

a) PUBLISHED PAPERS (bold numbers indicate peer-reviewed publications)

- 185.** Alfken, Susanne, Lars Wörmer, Julius Sebastian Lipp, Jenny Wendt, Arndt Schimmelmann, Kai-Uwe Hinrichs (2020) Mechanistic insights into molecular proxies through comparison of subannually resolved sedimentary records with instrumental water column data in the Santa Barbara Basin, Southern California. *Paleoceanography and Paleoclimatology* **35** (10), e2020PA004076. <https://doi.org/10.1029/2020PA004076>
- 184.** Nguyễn-Văn, Hường, Jan P. Schimmelmann, Dương Nguyễn-Thùy, Antti E.K. Ojala, Ingmar Unkel, Thái Nguyễn-Đình, Yu Fukumoto, Kelsey E. Doiron, Peter E. Sauer, Agnieszka Drobnia, Nguyệt Thị Ánh Nguyễn, Quốc Đổ-Trọng, Hồng Nguyễn-Thị, Dương Nguyễn-Ánh, Tạo Nguyễn-Văn, Arndt Schimmelmann (2020) Environmental history recorded over the last 70 years in Biên Hồ maar sediment, Central Highlands of Vietnam. *Quaternary International*. Electronic preprint: <https://doi.org/10.1016/j.quaint.2020.05.013>
- 183.** Schimmelmann, A., Haiping Qi, Philip J.H. Dunn, Federica Camin, Luana Bontempo, Doris Potočnik, Nives Ogrinc, Simon Kelly, James F. Carter, Aiman Abraham, Lauren T. Reid, Tyler B. Copen (2020) Food matrix reference materials for hydrogen, carbon, nitrogen, oxygen, and sulfur stable isotope-ratio measurements: collagens, flours, honeys, and vegetable oils. *Journal of Agricultural and Food Chemistry*. Electronic preprint: <https://doi.org/10.1021/acs.jafc.0c02610>
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- 181.** Nguyễn-Văn, Hường, Dương Nguyễn-Thùy, Nguyệt Thị Ánh Nguyễn, Thomas Streil, Jan P. Schimmelmann, Kelsey E. Doiron, Thái Nguyễn-Đình, Hồng Nguyễn-Thị, Arndt Schimmelmann (2020) Excessive radon-based radiation in indoor air caused by soil building materials in traditional homes on Đồng Văn karst plateau, northern Vietnam. *Chemosphere* **257**, 127119. <https://doi.org/10.1016/j.chemosphere.2020.127119>
- 180.** Yin, Yidong, Maria Mastalerz, Jay T. Lennon, Agnieszka Drobnia, A. Schimmelmann (2020) Characterization and microbial mitigation of fugitive methane emissions from oil and gas wells: Example from Indiana, USA. *Applied Geochemistry* **118**, 104619. <https://doi.org/10.1016/j.apgeochem.2020.104619>
- 179.** Nguyễn Thùy, Dương, Nguyễn Ánh Nguyệt, Nguyễn Văn Hường, Jan Schimmelmann, Nguyễn Đình Thái, Arndt Schimmelmann (2020) Nồng độ khí radon trong nhà trình tường và các yếu tố ảnh hưởng, lấy ví dụ ở khu vực Cao Nguyên Đá Đồng Văn, tỉnh Hà Giang. [Radon concentrations and their controlling factors in mud-built houses in Dong Van Plateau Karst Geopark, Ha Giang Province] *VNU Journal of Science: Earth and Environmental Sciences* **36** (1), 1-10. <https://js.vnu.edu.vn/EES/issue/view/583>; <https://doi.org/10.25073/2588-1094/vnuees.4547>
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- 176.** Nguyễn-Thùy, Dương, Hường Nguyễn-Văn, Jan P. Schimmelmann, Nguyệt Thị Ánh Nguyễn, Kelsey Doiron, Arndt Schimmelmann (2019) ²²⁰Rn (thoron) geohazard in room air of earthen dwellings in Vietnam. *Geofluids* **2019**, article ID 7202616, 11 pages. <https://doi.org/10.1155/2019/7202616>
- 175.** Topalov, Katarina, A. Schimmelmann, P. David Polly, Peter E. Sauer, Suresh Viswanathan (2019) Stable isotopes of H, C, and N in mice bone collagen as a reflection of food and water intake. *Isotopes in Environmental and Health Studies* **55** (2), 129-149. <https://doi.org/10.1080/10256016.2019.1580279>

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b) Papers in Press

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c) PAPERS SUBMITTED

Hendy, Ingrid L., Xiaojing Du, Linda Hinnov, Erik Brown, Arndt Schimmelmann, Dorothy Pak (in review) Two millennia of tropical and polar influence on Southern Californian precipitation. *Geophysical Research Letters*.

d) PAPERS IN PREPARATION

Webster, Kevin D., Arndt Schimmelmann, Agnieszka Drobniak, Maria Mastalerz, Laura Rosales Lagarde, Penelope J. Boston, Jay T. Lennon (in review) Diversity and composition of cave methanotrophic communities. *Applied and Environmental Microbiology*. Manuscript AEM02180-18. Preprint 10.1101/412213 has posted on bioRxiv: <http://biorxiv.org/cgi/content/short/412213v1>. Portable graphical link to your paper (QR code) can be obtained here: <https://connect.biorxiv.org/qr/412213>.

Hendy, Ingrid L., A. Schimmelmann, Dorothy K. Pak, and Linda Heusser (in review) The return of North Pacific atmospheric rivers during the Little Ice Age.

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e) ABSTRACTS

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- A-307 Doiron, Kelsey E., Hương Nguyễn-Văn, A. Schimmelmann, Antti Ojala, Dương Nguyễn-Thùy, Peter Sauer, Yu Fukumoto, Ingmar Unkel, Simon Brassell, and Thái Nguyễn-Đình (2019) Multi-proxy assessment of changes in climate and hydrodynamics across the Pleistocene-Holocene boundary recorded by biogeochemical signatures in lacustrine sediments from the Central Highlands of Vietnam. *AGU Fall Meeting 2019*, 9-13 December, San Francisco, Climate of the Common Era session. <https://www2.agu.org/fall-meeting>
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- A-46 Schimmelmann A., C.B. Lange (2001) Paleoclimatic interpretation of major Southern California flood events of the past 2,000 years. *Achieving Climate Predictability using Paleoclimate Data; EuroConference on Abrupt Climate Change Dynamics*, Castelvecchio Pascoli, Italy, 10-15 November 2001.
- A-45 Cooper, David Craig, Flynn Picardal, A. Schimmelmann, Aaron Coby (2001) Chemical and biological interactions during nitrate and goethite reduction by *Shewanella putrefaciens* 200. *International Symposium on Environmental and Biogeochemistry (ISEB)* 15, Sep. 11-15, 2001, Wroclaw, Poland. Program with Abstracts.

- A-44 Cooper, David Craig, Flynn Picardal, A. Schimmelmann, Aaron Coby (2001) Chemical and biological interactions during nitrate and goethite reduction by *Shewanella putrefaciens* 200. 11th Annual V.M. Goldschmidt Conference, May 20-24, 2001, Hot Springs, Virginia, USA.
<http://goldschmidtabstracts.info/abstracts/abstractView?abstractId=2001003026>
- A-43 Mastalerz, M., A. Schimmelmann (2001) Isotopically exchangeable hydrogen in coal relates to thermal maturity and maceral composition. 53rd ICCP/TSOP Meeting, 12-19 August 2001, Copenhagen, Denmark, p. 16-20.
- A-42 Sessions, Alex L., Thomas W. Burgoyne, William Alley, John M. Hayes, A. Schimmelmann (2001) Calibration of continuous-flow hydrogen isotopic analyses. *American Geophysical Union Spring Meeting, Boston 2001*, p. 55.
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- A-41 Schimmelmann, A. (2001) Improved method for the determination of deuterium/hydrogen stable isotope ratios in chitin. 4th Conference of the European Chitin Society ("Euchis 2001"), 6-10 May 2001, Senigallia, Italy, Abstracts, S-49.
- A-40 Schimmelmann, A., Carina B. Lange (2001) Major flood events of the past 2,000 years recorded in Santa Barbara Basin sediment. 18th Annual Pacific Climate (PACLIM) Workshop, March 18-21, 2001; Asilomar State Conference Grounds, Pacific Grove, California. Entire volume:
http://meteora.ucsd.edu/paclim/PACproc_2001.pdf http://meteora.ucsd.edu/paclim/8Schimmelmann_et_al.pdf
Abstract: <http://www.wca-infonet.org/servlet/CDSServlet?status=ND0xMjEzLjExNDQzMSY2PWVuJmZPWVY3VtZW50cyYzNz1pbmZv>
- A-39 Schimmelmann, A., Maria Mastalerz (2000) Isotopically labile organic hydrogen in thermal maturation of organic matter. *Department of Energy Workshop "From Atoms to Organisms (and back): Rates and Mechanisms of Geochemical Processes"* in Gaithersburg, Maryland, October 15-16, 2000. Abstracts, p. 30.
- A-38 Mastalerz, Maria., Erik Kvale, and A. Schimmelmann, 2000. The geochemistry of climatically sensitive indicators in tidal rhythmite. 34th Annual Meeting, North-Central Section, Geological Society of America, April 6-7, 2000, Indianapolis, Indiana. 2000 Abstracts with Programs, volume 32, Number 4, p. A-50
- A-37 Sauer, Peter E., John M. Hayes, Timothy I. Eglinton, Alex L. Sessions, A. Schimmelmann (1999) Compound-specific hydrogen-isotopic measurements of lacustrine organic matter: A novel tool for paleoclimatology. 9th Annual Goldschmidt Conference, August 22-27, 1999, Cambridge, Massachusetts, abstract 7435.
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- A-36 Sauer, Peter E., Timothy I. Eglinton, John M. Hayes, Alex L. Sessions, A. Schimmelmann (1999) Compound-specific hydrogen isotope measurements of organic matter: a new paleoclimate tool and organic material tracer. In: 19th International Meeting on Organic Geochemistry, Istanbul, Turkey, European Association of Organic Geochemists, vol. 1, p. 81-82; extended abstract.
- A-35 Biondi, Franco, Caroline Isaacs, Malcolm K. Hughes, A. Schimmelmann, Carina Lange, Dan R. Cayan, Wolf H. Berger. (1999) Linking terrestrial and near-shore ecosystems: The near-1600 dry/wet episode in the American Southwest. 1999 Fall Meeting of the American Geophysical Union, Special Session on "Linking Continental and Ocean Paleorecords: The PEP Transects", San Francisco, California.
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Or: <http://www.agu.org/cgi-bin/SFgate/SFgate?&listenv=table&multiple=1&range=1&directget=1&application=fm99&database=%2Fdata%2Fepubs%2Fwais%2Findexes%2Ffm99%2Ffm99&maxhits=200&=%22U12A-04%22>
- A-34 Biondi, Franco, Caroline Isaacs, Malcolm Hughes, A. Schimmelmann, Carina Lange, Dan Cayan, Wolf Berger (1999) The ca. 1600 dry/wet knock-out: Linking terrestrial and near-shore ecosystems. NOAA 24th Annual Climate Diagnostics and Prediction Workshop, 1-5 November 1999, Tucson, Arizona.
- A-33 Sessions, Alex L., Thomas W. Burgoyne, A. Schimmelmann, John M. Hayes (1999) Hydrogen isotope-ratio monitoring GCMS. The 9th Annual V. M. Goldschmidt Conference, August 22-27, 1999, Cambridge, Massachusetts.
- A-32 Santos Neto, Eugenio Vaz dos, Elisidiney Sefora T. da Frota, A. Schimmelmann, John M. Hayes (1999) Hydrogen and carbon isotopic compositions of marine and non-marine oils as indicators of paleoenvironmental conditions in the Espírito Santo Basin, Brazil. 19th International Meeting on Organic Geochemistry, 6-10 September, 1999, Istanbul, Turkey, Abstracts, Part II, p. 489-490.

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- A-28 Sessions, Alex L., Thomas W. Burgoyne, A. Schimmelmann, and John M. Hayes (1998) Hydrogen isotope-ratio-monitoring GCMS. *Gordon Conference in Organic Geochemistry*, Holderness School, Holderness, New Hampshire, August 9-14.
- A-27 Burgoyne, Tom W., Alex Sessions, A. Schimmelmann, John M. Hayes (1998) Systems for hydrogen isotope-ratio-monitoring GCMS. Proceedings of the *46th ASMS Conference on Mass Spectrometry and Applied Topics*, Orlando, Florida, May 31-June 4, abstract #MPH294.
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- A-24 Biondi, F., Carina Lange, A. Schimmelmann (1997) The Near-AD 1600 Event: the case for supraregional significance. *Association of American Geographers 93rd Annual Meeting*, 1-5 April 1997, Fort Worth, Texas, Abstracts p. 23.
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- A-19 Schimmelmann, A. (1995) The agony and occasional success in correlating multidisciplinary timeseries pertinent to Santa Barbara Basin. *IGCP 374: Paleoclimatology and Paleoceanography from Laminated Sediments*, 2-6 August 1995, University of California at Santa Barbara, p. 30.
- A-18 Schimmelmann, A., Monique Lawrence, Eric Michael (1993) Stable isotope ratios of organic H, C, and N in CMOGS sediment across the Miocene Monterey Formation, California. *AAPG Hedberg Conference "Facies Variations and Hydrocarbon Source-rock Potential: The Cooperative Monterey Organic Geochemistry Study"*, New Orleans, Louisiana, April 22-23, 1993, Abstract volume, p. 39.
- A-17 Lange, Carina, A. Schimmelmann (1993) A review of the Holocene Santa Barbara Basin laminated record. *Symposium "Palaeoclimatology and Palaeoceanography from Laminated Sediments"*, 22-23 September 1993, London, United Kingdom. Abstract book.
- A-16 Schimmelmann, A. (1993) High-resolution paleoclimatic information from varved marine sediments of the Southern California Borderland. *27th Annual Meeting of the Society for California Archaeology*, April 7-11, 1993, Program with Abstracts, p. 63.

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- A-14 Schimmelmann, A., Carina Lange (1992) Marine paleoclimate time-series with annual to biennial resolution from varved Santa Barbara Basin sediments: Geochemical evidence. *Eastern Pacific Ocean Conference*, October 1992, Timberline Lodge, Oregon, abstracts, p. 6.
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- A-12 Hagadorn, J.W., Lowell D. Stott, A. Sinha, M. Rincon, A. Schimmelmann (1992) A 150 year record of inter-annual climate variability and organic carbon burial in Santa Monica and Santa Barbara Basins. *Ann. Meet. of the Geological Society of America (GSA)*, Cincinnati, OH, 26-29 Oct 1992, Abstracts with Programs **24** (7), p. 223. http://www.osti.gov/energycitations/product.biblio.jsp?osti_id=5590367
- A-11 Schimmelmann A., Wolfgang H. Berger (1992) High resolution marine records. Program and Abstracts, 12th Biennial Meeting 24-26 August, 1992, *American Quaternary Association (AMQUA)*, University of California Davis, p. 24-25.
- A-10 Schimmelmann, A., Randall F. Miller (1991) D/H Isotope Ratio of Non-exchangeable Hydrogen in Complex Organic Matter, with Exemplary Application to Fossil Insect Exoskeletons. *Chapman Conference on Continental Isotopic Indicators of Climate; Abstracts with Program*; Jackson Hole, Wyoming, June 10-14, 1991, p. 20.
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- A-7 Lajat, Maryse, Alain Saliot, A. Schimmelmann (1989) Free and bound lipids in recent (1895-1987) sediments from Santa Barbara Basin. *14th International Meeting on Organic Geochemistry, Abstracts with Program*, paper No. 307.
- A-6 Schimmelmann, A., Miriam Kastner (1988) Time-series concentrations of sulfur compounds in laminated Santa Barbara Basin sediments: Environmental and diagenetic implications. *EOS* **69**, p. 1118.
- A-5 Schimmelmann, A. (1987) Evidence of climatic variability in marine sediments. In: (J.L. Betancourt and A.M. MacKay, editors) *4th Workshop on Climate Variability of the Eastern North Pacific and Western North America*, 22-26 March 1987, Pacific Grove, California, pp. 33-36.
- A-4 Lange, Carina B., A. Schimmelmann, Susan K. Burke, Sargun A. Tont, Wolfgang H. Berger, Andrew Soutar (1987) Microfossil and geochemical responses to the 1983 El Niño in the Santa Barbara Basin, California. *EOS* **68**, p.1778: <http://onlinelibrary.wiley.com/doi/10.1029/EO068i050p01677/pdf>
- A-3 Schimmelmann, A., Patrick Lavens, Patrick Sorgeloos (1986) Carbon, nitrogen, oxygen and hydrogen stable isotope ratios in Artemia from different geographical origin. *Second International Symposium on the Brine Shrimp Artemia, Abstracts*, University of Antwerp, Belgium, p. 110.
- A-2 Schimmelmann, A., Michael J. DeNiro (1984) Carbon and nitrogen stable isotope ratios of aquatic arthropod chitin as environmental indicators. Abstracts with Programs, *Annual Meeting of the Geological Society of America*, v. **16**, p. 646.
- A-1 Schimmelmann, A., Michael J. DeNiro (1983) Elemental and isotopic composition of sedimentary organic matter from a terrestrial section containing the Cretaceous/Tertiary boundary. Abstracts with Programs, *Annual Meeting of the Geological Society of America*, v. **15**, p. 680.
- A-0 Dissertation:
<http://www.lib.umi.com/dissertations/fullcit/8522336>
<http://proquest.umi.com/pqdweb?did=749046991&sid=1&Fmt=2&clientId=12010&ROT=309&VName=PQD>
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[http://catalog.library.ucla.edu/cgi-bin/Pwebrecon.cgi?DB=local&BOOL1=all+of+these&FLD1=Keyword+Anywhere+\(GKEY\)&CNT=25+records+per+page&SAB1=ucoclc12888861](http://catalog.library.ucla.edu/cgi-bin/Pwebrecon.cgi?DB=local&BOOL1=all+of+these&FLD1=Keyword+Anywhere+(GKEY)&CNT=25+records+per+page&SAB1=ucoclc12888861)

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PERSONAL

Born 3/12/1953 in Helmstedt, Federal Republic of Germany.

EDUCATION

- 1976 B. Sc. in Chemistry (Vor-Diplom), Technische Universität Braunschweig, Federal Republic of Germany.
- 1979 Master of Science in Chemistry (Diplom-Chemiker), Technische Universität Braunschweig, Federal Republic of Germany. Thesis: "Stable nitrogen isotopes in oil gases".
- 1985 Ph. D. in Geochemistry, University of California at Los Angeles. Thesis: "Stable isotopic studies on chitin".
<http://proquest.umi.com/pqdweb?did=749046991&Fmt=2&clientId=12010&RQT=309&VName=PQD>
or <http://wwwlib.umi.com/dissertations/fullcit/8522336>

SCIENTIFIC POSITIONS AND MAIN RESEARCH TOPICS

- Research Assistant, 1978-1980, Technische Universität Braunschweig. Nitrogen stable isotope geochemistry.
- Exchange Scientist, 1980-1981, Academy of Sciences, Azerbajdzhan, Baku, USSR. K-Ar geochronology.
- Research Assistant, 1982-1985, UCLA, organic geochemistry,. Geochemical, environmental, and climatic influences on stable isotope ratios in chitin. Isotope ratios across a Cretaceous/Tertiary boundary. Novel isotopic analytical approaches.
- Postdoctoral Researcher, 1985-1988, Scripps Institution of Oceanography, Geological Research Division. Chemical and isotopic characterization of marine sedimentary organic matter.
- Associate Specialist, 1988-1993, Scripps Institution of Oceanography, Geological Research Division. Paleoceanography; hydrogen stable isotope ratios in organic matter.
- Associate Scientist, 1993-1999, and
- Senior Scientist, 1999-Present, Indiana University, Department of Geological Sciences. Stable isotopes in fossil fuels and in sediments. Hydrogen isotopic exchange in organic matter. Paleoclimatology in laminated sediments.

OTHER PROFESSIONAL EXPERIENCE

- 1972-74 First Lieutenant and Platoon Leader, Signal Forces, Federal Republic of Germany (West Germany, "Bundeswehr").
- 1975-1979 Charitable service as Instructor for First-Aid and CPR, and as ambulance driver, Saint John's Ambulance (Johanniter-Unfall-Hilfe, Braunschweig, Germany).
- 1976-1979 Lecturer (Chemistry) in the Nursing School of the Marienstift Hospital (Braunschweig, Germany).

PH.D. ADVISOR: Michael J. DeNiro (UC Santa Barbara, emeritus)

POST-DOC ADVISOR: Wolfgang H. Berger (Scripps Institution of Oceanography, UCSD, emeritus).

ADVISEES: I serve(d) as a primary advisor for 7 students: Grzegorz Lis, Ph.D. 2006 (now Univ. Bristol, UK); Dariusz Strąpoć, Ph.D. 2007 (now Conoco Phillips); Wilfrido Solano-Acosta, Ph.D. 2007 (now Chevron Texaco); Hui Jin (M.Sc. 2009, now PhD program at Colorado School of Mines); Ling Gao (Ph.D. program, in progress), Katarina Topalov (Ph.D. program, in progress); Agnieszka Furmann (M.Sc., in progress).

AWARDS

Scholarship by the German Academic Exchange Service (DAAD), 1980-1981.
Scripps Industrial Associates Fellowship, 1987-1988.

PROFESSIONAL SERVICE

- (1) Developer and distributor of compound-specific hydrogen and carbon stable isotope reference materials that are being used by more than 100 laboratories worldwide, including the U.S. and Canadian customs agencies, Olympic and forensic drug testing laboratories, major oil companies, and environmental laboratories. (<http://php.indiana.edu/~aschimme/hc.html>)
- (2) The *International Atomic Energy Agency* (IAEA, in Vienna, Austria) contracted me in 2001/02 to co-develop organic oxygen stable isotope standard materials that are now being distributed worldwide as benzoic acids IAEA-601 and IAEA-602.
- (3) Invited participant on scientific congresses and meetings on stable isotope applications.

Manuscript Review

American Chemical Society, Symposium Series
Analytica Chimica Acta
Analytical Chemistry
Atmospheric Environment
Chemical Geology
Deep-Sea Research Part I
Earth and Planetary Science Letters
Estuarine, Coastal and Shelf Science
Geobiology
Geochemical Journal
Geochemistry, Geophysics, Geosystems
Geoderma
Geological Society of America Bulletin
Geochemical Perspectives Letters
Geochimica et Cosmochimica Acta
Geophysical Research Letters
Gondwana Research
International Journal of Coal Geology
International Journal of Environmental Analytical Chemistry
Journal of Analytical and Applied Pyrolysis
Journal of Chromatography A
Journal of Cave and Karst Studies
Journal of Petroleum Geology
Journal of Sedimentary Research
Limnology and Oceanography
Marine Ecology Progress Series
Marine Geology
Nature Geoscience
Organic Geochemistry
Palaeogeography, Palaeoclimatology, Palaeoecology
Palaios
Paleobiology
Phytochemistry
Proceedings of the National Academy of Sciences, PNAS (USA)

Quaternary International
Quaternary Research
Quaternary Science Reviews
Rapid Communications in Mass Spectrometry
Royal Society, Proceedings A (UK)
Royal Society, Proceedings B (UK)
Science
Talanta
The Auk
Individual chapters of books

Proposal Review

American Chemical Society, Symposium Series
CNRS (France)
Louisiana Board of Science
National Science Foundation (EAR, OCE, ATM, INT)
NERC (United Kingdom)
Netherlands Organisation for Scientific Research (NWO)
Swiss National Science Foundation
Dutch Science Foundation
The Petroleum Research Fund (administered by the American Chemical Society)
U.S. Department of Energy (Basic Energy Sciences)

Chief Scientist on Scientific Cruises:

1987, cruise from Port Hueneme, California, to the Santa Barbara Basin, and back to San Diego, on the *R/V Robert Gordon Sproul*.
1993, cruise from San Diego to the Santa Barbara Basin, and back to San Diego, on the *R/V Robert Gordon Sproul*.

Invited Participant:

Shore-based Scientific Party, Ocean Drilling Program (ODP), Site 893, Santa Barbara Basin. College Station, Texas, 1993.
Project Sub-Leader in the “International Geological Correlation Program (IGCP) 347, Palaeoclimatology and Palaeoceanography from Laminated Sediments”, 1994-1996, funded by IUGS/UNESCO.
Numerous scientific cruises on several research vessels off California in 1986, 1987, 1988, 1991, 1992, 1999, 2004, 2005, 2006, 2007, 2008, 2009, 2010.
Invited participant at the PAGES Varves Working Group 1st, 2^d, and 3rd Workshops, 2010, 2011, 2012. Member of steering committee since 2012.
Invited U.S. delegate in the IAEA Technical Meeting on Assessment of International Trends and Needs for Stable Isotope Reference Materials, Vienna, 18 to 21 October 2010.

Invited speaker at the symposium „Isotopes in Groundwater Protection – Science and Applications“, in Munich, 20-21 October.

Invited Lectures

Academy of Sciences, Baku, Azerbaijan, 1980
Academy of Sciences, Yerevan, Armenia, 1981
Technische Universität Braunschweig, 1981
University of Liège, Belgium, 1984
University of California, Riverside, 1985
University of California, Santa Barbara, 1988
University of California, Santa Cruz, 1988
Southern California Coastal Wastewater Project, SCCWP, Los Angeles, 1990
University of California, Davis, *American Quaternary Association (AMQUA)*,
1992
Eastern Pacific Ocean Conference, Timberline Lodge, Oregon, 1992
University of Göttingen, Germany, 1992
Asilomar Conference Center, California, *27th Annual Meeting of the Society
for California Archaeology*, 1993
University of Washington, Seattle, Washington, 1993
University of Cincinnati, Ohio, 1994
University of Western Michigan, Kalamazoo, Michigan, 1995
University of Cincinnati, Ohio, 1998
Woods Hole Oceanographic Institution, 1999
Lamont Doherty Geological Observatory, 2000
University of Illinois at Chicago, 2002
Polish Oil and Gas Institute, Krakow, Poland, September 2003
University of Western Michigan, Kalamazoo, Michigan, 2005
Goldschmidt Conference, Moscow, Idaho, 2005
Stanford University, California, 2005
Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover,
Germany, 2006
Universität Bremen, Germany, 2006
Gordon Research Conference on Organic Geochemistry, New
Hampshire, 2006
University of Southern Illinois, Carbondale, Illinois, 2007
Universität Bremen, Germany, 2008
Shell International Exploration and Production B.V., Rijswijk,
Netherlands, 2008
University of Amiens, France, 2008
Vietnam Petroleum Institute, Hanoi, Vietnam, 2008
ISOCOMPOUND 2009, Potsdam, Germany, 2009
PAGES Varves Working Group 1st Workshop, Estonia, 2010.
Isotopes in Groundwater Protection – Science and Applications,
Munich, 2010

Service on Thesis and Student Committees (excluding my own advisees)

Stephen Mark Monk, M.Sc., 1995
Jennifer Eigenbrode, M.Sc., 1999
German Mora, Ph.D., 2000
Alex Sessions, Ph.D., 2001
Tom Kulp, Ph.D., 2002
Mark Henning, M.Sc, 2003
Scott Struck, Ph.D., 2003
Jennifer Latimer, Ph.D., 2004
Jennifer Overvoorde, M.Sc., 2004
Sarah Pietraszek-Mattner, Ph.D., 2004
Kyle Hermann, M.Sc, 2004
Paula Shafer, Ph.D. 2005
Rachel Walker, Ph.D. 2005
Nabanita Gupta, M.Sc. 2005
Caleb Schiff, M.Sc. honors thesis, 2005
Mirela Dumitrescu, Ph.D., 2006
Andee Marksamer, M.Sc., 2007
Jennifer Villinski, Ph.D., 2007
Amlan Banerjee, Ph.D., 2008
Katrina Hoffman, M.Sc., 2008
Ross Brittain, Ph.D., SPEA, 2009
Peng Lu, Ph.D., 2010
Zalmai Yawar, M.Sc., 2011
Michael Cheshire, Ph.D., 2011
Ryan Wilson, M.Sc., 2012

Students advised

Grzegorz Lis, Ph.D. 2006
Dariusz Strapoć, Ph.D., 2007
Wilfrido Acosta-Solano, Ph.D. 2007
<http://proquest.umi.com/pqdlink?Ver=1&Exp=04-29-2014&FMT=7&DID=1472127491&RQT=309&attempt=1&cfc=1>
<http://proquest.umi.com/pqdlink?did=1472127491&Fmt=7&clientId=12010&RQT=309&VName=PQD>
<http://www.worldcat.org/oclc/227318417>
<http://www.iucat.iu.edu/uhtbin/cgisirsi/X/0/0/5/?searchdata1=054921643X>
<http://iucat-alt.iu.edu/uhtbin/cgisirsi/X/0/0/5/?searchdata8=OCN227318417>
Hui Jin, M.Sc., 2009
Ling Gao, Ph.D., in progress
Katarina Topalov, Ph.D., in progress
Allen Quaderer, M.Sc, in progress
Lin Wei, Ph.D., in progress
Patrick Griffin, Ph.D., in progress

Arndt Schimmelmann

Research Grants since 1993:

NSF-OCE (oceanography) #93-01438, “Abrupt climatic changes during the Late Quaternary monitored with annual to biennial resolution in Santa Barbara Basin”, (Schimmelmann wrote this \$382k proposal in late 1992 at Scripps Institution of Oceanography, together with Carina Lange. After Schimmelmann moved to IU in summer 1993, W.H. Berger became P.I. at SIO and A. Schimmelmann became a subcontractor at IU with a budget of \$170k), *1 August 1993-31 July 1996*.

NATO, Collaborative Research Grant #930391, “Reconstruction of sea surface temperature, AD 1450-1920, off Southern California “, (A. Schimmelmann, P.I.; this grant covered only laboratory and travel expenses for A. Schimmelmann and a British collaborator at the University of Bristol, UK; \$6k), *February 1993-July 1996*.

IU Research Facility Fund, “Robotic facility for biogeochemical sample processing”, (S.C. Brassell, P.I., A. Schimmelmann and J.M. Hayes, Co-P.I.s; funds for purchasing specialized lab equipment; \$62,800), 1996.

Petroleum Research Fund, #31203-AC2, administered by the American Chemical Society, “Isotopic responses and exchange of hydrogen and nitrogen in kerogen during thermal alteration across the oil window”, (the proposal was almost entirely written by Schimmelmann and includes salary support for Schimmelmann, whereas R. Wintsch serves as P.I. to satisfy the PRF-requirement of a tenure-track position of the P.I.); \$50k), *1 September 1996 - 31 August 1998*.

NSF, subcontract from Woods Hole Oceanographic Institution, WHOI #A-100027 “High-precision hydrogen isotopic GCMS”, (J.M. Hayes, P.I. at Woods Hole Oceanographic Institution; A. Schimmelmann holds a subcontract at IU amounting to \$100,417 over 2 years, in part to support Hayes’ graduate students and a post-doc who remained at IU after Hayes left IU for WHOI in 1996), *01 August 1997 - 31 January 2000*.

NASA, subcontract from Woods Hole Oceanographic Institution, WHOI #A-100049, “Isotopic biogeochemistry”, (J.M. Hayes, P.I. at Woods Hole Oceanographic Institution; A. Schimmelmann holds a subcontract at IU amounting to \$76,942 over two years, mostly to support Hayes’ graduate students and a post-doc who remained at IU after Hayes left IU for WHOI on 1996), *01 August 1997 - 31 December 1999*. With \$7,710 supplementary budget as of Sep. 25, 1999, bringing the cumulative award to \$84,652.

NATO, Collaborative Research Grant #971381, “Nitrogen and hydrogen isotopes in coal and kerogen through maturation “, (A. Schimmelmann, P.I.; this grant covers only laboratory and travel expenses for A. Schimmelmann at IU and a French collaborator at the Université Pierre et Marie Curie, Paris, France; \$5,580), *February 1998-January 1999*.

NSF-OCE-9807745, Earth System History (ESH), “Reconstructing extreme Southern California flood events from gray flood deposits in Santa Barbara Basin, since 5000 B.P.”, (A. Schimmelmann, P.I.; \$70,050), *15 September 1998 - 31 August 2000*. With \$44,000 supplement through *February 28, 2001*.

Complete List of Grant Applications Since 1993

| Agency | Year Submitted | Title | P.I. | Co-P.I. or Subcontractor | Amount Requested | Supported | Amount Granted |
|------------|----------------|---|--|--|---------------------|-----------|-----------------------------|
| UCSD (NSF) | 1993 | Abrupt climatic changes during the Late Quaternary monitored with annual to biennial resolution in Santa Barbara Basin | W.H. Berger (UCSD) | A. Schimmelmann | \$384,516 from NSF | YES | total 382k, \$170k at IU |
| NATO | 1993 | Reconstruction of sea surface temperature, AD 1450-1920, off Southern California | A. Schimmelmann | G. Eglinton | \$6k | YES | \$6k |
| DOE | 1995 | High-precision hydrogen isotopic GCMS | J.M. Hayes | A. Schimmelmann | \$257,571 | NO | n.a. |
| IU RFF | 1996 | Robotic facility for biogeochemical sample processing | S.C. Brassell | A. Schimmelmann, J.M. Hayes | \$65k | YES | \$62,800 |
| PRF/ACS | 1996 | Isotopic responses and exchange of hydrogen and nitrogen in kerogen during thermal alteration across the oil window | R.P. Wintsch (proposal almost entirely written by A. Schimmelmann) | (PRF mandates PIs to be professors and does not permit Co-PIs) | \$50k | YES | \$50k |
| WHOI (NSF) | 1996 | High-precision hydrogen isotopic GCMS | J.M. Hayes | A. Schimmelmann | \$100,417 from WHOI | YES | \$100,417 subcontract at IU |
| NSF | 1997 | Factors controlling the abundance of ¹³ C in algal and sedimentary biomarkers from the Amundsen and Bellingshausen Seas, Antarctica. | A. Schimmelmann | | \$374,129 | NO | n.a. |
| NSF | 1997 | Great marsh long-term ecologic research site (GMLTER) | G.S. Fraser | A. Schimmelmann and 16 other Co-PIs | \$3,360k | NO | n.a. |
| | Year | | | Co-P.I. or | Amount | | Amount |

| Agency | Submitted | Title | P.I. | Subcontractor | Requested | Supported | Granted |
|-------------|-----------|--|------------------|---------------------|--------------------|-----------|----------------------------|
| NSF | 1997 | Late Quaternary climate change in tropical South America: Organic geochemical and isotopic records of Fuquene Lake, Colombia. | L. M. Pratt | A. Schimmelmann | \$183,010 | NO | n.a. |
| WHOI (NASA) | 1997 | Isotopic biogeochemistry | J.M. Hayes | A. Schimmelmann | \$76,942 from WHOI | YES | \$76,942 subcontract at IU |
| NATO | 1997 | Nitrogen and hydrogen isotopes in coal and kerogen through maturation. | A. Schimmelmann | J.-P. Boudou (CNRS) | \$6k | YES | \$6k |
| NSF | 1997 | Extreme precipitation events reflected by Santa Barbara Basin gray flood deposits since 2,300 B.P. | C.C. Harvey | A. Schimmelmann | \$49,535 | NO | n.a. |
| NSF | 1998 | Reconstructing extreme Southern California flood events from gray flood deposits in Santa Barbara Basin, since 5000 B.P. | A. Schimmelmann | | \$114,607 | YES | \$70,050 |
| DOE | 1999 | Significance of isotopically labile organic hydrogen in the thermal maturation of source rocks. | A. Schimmelmann | M. Mastalerz | \$259,503 | YES | 259,503 |
| WHOI | 1999 | Continued support for Ms. Jennifer Villinski's work on her doctoral dissertation | A. Schimmelmann | | \$3,505 | YES | \$3,505 |
| NASA | 1999 | Hydrogen isotopic study of anaerobic sedimentary communities. | A. Schimmelmann | | \$22,000 | NO | n.a. |
| WHOI (NSF) | 1999 | Hydrogen isotopic biogeochemistry | J. M. Hayes | A. Schimmelmann | \$90,328 | In review | n.a. |
| NSF | 1999 | Collaborative Research: Reconstructing the biotic response to decadal oceanographic variability at the southern boundary of the California Current | A. Schimmelmann | | \$71,977 | NO | n.a. |
| NSF | 1999 | Reconstructing extreme Southern California flood events from gray flood deposits in Santa Barbara Basin, since 5000 B.P. (supplementary budget) | A. Schimmelmann | | \$44,000 | YES | \$44,000 |
| USGS | 2000 | Prediction of CO2 sorption in coal seams using uncrushed coal cores under realistic P, T, and moisture | A. Schimmelmann, | | \$120.615 | YES | \$120.615 |

conditions

Co-PI

OVERVIEW OF RESEARCH, TEACHING AND SERVICE

My current research interests include paleoclimatology of the Holocene (the last ca. 10,000 years, since the last Ice Age), fossil fuel isotope geochemistry (maturation of organic matter and formation of coal, oil, and natural gas), and the development of novel analytical methods in isotope geochemistry. A full list of publications is included in my CV (attached). I am the team leader in two collaborative, externally funded projects involving fellow researchers at IU, the University of California at San Diego (UCSD), the U.S. Geological Survey (USGS), Dartmouth College, and CNRS/France. Details of my research and aspects of my service to IU and to the scientific community are described below.

RESEARCH AND SCHOLARSHIP

a) Paleoclimatology

Credible predictions for our future climate, and proper assessment of present weather and climatic conditions, can only be made with a detailed understanding of the causes of past climate changes. Paleoclimatologists are trying to extend the known records of climate into the past, beyond the limitations of instrument readings that mostly cover only part of this century. My specialty is the reconstruction of paleoclimate based on annually laminated (= layered, not disturbed by burrowing animals), near-coastal, marine sediments. The evidence for oceanographic and continental changes is recorded sedimentologically and geochemically in layers of mud. Each distinct layer of sediment is similar to a tree-ring and can be dated and read, not unlike pages of a diary that has few missing pages for the past 10,000 years.

Geochemical and paleoclimatological research of the laminated Santa Barbara Basin sediment off California has been a topic of my external funding from NSF, NOAA, NATO, and other agencies for many years. My latest proposal to NSF-OCE (ESH) “Reconstructing extreme Southern California flood events from gray flood deposits in Santa Barbara Basin, since 5000 B.P.” received seven favorable reviews

(three “excellent”, three “very good” and one “very good/good”; copies are provided in this dossier) and resulted in two 2-year grants to IU and Scripps Institution of Oceanography (Dr. Carina B. Lange, P.I. at SIO). IU is the lead institution in this project. We aim at the compilation and climatic interpretation of evidence for severe floods in Southern California during the past 5,000 years. My team pioneered the use of well-dated, near-coastal flood deposits in the reconstruction of pre-historic catastrophic flood events that are not adequately recorded in any other natural record (Schimmelmann et al., 1998). Our continuing work builds on our many multidisciplinary sediment studies from the Santa Barbara Basin of the past 13 years, including the documentation of El Niño events of the past 150 years, the interpretation of an A.D. 1840 rare shell layer in the wake of volcanic disturbances, and the paleoclimatic correlation of a ca. A.D. 1605 California mega-flood event concurrent with other global *climatic perturbations*.

b) International Geological Correlation Program 347

I served as Project Sub-Leader in the “International Geological Correlation Program (IGCP) 347, Palaeoclimatology and Palaeoceanography from Laminated Sediments” (1994-1996, funded by IUGS/UNESCO). Meetings held in Southampton (United Kingdom) and Santa Barbara (California) brought together limnologists, marine sedimentologists, and paleoclimate modelers from many countries and inspired articles that jointly formed a well-received book “Palaeoclimatology and Palaeoceanography from Laminated Sediments”. The volume contains my thorough review article of Santa Barbara Basin sediment studies (Schimmelmann and Lange, 1996).

c) Isotopic Studies of Fossil Fuels

During the next century the world will face increasing difficulties in meeting the demand for affordably priced fossil fuels, even if calls for reducing greenhouse gas emissions are heeded. Successful exploration now requires increasingly sophisticated and expensive methods to target oil and gas fields that are ever more difficult to exploit. For

many years geochemists and exploration engineers have been trying to understand the process by which petroleum and natural gas are generated from a few weight percent of disseminated organic matter in buried sediments at moderate temperatures, often over millions of years. Artificial heating of potential petroleum source rocks from drill cores or outcrops is one way to simulate natural processes of maturation, and thus to provide feedback to petroleum geologists for locating the most promising areas for fossil fuel exploration. My specialty is the application of advanced methods of hydrogen and nitrogen stable isotope research, in collaboration with researchers who use state-of-the-art equipment for artificial thermal maturation of source rocks at the U.S. Geological Survey (USGS) in Denver, and high-pressure thermal maturation in gold cells at the Université Pierre et Marie Curie, Paris, CNRS/France.

My research on fossil fuels is externally funded by the Petroleum Research Fund and by a NATO Collaborative Research Grant. I lead a team of researchers from the USGS/Denver and CNRS/France in the utilization of stable isotopes of hydrogen and nitrogen to characterize the maturation processes leading from immature organic matter in sediments to fossil fuels such as oil and coal. The analytical methods for much of our hydrogen work were developed by me a few years ago to quantify and isotopically characterize carbon-bound organic hydrogen while at the same time accounting for the labile, exchangeable organic hydrogen bound to oxygen, nitrogen, and sulfur (Schimmelmann, 1991; Schimmelmann and DeNiro, 1993; Schimmelmann et al., 1993). A recent publication of our team also describes the isotopic interaction between inorganic nitrogen from ammonia and organic nitrogen in fossil fuels (Schimmelmann, Wintsch, Lewan and DeNiro, 1998), and another recent manuscript quantifies the transfer of inorganic water hydrogen into fossil fuels (Schimmelmann, Lewan, and Wintsch, in press). In both papers we describe a dynamic bi-directional transfer between organic and inorganic hydrogen and nitrogen. Thus we are breaking with the conservative view that maturation causes only uni-directional losses of hydrogen and nitrogen from organic matter. We have been gathering hydrogen isotope data on specific types of organic matter from sediments; these data are forming the basis for an upcoming proposal to

attract external funding, in collaboration with Dr. Maria Mastalerz of the Indiana Geological Survey.

c) Development of Analytical Methods

Several of my publications in the journal "Analytical Chemistry" introduced novel methods for determining stable isotope ratios in a variety of inorganic and organic substrates. Recently I joined a team that is developing a new type of hydrogen mass-spectrometer. The new instrument will be able to determine the deuterium/hydrogen (D/H) ratio of very small samples of organic compounds eluting from a gas chromatographic column. Our team-leader is John Hayes, now at Woods Hole Oceanographic Institution (WHOI). I hold the team's research grants that support project-related research at IU, in collaboration with a post-doc and students who are working at IU and WHOI. We have made considerable progress and are currently testing a prototype at WHOI using mixtures of pure isotopic standards that I have characterized isotopically via established methods. I have been preparing sufficiently large quantities of these standards and expect to make them available to other laboratories in 1999.

TEACHING AND TRAINING

Six months of my salary are covered by the IU Department of Geological Sciences in compensation for a variety of services that are not linked to my externally funded research. I was originally hired in 1993 to train students and visiting researchers in the use of "gas chromatography mass-spectrometry" (GCMS) and "pyrolysis-GCMS" equipment in our department, and to perform routine, preventive maintenance on two GCMS instruments. I continue performing these tasks. I have volunteered to provide several additional teaching and training services to the Department and the University. They include the following:

- I volunteered to teach G690 classes during the past two years. My initial participation in G690 "Chemical Oceanography" (fall 1996) G690 "Cenozoic Climate Variations" (Spring 1997) involved only few specialized lectures, mainly on the use of stable isotopes. In contrast, the class G690 "Isotope Systematics" in fall 1997 was taught for the first time, included comprehensive coverage of stable and radioactive isotopes in

earth sciences, and required time-consuming and intensive preparation of weekly classes that were shared with Dr. Edward Ripley. I will continue teaching “Isotope Systematics” every other year, as part of the fundamental core curriculum (the class is scheduled to be taught again in fall 1999). This dossier contains a copy of my detailed class notes that I prepared to help students in organizing the information presented in my lectures.

- I spend a significant amount of time helping students with practical aspects of their research projects. Examples are Volker Brüchert’s Ph.D. project on sulfur isotopes in laminated sediments from the Santa Barbara Basin, Eugenio Santos Neto’s Ph.D. project on hydrogen isotopes in Brazilian oils, Jennifer Eigenbrode’s M.Sc. research on California Holocene lake sediments, German Mora’s Ph.D. project on hydrogen isotopes in soil minerals, and Kristen Leckrone’s Ph.D. project developing a combustion mass-spectrometer-inlet system for dissolved organic matter. I have served on students’ committees (four in 1998) and I frequently write letters of recommendation for our students and post-doctoral researchers.
- I am training and supervising students and visiting scientists in the use of our numerous glass vacuum lines that are essential to process gases for isotopic measurements. Even with the greatest care, glass lines are prone to break occasionally. In addition to emergency glass-blowing repairs, about once every year I build or upgrade one or two vacuum lines to accommodate new analytical demands: for example, to permit quantitative combustion of methane in air to carbon dioxide (Dr. Jeffrey White’s research project). My glassblowing skills have been utilized so extensively that our laboratory has not found it necessary to call upon the professional glassblower in the IU Dept. of Chemistry for on-site work for the past five years.

MARKETING OF SPECIALTY CHEMICALS

I manufacture and quality-test about 25 kilograms of specialty chemicals (“zinc turnings for hydrogen isotope analyses”) every year for worldwide distribution to research and commercial isotope laboratories. The generated income is used exclusively by the Biogeochemical Laboratories for direct costs such as instrument repairs, laboratory assistants’ salaries, and routine laboratory supplies. This so-called “zinc

business” now requires about two full months of my time every year. If the current trend of increasing zinc sales continues, the Biogeochemical Laboratories will need to find an alternative arrangement for zinc production to limit the disruptive effect on my research.

INDUSTRIAL COLLABORATION

Several times a year the Biogeochemical Laboratories are asked to perform high-quality isotopic measurements for industry. For example, between August and November 1998 I determined the isotopic composition of numerous oil and bitumen samples for Shell/Houston and Petrobras/Brazil, as part of an ongoing industrial collaboration. Our good relations with petrochemical industrial partners have also resulted in donations of analytical instruments and industrial research grants to the Biogeochemical Laboratories, as well as contacts for our students looking for employment in industry, and increasing the visibility and stature of IU in analytical geochemistry.

SERVICE TO THE SCIENTIFIC COMMUNITY

I have been reviewing an increasing number of manuscripts for scientific journals and of research proposals for funding agencies. This task is time-consuming, but it also offers me the opportunity to stay informed about new directions in my subdisciplines of geosciences. For example, during the past five years I reviewed for the following journals and funding agencies:

1993

- One manuscript for *Geochimica et Cosmochimica Acta*

1994

- Five research proposals for the *National Science Foundation (NSF)*

1995

- Three research proposals for the *National Science Foundation (NSF)*
- Three manuscripts for *Geochimica et Cosmochimica Acta*
- One manuscript for *Science*

1996

- Four research proposals for the *National Science Foundation (NSF)*
- One manuscript for *Analytical Chemistry*

1997

- Five research proposals for the *National Science Foundation (NSF)*
- Two research proposals for *NERC* (the British “NSF”)
- One proposal for a Symposium Series Volume, *American Chemical Society*
- Two manuscripts for chapters in a book to be published by the *American Chemical Society*
- One manuscript for the *Geological Society of America Bulletin*
- One manuscript for *Marine Geology*
- One manuscript for *Limnology and Oceanography*
- One manuscript for the *Royal Society, Proceedings B*

1998 (until September)

- Six research proposals for the *National Science Foundation (NSF)*
- One manuscript for *Science*

Candidate's List of References (in alphabetical order)

Dr. Bada is a professor at UCSD, Scripps Institution of Oceanography. He published papers with me in 1989/90 on stable isotopes in organic substances:

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Dr. Boudou is a research scientist with CNRS at the Université Pierre et Marie Curie, Paris, France. He is currently my collaborator in a "NATO Collaborative Research Grant".

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CONTINUED →

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Dr. Van Geen is a geochemist and oceanographer who is familiar with some of my research on Santa Barbara Basin sediments:

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