

ISI 2006 Program

Third International Symposium on Isotopomers

(All symposium scientific events, including registration, will be held at the Institute of the Americas on the UCSD campus and at the Birch Aquarium at Scripps.)



Sunday, 8/27/2006

4:00-7:00 pm Registration and Ice Breaker – Institute of the Americas, Friend Plaza

Monday, 8/28/2006 – Day I

Inaugural Session: Stable Isotopes and Chemistry of the Atmosphere – Chairpersons: M. H. Thiemens and N. Yoshida

Session I-1	Speakers	Topic
	Welcome and Talks	
8:30-8:45	M. H. Thiemens, UCSD	
8:45-9:00	T. Nakai, JST	
9:00-9:40	R. A. Marcus (Invited Talk)	<i>Oxygen Isotopic Anomalies in Chemistry</i>
9:40-10:00	S. Chakraborty	<i>Oxygen Isotopes in Solar System: Recent Experimental Observations</i>

10:00-10:20 - Break

Session I -1 (Continued)

10:20-11:00	B. Luz (Plenary Lecture)	<i>^{17}O – a powerful tracer of hydrologic and biospheric cycles</i>
11:00-11:20	H. P. Affek	<i>Mass-47 in atmospheric CO_2: Tropospheric seasonal and diurnal variations and stratospheric anomalies</i>
11:20-11:40	R. Shaheen	<i>Factors Controlling the Isotope Exchange Reaction between CO_2 and Ozone-Experiment and Numeric Simulations</i>
11:40-12:00	B. Tuzson	<i>Unexpected temperature dependence of the ozone isotope anomaly</i>
12:00-12:20	H. Bao	<i>The five “personalities” of the ~ 3.2 Ga Fig Tree barites</i>

12:20-1:20 Lunch

Session I- 2**Chairpersons: S.K. Bhattacharya and B. Luz**

1:20-1:40	S.K. Bhattacharya	<i>Determination of intramolecular isotope distribution of ozone by oxidation reaction with silver metal</i>
1:40-2:00	Antra	<i>Anomalous oxygen isotope enrichment in CO₂ produced from O+CO</i>
2:00-2:20	V. Rai	<i>Photochemistry in the Early Solar System: Evidence from Sulfur Isotopic Studies from Meteorites and the Relation to Oxygen</i>
2:20-2:40	J.R. Lyons	<i>The origin of sulfur isotope anomalies in the atmosphere</i>
2:40-3:00	S. Danielache	<i>³²S/³³S/³⁴S and ³⁶S Kinetic Fractionation Effects in the Reaction of OCS with OH Radical</i>
3:00-3:20	M. M –L. Grage	<i>HCl and DCl: A Case Study of Different Approaches for Determining the Photo Fractionation Constant</i>

3:20-3:40 Break**Session I – Posters: Environmental Measurements and Experiments – Chairpersons: S. Toyoda and H. Affek**

3:40-5:30	S. Kawagucci	<i>¹⁷O Anomaly in the Stratospheric CO₂ within the Arctic Polar Vortex</i>
	T. Roeckmann	<i>Information about stratospheric dehydration processes from satellite based HDO measurements with the MPIAS instrument</i>
	V. Blinova	<i>Stable carbon isotopic composition of the hydrocarbon gases from mud volcanoes in the Gulf of Cadiz</i>
	H. Nara	<i>Stable carbon isotopic compositions of atmospheric ethane and propane in the remote marine atmosphere: a useful indicator of the atmospheric transport processes</i>
	Y. Ueno	<i>Quadruple sulfur isotope constraints on sulfur cycles of Archean and modern seafloor hydrothermal systems</i>
	B. A. Wing	<i>Photochemical fractionation of sulfur isotopes: Experimental systematics and anomalies</i>
	S. Danielache	<i>High Precision Spectroscopy of ³²S and ³⁴S Sulfur Dioxide: Ultraviolet Absorption Cross Sections and Fractionation Constant</i>
	C. Eskebjerg	<i>High Precision Absorption Cross Section Measurements of Carbonyl Sulfide Isotopomers</i>
	M. S. Johnson	<i>UV and IR absorption cross-sections of HCHO and DCDO</i>
	M. Sorai	<i>Geochemical simulation of global nitrous oxide cycle</i>

6:30 Barbecue at Scripps Institution of Oceanography

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Tuesday, 8/29/2006 – Day II

Session II-1: Non-mass Dependent Fractionation: Observations and Experiments – Chairpersons: Y.L Yung and J. Savarino

Talks	Speakers	Topic
9:00-9:40	Y.L. Yung (Plenary Lecture)	<i>Oxygen Mass-Independent Anomaly in N₂O: Implications for an Atmospheric Source</i>
9:40-10:00	J. Savarino	<i>Betrayed by its isotopes: Origin of inorganic nitrate in the coastal Antarctic troposphere</i>
10:00-10:20	J. McCabe	<i>A proxy for ozone variability in south polar nitrate</i>

10:20-10:40 Break

Session II-1 (Continued)

10:40-11:00	J. Kaiser	<i>Probing stratospheric transport and chemistry with new balloon and aircraft observations of the meridional and vertical N₂O isotope distribution</i>
11:00-11:20	R. Well	<i>Soil studies to investigate the control of isotopomer signatures of soil-emitted N₂O</i>
11:20-11:40	G. Dominguez	<i>Quantifying the contribution of ship emissions to the aerosol environment in San Diego using measurements of oxygen isotopes in aerosol NO₃</i>
11:40-12:00	R. Jost	<i>Symmetry breaking by oxygen isotope substitution in nitrogen dioxide</i>
12:00-12:20	M. Westley	<i>On the calibration of the intramolecular nitrogen isotope distribution in nitrous oxide</i>

12:20-1:20 Lunch

Session II-2

Chairpersons: M. Johnson and T. Roeckmann

1:20-2:00	M. Johnson (Plenary Lecture)	<i>Relative tropospheric photolysis rates of HCHO and HCDO measured at the European Photoreactor Facility</i>
2:00-2:20	T. Roeckmann	<i>Accumulating evidence for methane emissions from vegetation</i>

2:20-2:40 N. Suzuki *A measurement of methane flux and its isotope ratio to determine methane dynamics in wetland*
2:40-3:00 Z. Eshetu *Land Use and Climate Change in Ethiopia from Multi-isotope analyses of Soil Organic Matter*

3:00-3:20 Break

Session II – Posters: Environmental Measurements and Simulations – Chairpersons: M. Johnson and T. Roeckmann

3:20-5:30 O. Yoshida *Methane production, consumption, and sea-air flux in the central North Pacific based on stable isotopic distribution of methane*
O. Yoshida *Methane concentration and stable isotopic distribution as indicators of methane and ocean dynamics in the Antarctic Ocean*
K. Koba *Characterization of N₂O in a temperate forested*
J. Savarino *Surface Ozone Depletion Events and Oxygen Isotopes in Atmospheric Inorganic Nitrate: Insights from two Field Campaigns in the High Arctic*
Y. Tobari *Research on transition of nitrogen circulation by human activity, using nitrate isotope ratio*
S. Toyoda *Isotopomeric analysis of N₂O dissolved in a river in Tokyo metropolitan area*
A. Fujii *The isotope and isotopomer studies of nitrous oxide in the eastern subtropical North Pacific*
L. Wang *Nitrogen uptake preferences in savanna ecosystems*
T. Roeckmann *Modelling the budget of middle atmospheric water vapour isotopes*
J. Savarino *Oxygen isotopic anomaly transfer from O₃ to NO₂*
V.I. Vysotskii *Experiments, Mechanism and Theory of Laboratory Implosive Nucleosynthesis of Superheavy, Anomalous and Exotic Stable Nuclei in Collapsing Targets*
L. Brothers *Oxygen Anomaly in NO₃ Aerosol Samples Obtained from Riverside*
B. Tuzson *A QCL Spectrometer for Stable Carbon Dioxide Isotope Measurements. Laboratory and Field Studies*
S. K. Bhattacharya *Nuclear spin induced isotope enrichment in CO₂ photodissociation*

No Social Activities Tonight

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Wednesday, 8/30/2006 – Day III

Session III-1 Isotopomers in Biomedical Applications – Chairpersons: T. Brenna and R. Robins

Talks	Speaker	Topic
8:30-9:05	J. T. Brenna (Invited Talk)	<i>Intramolecular $\delta^{15}N$ of Amino Acids: Methods and Demonstration that $\delta^{15}N$ of Lysine Responds to Respiratory Status in <i>Paracoccus denitrificans</i></i>
9:05-9:25	V.I. Vysotskii	<i>Experimental Observation of Cs-137 Isotope Deactivation and Mn-55 Isotope Transmutation in Biological Cells</i>
9:25- 9:45	E. Brenna	<i>Establishing the synthetic origin of illicit drugs by $2H$ NMR spectroscopy</i>

9:45-10:05 Break

Session III-1 (Continued)

10:05-10:40	O. Kajiwara (Invited Talk)	<i>Synthesis of ^{13}C Labeled Amino Acid</i>
10:40-11:00	M. Hellerstein	<i>Flux Measurements by Mass Isotopomer Distribution Analysis (MIDA) for Pathway-Based Therapeutic Discovery</i>
11:00-11:20	M. MacCoss	<i>Proteome-Wide Measurement of Protein Flux in Eukaryote Organisms</i>

Session III-2: Isotopomers in Food and Natural Products – Chairpersons: C. Guillou and O. Kajiwara

11:20-11:55	C. Guillou (Plenary Lecture)	<i>Determination of ^{18}O, ^{13}C and 2H isotopomers for food control in European Union</i>
11:55-12:15	H. -L. Schmidt	<i>A measuring system for the simultaneous isotope ratio and elemental analysis of C,H,N and S in food and other biological material</i>
12:15-12:35	Y. H. Zhang	<i>Isotope effects of f block elements observed by chromatography —the mass dependency—</i>

12:35-1:35 Lunch

Session III-3: Experimental Advances – Chairpersons: G. Dominguez and R. Jost

1:35-2:10	R.J. Robins (Plenary Lecture)	<i>Recent advances in the analysis of deuterium and carbon-13 distribution in isotopomers of natural products</i>
2:10-2:30	J. Schleucher	<i>NMR quantification of deuterium and ^{13}C isotopomers as tool in biogeochemistry</i>
2:30-2:50	N. Akikusa	<i>Selective detection of isotopomers with a quantum cascade laser</i>
2:50-3:10	H. Sasada	<i>Difference-frequency source with a periodically poled lithium niobate waveguide for spectroscopic measurement of isotopomer around $3\ \mu\text{m}$</i>

3:10-3:30 Break

Session III – Posters: Experimental Advancement and Applications in Biomedical, Food and Natural Products Chairpersons: J. T. Brenna and R. J. Robins

3:30-5:20	K. Yamada	<i>Measurement of D/H, $^{13}\text{C}/^{12}\text{C}$ and $^{18}\text{O}/^{16}\text{O}$ ratios of ethanol in water at sub-millimole levels by a SPME-GC/TC, C/IRMS</i>
	V.S. Sevastyanov	<i>The selective oxidation of organic gases in a solid electrolyte reactor for amperometric sensing and isotopic analysis by CF-IRMS</i>
	N. Nasu	<i>Measurement of intramolecular carbon isotope ratio of acetaldehyde by sealed tube pyrolysis</i>
	J. T. Brenna	<i>Determination of Intramolecular $\delta^{13}\text{C}$ From Incomplete Pyrolysis Fragments. Evaluation of Pyrolysis-Induced Isotopic Fractionation in Fragments from the Lactic Acid Analogue Propylene Glycol</i>
	H.-L. Schmidt	<i>Systematics of the isotopologues and isotopomers of the aromatic ring of phenylpropanoids from the biosynthesis</i>
	G.S. Remaud	<i>Quantitative ^{13}C-NMR as an efficient tool for the determination of site-specific ^{13}C fractionation at natural abundance</i>
	G. S. Remaud	<i>^{13}C-isotopomer determination by quantitative ^{13}C-NMR: repeatability and reproducibility</i>
	G. S. Remaud	<i>Accuracy and precision of the ^2H-SNIF-NMR method using ERETIC as reference</i>

6:30-9:00 Poster Celebration and Dinner at the Birch Aquarium at Scripps

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Thursday, 8/31/2006 – Day IV

Session VI-1: Isotopomers in Terrestrial Systems – Chairpersons: H. Bao and G. Michalski

Talks	Speaker	Topic
9:00-9:40	M. F. Miller <i>(Plenary Lecture)</i>	<i>New insights to oxygen three-isotope distributions on the Earth, from high precision measurements on terrestrial silicates and polar precipitation</i>
9:40-10:00	P. Ghosh	<i>Ootolith carbonate -based calibration of ^{13}C-^{18}O bond paleothermometer</i>
10:00-10:20	L. Lefticariu	<i>Stable Isotope Study of Radiolytic Oxidation of Pyrite</i>
10:20-10:40	Break	
10:40-11:00	O. Abe	<i>Seasonal variation of ^{17}O anomaly in Antarctic precipitation</i>
11:00-11:20	G. Michalski	<i>NO_3 oxygen isotopes</i>
11:20-11:40	A. Makabe	<i>Nitrogen dynamics in Lake Biwa using stable isotopes</i>

Session IV-2: Concluding Session

11:40-12:40 Comments, suggestions, vote of thanks and concluding remarks

12:40- 1:40 Lunch

Visit to H. Urey Memorial Room and R. Keeling Stable Isotope Lab

Old Town San Diego Excursion

San Diego Harbor Dinner Cruise