APPROACH TO UNDERSTANDING ORGANIC COMPOUND INTERACTIONS WITH ENVIRONMENTAL SORBENTS**
Ellen R. Graber and Mikhail Borisover
44. **INFLUENCE OF IONIC STRENGTH UPON THE INTERACTION OF NATURAL ORGANIC MATTER AND METAL OXIDE SURFACES**
S. Altan Süphandag and Miray Bekbölet
45. **PYROLYTIC STUDY OF THE NON-EXTRACTABLE RESIDUES OF ¹³C-ATRAZINE IN SOIL SIZE FRACTIONS AND SOIL HUMIN**
M. -F. Dignac, Y. Zegouagh, L. Loiseau, G. Bardoux, E. Barriuso, C. Largeau, S. Derenne and A. Mariotti
46. **INTERACTIONS OF NATURAL ORGANIC MATTER WITH THE MINERAL MATRIX OF SOILD.**
M. Kukich, R. Schoonhoven, R. F. Christman and F. K. Pfaender
47. **SORPTION OF HUMIC SUBSTANCES ON AQUIFER MATERIAL AND SOIL COMPONENTS**
Linda Eglite and Maris Klavins
48. **NON-LINEAR BINDING OF PAHs TO DISSOLVED HUMIC-ACID: EVIDENCE FROM THREE DIFFERENT METHODS**
Yael Laor, Menahem Rebhun, Smadar Meir, Robert Armon and Chen Zolkov
49. **BINDING OF PAHS IN LEACHATES FROM SOIL AND WASTE MATERIALS IN RELATION TO DISSOLVED ORGANIC MATTER CHARACTERISTICS**
Gerlinde D. Roskam, Andre van Zomeren, Esther Zuiver and Rob N. J. Comans

50. **SORPTION OF PAH TO ESTUARINE HUMIC SUBSTANCES AND IMPACTS OF WATER TEMPERATURE AND SALINITY VARIATIONS**
Luc Tremblay, Scott D. Kohl, James A. Rice and Jean-Pierre Gagné
51. **A PERSISTENT FRACTION OF VOLATILE ORGANIC CONTAMINANT SORBED IN SOIL COMPARTMENTS**
Yang-hsin Shih and Shian-chee Wu
52. **THE ANALYTICAL AVAILABILITY OF POLYCHLORINATED BIPHENYLS (PCBs) IN WATER CONTAINING NATURAL ORGANIC MATTER**
Christine Steiro, Alfred A. Christy, Egil T. Gjessing and Georg Becher
53. **A GENERAL DESCRIPTION OF THE CONTRIBUTION OF ORGANIC CARBON TO SOIL WATER HOLDING CAPACITY**
Alan Olness and David Archer
54. **DETOXICATION OF ACETOCHLORE BY PREPARATIONS OF HUMIC ACID FROM DIFFERENT SOURCES**
Galina V. Naumova, Vladimir A. Kholodov, Natalia A. Kulikova, Nadezhda A. Zhmakova, Natalia L. Makarova, Tatiana F. Ovchinnikova and Irina V. Perminova
55. **AGEING OF BENTONITE: HUMIC AND BENTONITE:FULVIC COLLOIDAL SYSTEMS**
Dragoljub D. Bilonovic and Steven A. Spigarelle
56. **TRANSPORT OF HUMIC AND FULVIC ACID IN AN ACID SANDY SOIL**
Liping Weng, Ellen Fest, Jeroen Fillius, Erwin J. M. Temminghoff, Willem H. Van Riemsdijk
57. **AGGREGATION OF CLAY AND IRON OXIDE PARTICLES: A PARTICULAR ROLE OF SURFACE HYDROXYLS AND COMPLEXATION BY HUMIC ACIDS**
Etelka Tombácz, Zsuzsanna Libor, Erzsébet Illés and Erwin Klumpp
58. **ADSORPTION AND DESORPTION OF THE PLANT MUTAGEN MALEIC HYDRAZIDE BY TWO SOIL HUMIC ACIDS**
Elisabetta Loffredo, Giuseppe Ferrara and Nicola Senesi

MONDAY, JULY 22
Blackman Auditorium

Separations

M. De Nobili and T. Gilbert, Presiding

- 14:00 **CAPILLARY ZONE ELECTROPHORESIS – ELECTROSPRAY IONIZATION /MASS SPECTROMETRY (CZE-ESI/MS) OF NATURAL ORGANIC MATTER (NOM)**
Ph. Schmitt-Kopplin, N. Hertkorn, A. Kettrup, J. Junkers, Guichen Ping, Yukui Zhang, M. Perdue and Y. Chen
- 14:25 **CAPILLARY ELECTROPHORESIS CAN DETECT NEGATIVELY CHARGED DISSOLVED**

ORGANIC MATTER COLLOIDS AT ACIDIC pH

Frank J. von Willert and Richard C. Stehouwer

14:50 CHARACTERIZATION OF HUMIC SUBSTANCES USING CAPILLARY ELECTROPHORESIS WITH FLUORESCENCE LIFETIME DETECTION

Linda B. McGown and Joseph D. Hewitt

15:15 FLUORESCENCE AND PHOTOINDUCTIVE EFFICIENCY OF SOIL HUMIC ACIDS AND FRACTIONS OBTAINED BY TANDEM SEC-PAGE

C. Richard, O. Trubetskaya, O. Trubetskoj, J-P. Aguer and G. Guyot

15:40 *Break*

16:10 INVESTIGATION OF COLLOIDAL AND TRACE METAL COMPLEXATION CHARACTERISTICS OF SOIL AND SEDIMENT-DERIVED FULVIC ACIDS BY FLOW FIELD-FLOW FRACTIONATION - INDUCTIVELY COUPLED PLASMA-MASS SPECTROMETRY (Flow FFF-ICP-MS)

Dula Amarasiriwardena, Jonathan Bell, Atitaya Siripinyanond, Baoshan Xing and Ramon M. Barnes

16:35 CHEMICAL EXTRACTION OF HUMIC ACIDS BASED ON BINDING TO POLYVALENT CATIONS

Daniel C. Olk

17:00 Adjourn to Big Day Poster Session I and Refreshments, Curry Student Center, Ballroom

TUESDAY JULY 23

Blackman Auditorium

Characterization

M. Hayes and M. Spiteller, Presiding

8:30 QUANTITATIVE ANALYSIS AND PREDICTIVE MODELING OF THE PROPERTIES OF HUMIC SUBSTANCES AS A GATEWAY TO THEIR PRACTICAL APPLICATIONS

Irina V. Perminova

9:00 PROPERTIES OF DISSOLVED ORGANIC MATTER RELATED TO THE DYNAMICS OF ITS BIODEGRADATION

Karsten Kalbitz, David Schwesig, Juliane Schmerwitz, Bruno Glaser, Ruth Ellerbrock and Peter Leinweber

9:25 IDENTIFICATION OF MOLECULAR FORMULAS OF INDIVIDUAL HUMIC MOLECULES BY ELECTROSPRAY IONIZATION AND HIGH-FIELD FOURIER TRANSFORM ION CYCLOTRON RESONANCE MASS SPECTROMETRY

William T. Cooper, Alexandra Stenson and Alan G. Marshall

9:50 UNRAVELING THE 3-D STRUCTURES OF HUMIC SUBSTANCES THROUGH EXPERIMENTAL CHARACTERIZATION, COMPUTER ASSISTED STRUCTURE ELUCIDATION AND ATOMISTIC

SIMULATIONS

Mamadou S. Diallo, Andre Simpson, Jean Loup Faulon, Paul Gassman, William A. Goddard III and James H. Johnson, Jr. and Patrick G Hatcher

10:15 *Break*

10:45 **CHARACTERIZATION OF HUMIC ACIDS PROGRESSIVELY BASE EXTRACTED FROM PAHOKEE PEAT**

Li Li, Yong Ran, Guoying Sheng, Jiamo Fu, Ping'an Peng and Weilin Huang

11:10 **CHARACTERIZATION OF HUMIC ACIDS AND HUMIN USING TRANSALKYLATION AND MILD OXIDATION REACTIONS**

Coralie Deport, Laurent Lemée and André Amblès

11:35 **ALIPHATICS IN ANDOSOLS: A DETAILED MOLECULAR APPROACH**

Dennis F. W. Naafs, Pim F. van Bergen and Jan W. de Leeuw

12:00 *Lunch, Curry Student Center and Big Day Poster Session II*

BIG DAY POSTER SESSION II

Authors present 12:15 – 14:00 and 16:45 – 18:00

Curry Student Center, Ballroom

R. Christman, E. Gjessing, Y. Laor, F. Roddick, F. Ugolini, and K. Yonebayashi, Presiding

101. **DIRECT INTERACTIONS OF HUMIC SUBSTANCES WITH AQUATIC ORGANISMS RESULT IN AMBIGUOUS ECOLOGICAL EFFECTS**

Christian E. W. Steinberg

102. **THE DIVERSITY AND UBIQUITY OF BACTERIA UTILIZING HUMIC SUBSTANCES AS AN ELECTRON DONOR FOR ANAEROBIC RESPIRATION**

John D. Coates, Kimberly A. Cole, Romy Chakraborty, Susan M. O'Connor and Laurie A. Achenbach

103. **MORPHOLOGICAL AND GEOCHEMICAL EFFECTS OF MICROBIALY INDUCED REDOX CHANGES OF HUMIC SUBSTANCES**

Romy Chakraborty, Susan M. O'Connor, Claudia Schmidt, Jürgen Thieme and John D. Coates

104. **HORIZONTAL AND VERTICAL DISTRIBUTION OF LIGNIN DEGRADATION PRODUCTS IN SEDIMENTARY HUMIC SUBSTANCES FROM THE GDANSK BASIN (BALTIC SEA)**

Janusz Pempkowiak, Andrzej Staniszewski and Hanna Obarska-Pempkowiak

105. **KINETICS OF DIAGENETIC CHANGES OF HUMIC SUBSTANCES IN THE BALTIC SURFACE SEDIMENTS**

Janusz Pempkowiak, Justyna Kopecka, Hanna Obarska-Pempkowiak

106. **CHANGES IN MOLECULAR WEIGHT DISTRIBUTION OF HUMIC ACID BY ENZYMATIC DECOLORIZATION**

Y. Yanagi, N. Fujitake, S. Okuhara, T. Kiyota, T. Suzuki, H. Otsuka and J. -M. Bollag

- 107. EFFECTS OF STORAGE DISTURBANCE OF SOIL SAMPLES ON QUANTITY AND QUALITY OF WATER EXTRACTABLE ORGANIC MATTER**
Bernd Marschner and Dirk Jödemann
- 108. HUMIC SUBSTANCES IN TRANSFORMATION OF XENOBIOTICA**
Maris Klavins and Kristine Babre
- 109. PHOTOCHEMICAL INTER REACTIONS AND DEGRADATION OF NATURAL ORGANIC MATTER IN SURFACE WATERS**
Morten André Pedersen, Egil T. Gjessing and Dag Olav Andersen
- 110. HUMIC SUBSTANCES AS INHIBITORS OF PLANT PHOTOSYNTHESIS – XENOBIOTIC-MODE-OF-ACTION OF DOC?**
Stephan Pflugmacher and Christian Steinberg
- 111. ANALYSES OF HUMIC ACIDS IN VARIOUS KINDS OF SOILS WITH REGARD TO THE DEGREE OF HUMIFICATION**
Akira Watanabe, Donald B. McPhail, Nagamitsu Maie, Kosuke Ikeya, Tomonori Abe and Shuichi Yamamoto
- 112. THE FULVIC TEST - A PROCEDURE TO MEASURE THE FULVIC ACID CONTENT OF ORGANIC AMENDMENT PRODUCTS**
Richard Lamar, Michael H.B. Hayes and Kenneth S. Day
- 113. EFFECT OF THE LOW TEMPERATURE ASHING (LTA) ON SOIL ORGANIC MATTER**
Alberto Agnelli, Luisella Celi, Giuseppe Corti, Leania Condello and Alessandro Degl'Innocenti
- 114. TRANSFORMATIONS OF ORGANIC MATTER OCCURRING IN COMPOSTED MUNICIPAL SOLID WASTES UNDER DIFFERENT MOISTURE CONDITIONS**
Jerzy Drozd, Michal Licznar and Maria Jerzykiewicz
- 115. METAL COMPLEXATION OF WATER SOLUBLE ORGANIC MATTER FROM COMPOSTED MUNICIPAL SOLID WASTE (MSW)**
Gudrun Abbt-Braun, Daniel Schmitt, Fritz H. Frimmel, Yona Chen and Yitzhak Hadar
- 116. QUALITY OF HUMIC ACIDS IN RAW AND COMPOSTED OLIVE OIL MILL SOLID WASTES**
Gennaro Brunetti, Vito La Ghezza and Nicola Senesi
- 117. FERTILIZATION EFFECTS ON SOIL ORGANIC MATTER QUALITY UNDER DIFFERENT PRODUCTION SYSTEMS IN SEMIARID PAMPEAN SOILS**
Juan Galantini, Ramón Rosell, Gennaro Brunetti and Nicola Senesi
- 118. DETERMINATION OF DIFFUSION COEFFICIENTS OF METAL IONS IN HUMIC GELS**
Martina Klucáková, Radek Blahák and Miloslav Pekar

119. **STRUCTURAL RESOLUTION OF METAL-HUMIC ACIDS INTERACTIONS THROUGH DECONVOLUTION FT-IR SPECTROSCOPY**
Claudio Cocozza and Teodoro M. Miano
120. **EFFECT OF HUMIC SUBSTANCES ON THE BEHAVIOR OF IRON SIDEROPHORES IN SOIL AND WATER**
L. Catalano, M. De Nobili, H. Siebner-Freibach and Y. Chen
121. **COMPLEXATION OF METAL IONS BY HUMIC SUBSTANCES AND α -AMINO ACIDS: A COMPARATIVE STUDY**
Ademir dos Santos, Iramaia Corrêa Bellin, Pedro Paulo Corbi, Alexandre Cuin, André Henrique Rosa, Maria Olimpia de Oliveira Resende, Julio Cesar Rocha and Petr Melnikov
122. **COMPLEXATION STUDY OF HUMIC ACID WITH COBALT(II) BY POLAROGRAPHY AND FLUORESCENCE**
Fanny Monteil-Rivera and Jacques Dumonceau
123. **XAFS STUDIES OF COBALT(II) BINDING BY PEAT, PLANT AND SOIL DERIVED SOLID HUMIC ACIDS**
Elham A. Ghabbour, Andreas Scheinost and Geoffrey Davies
124. **SOFT X-RAY SPECTROSCOPY AND MICROSCOPY OF NATURAL ORGANIC MATTER FLOCCULATED WITH IRON AND COPPER SALTS**
Christian H. Specht, Jurgen Thieme, Claudia Schmitt, Gudrun Abbt-Braun and Fritz H. Frimmel
125. **INTERACTIONS OF TERBIUM WITH HUMIC SPECIES AND EXAMINATION OF THE FLUOROPHORE-METAL ENERGY TRANSFER PROCESSES**
Gregory V. Korshin, Chiwang Li and Marc F. Benedetti
126. **FLUORESCENCE BEHAVIOR OF METAL COMPLEXES OF HUMIC ACIDS FROM DIFFERENT SOURCES**
Maria Rosaria Provenzano, Valeria D'Orazio, Maria Jerzykiewicz and Nicola Senesi
127. **CHARACTERIZATION OF AQUATIC HUMIC SUBSTANCES FROM A TROPICAL REGION AND THEIR INTERACTION WITH CHLORINE**
Eduarda R. Carvalho, Débora M. B. P. Milori, Etelvino H. Novotny, Adriana B. Araujo, Arioaldo O. Florentino, Júlio Cesar Rocha and Ladislau Martin-Neto
128. **HEAVY METALS AVAILABILITY FOR PLANTS UNDER INFLUENCE OF ORGANIC MATTER FROM BROWN COAL**
Jolanta Kwiatkowska and Alina Maciejewska
129. **EFFECT OF RESIDUAL VANADYL IN THE SPECTROSCOPIC ANALYSES OF SOIL HUMIC ACIDS**
Etelvino Henrique Novotny, Heike Knicker, Débora M.B.P. Milori and Ladislau Martin-Neto

130. **INVESTIGATION OF THERMAL TREATMENT FOR QUANTIFICATION OF BLACK CARBON IN ENVIRONMENTAL SAMPLES**
Thanh H. Nguyen, William P. Ball and Roberta A. Brown
131. **BLACK CARBON AND KEROGEN IN SOILS AND SEDIMENTS**
Ping'an Peng, Weilin Huang and Jianzhong Song
132. **DETERMINATION OF BLACK CARBON IN NATURAL ORGANIC MATTER BY CHEMICAL OXIDATION AND SOLID-STATE NMR**
Myrna J. Salloum and Patrick G. Hatcher
133. **ABIOTIC SYNTHESIS OF HUMIC SUBSTANCES ON A VOLCANIC MATRIX AND ROLE OF ISOMERIC COMPOUNDS – A PRELIMINARY STUDY**
Fiorenzo C. Ugolini, Paola Arfaioli, Alessandro Agnelli and Marinella Bosetto
134. **EFFECT OF FIRE ON THE CHARACTERISTICS OF SOIL HUMIC ACID**
Guido Alberti, Alessandro Cristini, Aldo Loi, Pietro Melis and Sandro Meloni
135. **SOIL ORGANIC MATTER QUALITY DURING LONG-TERM FIELD EXPERIMENTS**
Jarmila Laštincová and Lubica Pospíšilová
136. **EFFECT OF LONG-TERM MINERAL FERTILIZATION ON HUMIC CONDITION OF THE SLIGHTLY LEACHED CHERNOZEM IN DOBROUDJA**
Margarita Nankova, Hristofor Kirchev and Emil Penchev
137. **IMPACT OF LONG-TERM TILLAGE ON ORGANIC MATTER AND MICROAGGREGATE STABILITY**
Anita Gal, Erika Michéli, Etelka Tombácz and Tomás Harrach
138. **STUDIES OF ASPECTS OF THE COMPOSITIONS OF HUMIC-TYPE SUBSTANCES FROM SEAWEED AND OF THE INFLUENCES OF SEAWEED EXTRACTS ON GRASS GROWTH**
R. J. McInerney, P. Cross, C. E. Clapp and M. H. B. Hayes
139. **HUMIC SUBSTANCES FOR ENHANCING PLANT GROWTH**
C. E. Clapp, Y. Chen, M. H. B. Hayes, V. W. Cline, A. J. Palazzo, J. A. E. Molina, D. B. White and J. M. Baker
140. **NITROGEN-15 AND NATURAL ABUNDANCE C-13 CHANGES UNDER DIFFERENT TILLAGE, RESIDUE AND FERTILIZER MANAGEMENT**
M. F. Layese, C. E. Clapp, R. R. Allmaras, S. M. Copeland, J. A. E. Molina, D. R. Linden and J. M. Baker
141. **OPTIMIZING FILTRATION WITH OXIDANTS: THE ROLE OF NOM**
William C. Becker, Kwok-Keung Au, and Charles R. O'Melia
142. **ACTOSOL-Z®, A HUMIC ACID BASED FERTILIZER, MAKES WASTEWATER IN WYOMING EFFECTIVE FOR IRRIGATION**

Robert Downey and Amjad K. Fataftah

- 143. CHARACTERIZATION OF SOIL HUMIC ACIDS MOLECULAR SIZE FRACTIONS BY FLUORESCENCE IN AREAS UNDER SEWAGE SLUDGE APPLICATION**
Martha González Pérez, Débora M. B. P. Milori, Etelvino H. Novotny, Ladislau Martin-Neto, Ronaldo Berton, Wagner Bettiol and Otávio A. Camargo
- 144. HUMIC-BASED SOIL ADDITIVES FOR TREATING ACIDIC VINEYARD SOILS**
Jason (G.) Issa, Antonio F. Patti, W. Roy Jackson and Cornelia Bos-Van der Zalm
- 145. SOIL CARBON AND GLOMALIN CONCENTRATIONS UNDER CROP AND TILLAGE MANAGEMENT IN EASTERN SOUTH DAKOTA**
Joseph L. Pikul Jr., Sara F. Wright, Linda Jawson and Michael M. Ellsbury
- 146. PROPERTIES OF HUMUS FROM SOILS INCUBATED WITH POST-HARVEST RESIDUES**
Slawomir S. Gonet, Bozena Debska, Anton Zaujec and Erika Tobiasova
- 147. STRUCTURAL CHARACTERIZATION OF HUMIC ACID EXTRACTED FROM COMPOSTED SEWAGE SLUDGE**
Soumia Amir, Mohamed Hafidi, George Merlina and Jean-Claude Revel
- 148. EFFECT OF COMPOSTING PROCESS AND DURATION ON THE CHEMICAL STRUCTURE OF COMPOSTS ORGANIC MATTER AS STUDIED BY SOLID-STATE ¹³C CPMAS NMR AND PSRE**
M. -F. Dignac, C. Francou, M. Le Villio, S. Houot and H. Knicker
- 149. SOIL ORGANIC MATTER FORMATION AND ADAPTATION STRATEGIES OF ROOT SYSTEMS IN LIGNITE-RICH MINE SOILS IN LUSATIA, GERMANY**
Oliver Bens, Ulrich Fettweis, Anna Koch, Uwe Schneider and Reinhard Hüttl
- 150. HPLC AS A TOOL FOR THE INVESTIGATION OF HUMICS IN BAYER LIQUORS**
Thelma-Jean Whelan, Michael A. Wilson and Kamali Kannangara
- 151. SPECTROSCOPIC AND CHEMICAL CHARACTERIZATION OF HUMIC SUBSTANCES ORIGINATING FROM COMPOSTED SAWDUST/PAPER MILL SLUDGE**
Claudia M. B. F. Maia, Antonio S. Mangrich, Cristiane R. Budziak and Júlio C.P. Santos
- 152. CHEMICAL CHARACTERISTICS AND POSSIBLE SOURCES OF FULVIC ACIDS LEACHED FROM THE PLOW LAYER OF PADDY FIELDS**
Nagamitsu Maie, Akira Watanabe and Makoto Kimura
- 153. CARBON CONTRIBUTION AND CHARACTERISTICS OF HUMIC ACID, FULVIC ACID, PARTICULATE ORGANIC MATTER, AND GLOMALIN IN DIVERSE ECOSYSTEMS**
Kristine Nichols, Sara Wright, Walter Schmidt, Michael Cavigelli and Kudjo Dzanor
- 154. HUMIC SUBSTANCE AND POLYSACCHARIDE EFFECTS ON AGGREGATE FORMATION AND STABILIZATION**
Jorge Tarchitzky and Yona Chen

155. **THE EFFECT OF LIMING ON THE RATIO OF DOC/DON ON AN ACIDIC ARENOSOL**
Tibor Filep, Péter T. Nagy and Ida Kincses

TUESDAY JULY 23
Blackman Auditorium

Characterization

L. Martin-Neto and D. Wallia, Presiding

- 14:00 **ADVANCES IN THE UNDERSTANDING OF ORGANIC MATTER STABILIZATION PROCESSES IN SOILS: CHEMOLYTIC TECHNIQUES COMBINED WITH ¹³C NMR SPECTROSCOPY**
Ingrid Kögel-Knabner
- 14:30 **QUALITATIVE CHANGES OF SOIL ORGANIC MATTER DETECTED BY ¹³C NMR AND ESR IN AREAS UNDER CARBON SEQUESTRATION IN BRAZIL**
Ladislau Martin-Neto, Clenio N. Pillon and João Mielniczuk
- 14:55 **PROTON HOMONUCLEAR TWO-DIMENSIONAL NMR SPECTROSCOPY OF HUMIC SUBSTANCES WITH EXTREME RESOLUTION AND SENSITIVITY**
Norbert Hertkorn, Irina Perminova, Dmitrii Kovalevskii and Antonius Kettrup
- 15:20 **CRYOPROBE VERSUS ULTRAHIGH FIELD NMR IN THE STUDY OF HUMIC MATERIALS**
Robert L. Cook, Deane D. McIntyre, Cooper. H. Langford and Hans J. Vogel
- 15:45 **DEGRADATION OF CONDENSED TANNINS AS REVEALED BY ¹³C-NMR SPECTROSCOPY AND MALDI-TOF MASS SPECTROMETRY**
Heike Knicker, Anke Behrens, Nagamitsu Maie, Clemens Engelke and Ingrid Kögel-Knabner
- 16:10 **HYDROPHOBIC SITES IN HUMIC ACID AS DETECTED BY ESR OF SPIN-LABEL STEARIC ACID, ¹³C NMR OF LABELED OLEIC ACID AND PYRENE FLUORESCENCE**
Julieta A. Ferreira, Ladislau Martin-Neto, Otaciro R. Nascimento and Luiz A. Colnago
- 16:35 **Adjourn for Big Day Poster Session II, Reception and Field Trip**

THURSDAY, JULY 25
PARALLEL SESSION IA
Curry Student Center, Room 444

Sorption I

F. Frimmel and B. Xing, Presiding

- 8:30 **THERMODYNAMIC PROPERTIES OF SOIL- AND SEDIMENT-DERIVED NATURAL ORGANIC MATERIALS**
Rossane C. DeLapp, Katherine D. Young and Eugene J. LeBoeuf
- 9:00 **DEMONSTRATION OF THE "CONDITIONING EFFECT" IN SOIL ORGANIC MATTER AND SUPPORT FOR A PORE DEFORMATION MECHANISM FOR SORPTION HYSTERESIS**
Yuefeng Lu and Joseph Pignatello

- 9:25 CORRELATIONS BETWEEN DOM CHARACTERISATION PARAMETERS AND KEY DESCRIPTIVE PARAMETERS OF THE WATERSHED**
Rolf D. Vogt, Jarkko Akkanen, Egil Gjessing, Jussi Kukkonen, Stephan Pflugmacher, Christian Steinberg and Adam Zolnay
- 9:50 OBSERVATION OF MULTIPLE SORPTION DOMAINS IN HUMIC SUBSTANCES USING NMR SPECTROSCOPY AND SORPTION STUDIES; APPLICATION TO STRUCTURE CONFIGURATION**
Amrith S. Gunasekara, Myrna J. Salloum, Leonard C. Dickinson and Baoshan Xing
- 10:15 *Break***
- 10:45 KINETICS OF 2,4-DICHLOROPHENOXYACETIC ACID (2,4-D) ADSORPTION BY METAL OXIDES, METAL OXIDE-HUMIC COMPLEXES AND HUMIC ACID**
C. Liu and P. M. Huang
- 11:10 EFFECT OF HUMIC ACID ADSORPTION ON THE AGGREGATION OF MAGNETITE NANOPARTICLES**
Erzsébet Illés and Etelka Tombácz
- 11:35 SIMPLIFIED LINK SOLVATION MODEL (LSM) FOR SORPTION IN NATURAL ORGANIC MATTER**
Mikhail Borisover and Ellen R. Graber
- 12:00 *Lunch, Curry Student Center***

THURSDAY, JULY 25
PARALLEL SESSION IB
Curry Student Center, Room 318

Metals

D. Amarasiriwardena and K. Czerwinski, Presiding

- 8:30 CATALYTIC EFFECTS OF NI-HUMIC COMPLEXES ON THE REDUCTIVE DEHALOGENATION OF CHLORINATED ALKANES AND ALKENES**
Edward O'Loughlin, Huizhong Ma and David Burris
- 9:00 SPECTROSCOPIC CHARACTERIZATION OF THE INTERACTION OF Al³⁺ AND Pd²⁺ WITH SUWANNEE RIVER FULVIC ACID**
Kelly M. Elkins, Elissa Larivee and Donald J. Nelson
- 9:25 SYNTHETIC HUMIC ACIDS: A USEFUL TOOL TO STUDY THE INTERACTION OF HUMIC ACIDS WITH ACTINIDES IN THE ENVIRONMENT**
Susanne Sachs, Katja Schmeide, Karl-Heinz Heise and Gert Bernhard
- 9:50 CONTRIBUTION OF NATURAL ORGANIC MATTER TO COPPER LEACHING FROM MUNICIPAL SOLID WASTE INCINERATOR BOTTOM ASH**

André van Zomeren and R. N. J. Comans

10:15 *Break*

10:40 **THE ROLE OF HUMIC SUBSTANCES IN TRACE ELEMENT MOBILITY IN NATURAL ENVIRONMENTS AND APPLICATIONS FOR RADIONUCLIDES**

V. Moulin

11:10 **INTER-LANTHANIDE LUMINESCENCE RESONANCE ENERGY TRANSFER IN HUMIC SUBSTANCES**

Michael U. Kumke, Hans-Gerd Löhmannsröben, Sascha Eidner and Gregory Korshin

11:35 **ENVIRONMENTAL POLLUTION LEVEL AS DETERMINED BY EPR SPECTROSCOPY ANALYSES AND OXIDATION POWER OF HUMIC ACIDS EXTRACTED FROM AQUATIC (UNDER MANGROVE FOREST) SEDIMENT SAMPLES**

Lenise da Silva, Angelo R. S. Oliveira and Antonio S. Mangrich

12:00 *Lunch, Curry Student Center*

THURSDAY, JULY 25
PARALLEL SESSION IIA
Curry Student Center, Room 444

Sorption II

Y. Chen and D. Ryan, Presiding

14:00 **WETTING CYCLES OF AIR DRIED AND "HYDROPHOBIC" SOILS STUDIED BY NMR RELAXOMETRY – THE ROLE OF HUMIC SUBSTANCES**

Cooper H. Langford, Tiona Todoruk, Marina Litvina and Apostolos Kantzas

14:30 **SWELLING OF SOIL ORGANIC MATTER IN HUMIC SOIL SAMPLES: METHODS AND RELEVANCE**

Gabriele E. Schaumann, Julia Hurrass, Susanne Berger, Karsten Sieg, Jan Weber, Heiner Stoffregen, Martin Mueller and Wolfgang Rotard

14:55 **NONPOLAR ORGANIC CONTAMINANT ASSOCIATION WITH HUMIC SUBSTANCES IN ANOXIC AQUATIC SEDIMENTS: EFFECTS OF AERATION ON PCB DISTRIBUTION, MOBILITY AND BIOAVAILABILITY**

Joel A. Pedersen, Linda E. Schweitzer, Chen-Hung Michael Lin and I.H. (Mel) Suffet

15:20 *Break*

15:30 **EFFECTS OF LIPIDS ON THE NONLINEAR SORPTION OF PHENANTHRENE BY SEDIMENTARY HUMIC SUBSTANCES**

Luc Tremblay, Scott D. Kohl, James A. Rice and Jean-Pierre Gagné

15:55 **SPME AS A METHOD TO STUDY PARTITIONING PROCESSES IN NATURAL SAMPLES WITH HIGH SALT CONCENTRATIONS**

Linn Persson, Tomas Alsberg, Anna Ledin and Göran Odham

16:20 THE FUNDAMENTALS OF HUMIC SUBSTANCES, AND THEIR HUMIC-CLAY COMPLEXES – INSIGHTS IN HUMIN, SOIL FORMATION, AND THE REACTIVE SOIL INTERFACE
Andre Simpson, William Kingery, Edward Foan and Patrick Hatcher

16:45 Break

16:50 IHSS ASSEMBLY, Curry Student Center, Room 318

18:10 Adjourn for Banquet at 19:30, Curry Student Center, Ballroom

THURSDAY, JULY 25

PARALLEL SESSION IIB

Curry Student Center, Room 318

Biological and Agricultural Research

C. Clapp and M. Klavins, Presiding

14:00 MECHANISMS FOR THE STABILIZATION OF SOIL ORGANIC MATTER
Konrad M. Haider

14:30 MORE EVIDENCE FOR HUMIC SUBSTANCES ACTING AS BIOGEOCHEMICALS ON ORGANISMS
C. Wiegand, N. Meems and C. E. W. Steinberg

14:55 ENHANCEMENT IN BIOMIMETIC OXIDATION OF PENTACHLOROPHENOL BY THE ADDITION OF HUMIC SUBSTANCES AND ITS APPLICATION TO SOIL REMEDIATION
Masami Fukushima, Akira Sawada, Mikio Kawasaki, Hiroyasu Ichikawa, Kengo Morimoto, Kenji Tatsumi and Shunitz Tanaka

15:20 Break

15:30 FORMATION OF LOW MOLECULAR WEIGHT ORGANIC ACIDS FROM DISSOLVED ORGANIC MATTER BY IRRADIATION WITH SIMULATED SOLAR UV-LIGHT
Thomas Brinkmann, Daniel Sartorius, Philip Hörsch and Fritz H. Frimmel

15:55 SOIL ORGANIC MATTER STORAGE AND STABILITY PROMOTED BY CROPPING SYSTEMS UNDER NO-TILLAGE IN SOUTHERN BRAZIL
Jeferson Diekow, João Mielniczuk, Heike Knicker, Déborah P. Dick and Ingrid Kögel-Knabner

16:20 RESPONSE OF FIELD CROPS AND FRUIT TREES TO APPLICATION OF ACTOSOL[®], A HUMIC ACID FERTILIZER, UNDER EGYPTIAN CONDITIONS
Saad A. El-Shall

16:45 Break

16:50 IHSS ASSEMBLY, Curry Student Center, Room 318

18:15 Adjourn for Banquet at 19:30, *Curry Student Center, Ballroom*

FRIDAY, JULY 26
Blackman Auditorium

Black Carbon and Chlorine

J. Alberts and T. Miano, Presiding

8:30 **DISTRIBUTION OF CHARRED PLANT FRAGMENTS IN JAPANESE VOLCANIC ASH SOILS WITH REFERENCE TO ORIGINS OF BLACK HUMIC ACIDS**

H. Shindo, T. Honna, S. Yamamoto and H. Honma

8:55 **WOOD CHAR AS A POTENTIAL SORBENT IN SOILS: CHAR PROPERTIES AS A FUNCTION OF PRODUCTION CONDITIONS**

Roberta A. Brown, Andrew K. Kercher, Thanh H. Nguyen, Dennis C. Nagle and William P. Ball

9:20 **CHARACTERIZATION OF A HUMIC ACID FROM A VOLCANIC ASH SOIL IN JAPAN BY FOURIER TRANSFORM ION CYCLOTRON RESONANCE MASS SPECTROMETRY (FT-ICR MS): BLACK CARBON AS A POTENTIAL SOURCE**

Robert W. Kramer, Elizabeth B. Kujawinski and Patrick G. Hatcher

9:45 ***Break***

10:15 **FORMATION OF HALOGENATED COMPOUNDS FROM THE REACTIONS OF CHLORINE WITH HUMIC SUBSTANCES**

David A. Reckhow

10:45 **CRYSTAL SURFACE AND HUMIC MATERIAL EFFECTS ON CRYSTALLISATION**

Damian E. Smeulders and Michael A. Wilson

11:10 **ASK NOT WHAT HUMIC ACID IS: ASK WHAT IT CAN DO FOR US**

Daman S. Walia and Amjad K. Fataftah

11:40 ***Lunch, Curry Student Center***

13:30 **CLOSING CEREMONY, *Blackman Auditorium***

Y. Chen, G. Davies and E. Ghabbour, Presiding

Best 4 Poster Awards

Contributions Awards

Votes of Thanks

Closing Remarks

Invitation to IHSS 12

14:00 **Adjourn**