SCHOLARSHIP AND CREATIVE WORK

List completed works, using the following guidelines:

1. Works that are edited, co-authored, translated, compiled, etc. should be clearly indicated as such. In the case of co-authored works or projects, information should be provided as to the specific contributions of the candidate.

2. Categories should be further subdivided as necessary to present the different types of publications and creative works clearly.

3. Citation of a reprinting or translation of a work should follow immediately after that work’s main entry, and should be clearly indicated.

4. Works that are “in press” or “accepted for publication,” must be clearly indicated and verifications must be supplied. Such works should be listed in Sections A-C, as appropriate.

5. Double space between all entries.

6. Include complete page numbers for all publications.

7. Within each section, list latest works first.

(A) BOOKS, MONOGRAPHS

1. Published, exhibited, performed since last promotion and/or initial appointment.

2. Published, exhibited, performed prior to last promotion and/or initial appointment.

(B) JOURNAL ARTICLES

Indicate refereed journals with *.

All papers are in refereed journals.

My scholarship/creative activities since last promotion to Associate Professor effective Jan. 1, 2003 if measured by quantities, are as follows:

a) Sixteen papers are published or in press in high impact peer-reviewed journals (three of which I first-authored, six of which I second-authored) including a technical comment to Science;

b) Five manuscripts are in review, all of which I second-authored

c) Numerous abstracts were presented at major international conferences;

d) Five external proposals have been submitted, two of which were funded (Table 3) and one renewal to NIESH is pending (Table 1).

1. Since last promotion or initial appointment.

Publications (2005):


between As and Fe mobilization, Chemical Geology, in press April 2005


Publications (2004):


Publications (2003):


2. Prior to last promotion and/or initial appointment.


(C) CHAPTERS IN BOOKS/ANTHOLOGIES
1. Since last promotion or initial appointment.
2. Prior to last promotion and/or initial appointment.

(D) EXHIBITIONS, PERFORMANCES
1. Since last promotion or initial appointment.
2. Prior to last promotion and/or initial appointment.

(E) REVIEWS
1. Since last promotion or initial appointment.
2. Prior to last promotion or initial appointment.

(F) ORAL PAPERS AND ADDRESSES
(Indicate whether addresses were "refereed (*)", or "invited (**)." In case of joint presentations, indicate presenting author by # sign.)
1. Since last promotion and/or initial appointment.

Invited Presentations
6. Aug. 2005, "Oceanographic Research in the Pacific: Opportunities in the GEOTRACES program and findings in the eastern tropical Pacific", State Key Laboratory of Marine Geology, Tongji University, Shanghai, China.
7. Sept. 2005, "Rapid climate fluctuation in the Holocene: Records from the subtropical eastern Pacific
oxygen minimum zone", Colloquium, Dept. of Earth Sciences, Stony Brook University.

Refereed Abstracts


*Dean, W. E. and Zheng, Y. Telcommunications between variations in the oxygen-isotopic composition of Greenland ice, and variations in productivity and anoxia on the Alta and Baja California margins, and the Cariaco Basin (abstract)., Fall GSA meeting, Nov. 2004, Denver.

*MARCHITTO, Thomas, VICARELLI, Marta, CARRIQUEY, Jose, SANCHEZ, Alberto, DEAN, Walter, ORTIZ, Joseph, ZHENG, Yan, and VAN GEEH, Alexander, VENTILATION INFLUENCE ON BAJA CALIFORNIA OXYGEN MINIMUM ZONE STRENGTH SINCE THE LGM: CONSTRAINTS FROM BENTHIC FORAMINIFERAL MG/CA, Fall GSA meeting, Nov. 2004, Denver.

**Zheng, Y. A capstone undergraduate course based on arsenic problem in Bangladesh groundwater (abstract), Fall GSA meeting, Nov. 2004, Denver.


*Z. Mo# and Y. Zheng, Speciation of arsenic sorbed on ferrihydrite determined by voltammetry in sodium phosphate and hydrochloric acid extracts (abstract), Fall ACS Meeting, Sept. 7-11, 2003, New York


2. Prior to last promotion and/or initial appointment.

Invited presentations:

Referred Abstracts


two contrasting settings: Santa Barbara Basin and Middle Atlantic Bight, and a comparison with molybdenum. Mineralogical Magazine, 62A: 1697.


(G) REPORTS AND OTHER WORKS.

1. Since last promotion and/or initial appointment.


2. Prior to last promotion and/or initial appointment.

(H) SUBMITTED WORKS AND WORK IN PROGRESS. Specify stage of progress and magnitude of work. Include number of manuscript pages for each submitted work.


<table>
<thead>
<tr>
<th>Authors</th>
<th>Project Title</th>
<th>Agency</th>
<th>Date</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zheng</td>
<td>Mobilization of Natural Arsenic in Groundwater</td>
<td>NIEHS/SBIRP</td>
<td>4/1/06-3/31/11</td>
<td>$451,200</td>
</tr>
<tr>
<td>Zheng</td>
<td>Sediment Geochemistry of Arsenic in Santa Barbara Basin: A Natural Laboratory to Investigate Fe versus S sink</td>
<td>PSC-CUNY37</td>
<td>7/1/06-6/30/07</td>
<td>$5,970</td>
</tr>
<tr>
<td>McHugh, Zheng, Kohfeld</td>
<td>Collaborative Research-Track 1: Partnership to Enhance Diversity in Marine Geosciences: Holocene Climate and Anthropogenic Changes from Long Island Sound, NY</td>
<td>NSF GEO-503553</td>
<td>5/15/05-4/30/07</td>
<td>$59,328</td>
</tr>
<tr>
<td>Zheng</td>
<td>Collaborative Research: Vertical Control of Groundwater Arsenic Concentrations in Shallow Bangladesh Aquifer</td>
<td>NSF EAR-03-45428</td>
<td>1/21/04-2/28/07</td>
<td>$60,585</td>
</tr>
<tr>
<td>Zheng</td>
<td>Subcontract with Columbia University: Arsenic Mobilization in Bangladesh Groundwater</td>
<td>NIEHS-9219PRO5</td>
<td>6/1/00-3/31/06</td>
<td>$417,169</td>
</tr>
<tr>
<td>Zheng &amp; Brock</td>
<td>Evaluation of Arsenic Concentrations in Rock-Farming Minerals and Arsenic-enriched Minerals: Implications for Arsenic Mobility in the Environment</td>
<td>PSC-CUNY36</td>
<td>7/1/05-6/30/06</td>
<td>$2,837</td>
</tr>
<tr>
<td>Zheng</td>
<td>Collaborative Research: A high-resolution record of productivity and/or ventilation of the northeastern Pacific from Soledad Basin, Baja California.</td>
<td>NSF OCE-02-14221</td>
<td>9/1/02-8/31/05</td>
<td>$65,519</td>
</tr>
<tr>
<td>Zheng &amp; Locke</td>
<td>Adaptation of an exemplary environmental chemistry laboratory course</td>
<td>NSF CCLI-A&amp;I</td>
<td>10/1/00-9/30/02</td>
<td>$29,858</td>
</tr>
<tr>
<td>Zheng</td>
<td>Subcontract with Columbia University: Coring the oxygen minimum zone off Baja California to reconstruct Holocene Climate Variability in the north Pacific</td>
<td>NSF OCE-98-09026</td>
<td>1/1/99-12/31/01</td>
<td>$50,283</td>
</tr>
<tr>
<td>Zheng &amp; Locke</td>
<td>Characterization and Quantification of Natural Organic Matter CUNY equip. in Aquifer Systems</td>
<td>Grant</td>
<td>7/1/02-6/30/03</td>
<td>$35,577</td>
</tr>
<tr>
<td>Zheng</td>
<td>Evaluation of Oxidation State of Arsenic Sorbed on Synthetic Iron Oxides</td>
<td>PSC-CUNY35</td>
<td>7/1/04-6/30/05</td>
<td>$4,638</td>
</tr>
<tr>
<td>Zheng</td>
<td>Voltammetric Determination of Metals (Cd, Cu, Pb) and Metalloids (As, Cr): Application in Natural Waters</td>
<td>PSC-CUNY34</td>
<td>7/1/03-6/30/04</td>
<td>$3,190</td>
</tr>
<tr>
<td>Zheng</td>
<td>An Integrated Field and Laboratory Approach to Speciation Analysis of Arsenic in Natural Waters</td>
<td>PSC-CUNY33</td>
<td>7/1/02-6/30/03</td>
<td>$4,384</td>
</tr>
<tr>
<td>Zheng</td>
<td>Oxidation kinetics of Arsenic(III) in natural waters</td>
<td>PSC-CUNY32</td>
<td>7/1/01-6/30/02</td>
<td>$4,639</td>
</tr>
<tr>
<td>Zheng</td>
<td>Determination of dissolved sulfide from nM to mM levels in marine and fresh water samples: analytical challenge and solution</td>
<td>PSC-CUNY31</td>
<td>7/1/00-12/31/01</td>
<td>$5,860</td>
</tr>
<tr>
<td>Zheng</td>
<td>Authigenic cadmium, molybdenum and uranium in the Chesapeake Bay sediment: Development of proxies of water anoxia and eutrophication in the Holocene</td>
<td>PSC-CUNY30</td>
<td>7/1/99-12/31/00</td>
<td>$5,158</td>
</tr>
<tr>
<td>Zheng &amp; Spyres</td>
<td>Composition and Reactivity of Organic Matter in Bangladesh Aquifer</td>
<td>FEAR-Hydrology</td>
<td>1/1/05-12/31</td>
<td>$143,722</td>
</tr>
<tr>
<td>Hoffman &amp; Zheng</td>
<td>Assessing the Impact of the NYC Watershed Partnership Program with Economic and Water Quality Indicators</td>
<td>CUNY</td>
<td>1/1/04-12/31/05</td>
<td>$29,930</td>
</tr>
</tbody>
</table>
SERVICE

(A) COLLEGE/UNIVERSITY. Include dates of each service.

Feb. 8, 1999-present: SEES M.A. program strategy committee
Oct. 2, 1998-present: represents SEES at Queens College Chemical Hygiene Committee
Spring/2003, Spring 2004, Fall/04-present: SEES Personnel and Budget Committee
Fall/2004-Spring/2005: EES Ph.D. program executive committee
Fall/2004: NNYN working group

Sept. 1998-June 2000: supervise science honor student Hannah Abend
June 1999-June 2000: supervise SEES undergraduate Bettina Ben-Eliezer
June 1999-June 2000: supervise SEES undergraduate Timothy Brutus
June 1999-June 2000: supervise SEES undergraduate Joel Jackel
June 1999-June 2000: supervise SEES undergraduate Ohnika Singh
Sept. 1999-present: supervise EES Ph.D. student Ratan Dhar
April 2000-May 2001: supervise SEES undergraduate Michael Giallensano
June 2000-Dec. 2000: supervise Bronx High School of Sciences student, participant of Intel-Westinghouse Science Talent Search, Jessica Eng
Fall 2000 sponsor for CUNY exchange scholar from Shanghai U. Dr. Huang and Ms. Zhang
June 2001-Dec. 2001: supervise high school student Ellee Kim
Jan. 2002-Aug. 2002: supervise Bronx High School of Sciences students, participant of Intel-Westinghouse Science Talent Search, Mala Ramanaraine and Anita Chu
Fall 2002-Spring/2004: supervise SEES undergraduate Lenaye Bolanos
Summer/2004: supervise Masters student Daniel Sweeney for independent study
Fall/2002-Summer/2005: supervise Geology Masters student James Ypsilantis
Sept. 2004-present: supervise EES Ph.D student Hun-Bok Jung

Spring/2004: SEES graduate advisor (replacement for McHugh who was on sabbatical leave)

Jan. 11, 1999
A proposal to CUNY-Shanghai University exchange program was funded to work with Shanghai University faculty on environmental protection. Zheng visited Shanghai Univ. for three weeks in the summer of 2000 and gave a series of seminars on municipal waste water and coastal environment.

(B) PROFESSION. Include dates of each service.

On average, I review about 6 to 8 manuscripts and proposals in a year. In Oct. 2004, I served on the review panel for NIEHS/Superfund Basic Research Program.

Mail Reviewer for NSF Marine Geology and Geophysics, Earth System History, Geochemistry and Petrology, Biogeoscience, Polar Science, and Hydrology Programs, American Chemical Society Petroleum Fund, New York Sea Grant, WHOI Sea Grant, PSC-CUNY grant, Chilean National Science Foundation etc.


Aug. 2005, co-convener, A regional workshop of GEOTRACES, Xiamen, China, Aug. 25-27, sponsored by China National Natural Science Foundation and US National Science Foundation

(C) COMMUNITY. Last five years only. Include dates for each service. Examples: unpaid member of board of trustees for school or library; activities in non-college or university settings; unpaid consultanships.

June 2002-May 2005, School Leadership Team, P.S144, District 28 of NYC
April 29, 2001, Judge, Shipley Ronal Science Fair at Roslyn High School
April 29, 2002 Career Day, P.S144, District 28 of NYC
May 30, 2003 Career Day, P.S144, District 28 of NYC
May, 2004, Judge, Shipley Ronal Science Fair at Roslyn High School
STATEMENT OF CANDIDATE

Use this space to put your scholarship/creative activities into proper context and expand on your teaching. Describe the evolution of your scholarship, referring to specific items in the "Scholarship and Professional Growth" section. Discuss any curriculum development that you have participated in, as well as your teaching activities (techniques, course materials, area of expertise, etc.). Where appropriate, please describe curricular innovations for which you have been responsible. It would also be helpful to know how you view the relationship between teaching and scholarship. If service plays an important role in your case, you may use this space to augment the "Service" section.

This statement describes the achievement in research and teaching from Jan. 1, 2003 to Oct., 2005, focusing on activities that dated after my promotion to Associate Professor.

(A) Scholarship/creative activities

Components of the Earth System, the atmosphere, the hydrosphere, the soil and sediment portion of the lithosphere, and the biosphere, are all being modified by humans at rates and scales that have not been imaginable just one century ago. As a result of such human influences there are numerous responses that are known to affect, or may eventually affect, human health. Investigation of arsenic geochemistry in Bangladesh groundwater in the past 5 years allowed me to appreciate the quality of the earth system itself and its linkage to human health, with or without human modification. Highlights from this research effort include:

1) The deeper aquifer of Bangladesh is likely to continue to provide drinking waters in a sustainable manner as long as it is not to be exploited for irrigation because of low-arsenic content in the sediments of that aquifer (Zheng et al., GCA, in press); 2) The rate of arsenic mobilization in the shallow, As-containing aquifer is nearly constant at ~ 20 μg/L per year (Stute et al., submitted to WRR) despite of high order of spatial heterogeneity (van Geen et al., 2003, WRR); 3) As is mobilized under Fe-reducing conditions in groundwater from the Ganges-Brahmaputra Delta and lack of sulfur enhances As mobility (Zheng et al., 2004, Appl. Geochem.). Furthermore, As and Fe mobilization is highly decoupled (Horneman et al., 2004; van Geen et al., 2004); 4) Sensitive analytical methods that are capable of measuring As and As species from field to laboratory have been developed (Dhar et al., 2004; He et al., 2004 and Cheng et al., 2004). This research is currently supported by grants from NIEHS/Supersolvent Basic Research program and NSF EAR (Table 3). A renewal proposal to NIEHS/SBRP was submitted in April 2005 to investigate mobilization of natural arsenic in groundwater in Bangladesh and New England, USA. Fundamental understanding of As geochemistry learned by studying the Bangladesh aquifer, e.g., the roles of Fe and S in As mobility, has also led to a successful illustration of As mobility in a highly contaminated Superfund site in Vineland, NJ (Keimowitz, in press, ES&T) and a proposal to do so in the marine environment (PSC-CUNY 37, pending).

Two grants received from NSF OCE supported investigation of geochemistry of several oxyanion elements (e.g. Mo, U, Re) etc. and its application as proxies to study paleoceanography and palaeoclimate. My research strength has been to conduct well-executed field sampling program and to develop and apply laboratory techniques of chemical measurements in order to study behaviors of elements in the environment. The first grant supported my participation as a co-PI to a 25-day expedition on board R/V Melville off Baja California in Oct./Nov. 1999. The second grant supported generation of high resolution of sediment record in the Holocene epoch (the last 10,000 yrs). Understanding the climate change of Holocene is of great importance because it provides constraints to the sensitivity of climate system under natural forcing. This knowledge is crucial to forecast future warming trends under anthropogenic greenhouse forcing. Key observations are: 1) The new sites at ~ 25°N in the eastern Pacific margin off Baja California exhibit different characteristics in its response to processes that regulate the strength of the oxygen minimum zone (van Geen et al., Paleoceanography, 2003) than the sites further north (Zheng et al., Paleoceanography, 2000); 2) The
millennial scale fluctuations of sediment color, organic matter content, sediment Cd and Mo concentrations between 24-52 kyr before present, is highly correlated to the signatures observed in the Greenland Ice Core, suggesting that the high and low latitude rapid climate change are related and perhaps driven by processes originated in the tropics (Ortiz et al., Geology, 2004; Dean et al., submitted to Paleoceanography); 3) A prominent centennial pacing of sediment Cd, Mo and U concentrations are found at the sites off the Baja California during the Holocene, posing new questions whether external (solar) or internal climatic feedbacks (ENSO) lead to centennial scale climate fluctuation (Zheng et al., in prep.). Similar to Bangladesh study, fundamental understanding of geochemistry learned by studying the marine environment is applied to study coastal environment impacted by human. The fluctuations of bottom-water oxygenation in the mid-bay region is shown to be largely driven by freshwater discharge (e.g. natural causes) rather than eutrophication (e.g. human influence) (Zheng et al., 2003, Appl. Geochem.). Similar approach has been applied to examine hypoxia in the Adriatic Sea in collaboration with CSA, Rimini, Italy and can be applied in Flushing Bay and Long Island Sound with a recent NSF award (see Teaching, below).

As a researcher I will continue to seek new questions in basic science, particularly those that address the interactions between the Earth Systems and the humans, especially human health. I foresee to be more involved in serving the broader scientific community as well as transferring knowledge into policy. I was a member of the team at the Columbia University’s Earth Institute working on a strategic plan for the Government of Bangladesh to provide safe drinking water. During my current sabbatical leave, I am working with UNICEF office in Beijing to edit manuscripts on arsenic occurrence and health effect in China to appear as a mini-monograph Environmental Health Perspective.

(B) Teaching

I strongly believe in the value of knowledge-based classroom teaching, especially the importance of explaining the rigor of scientific investigation. This philosophy was what I followed when taught a wide range of courses from freshman introductory to Ph.D. level. Science is driven by curiosity (e.g. hypothesis), but hypotheses must be supported by evidence, most often derived from rigorous and innovative observation, experiments or theoretical calculations to become theories. I emphasize how hypothesis becomes knowledge in my teaching using examples form my research.

1) The capstone course, ENSC173 "Environmental Problem Solving", was offered in S/2003. Students investigated scientific background, as well as engineering, social and economical issues in providing safe water options to millions of Bangladeshis exposed to high levels of arsenic. An innovative pedagogical approach of “peer review” was described in two invited presentations made at an NSF sponsored on Cutting Edge workshop, May, 2004 (http://serc.carleton.edu/81/NAGTWorkshops/health04/program.html), and a session on Geology and Human Health during the annual meeting of Geol. Society of America in Denver in Nov. 2004.

2) Two other new preparations, GEOL799, The principles of environmental geochemistry (S/2004) and ENSC111, introduction to the environment (F/2004&S/2005) were offered. GEOL799 falls under a well-defined specialty. ENSC111 was taught under a new theme of environmental quality (air, water and food) and human health with a laboratory manual developed specifically to support this theme. ENSC111 has had and continues to have the largest enrollment at SEES.

I have mentored many students (3 high school, 10 undergraduate, 2 masters, and 3 Ph.D.) Most undergradu. have gone on to pursue Masters and Ph.D degrees in science (Columbia, 2; Stevens, 1, U.C. Davis, 1, Stony Brook, 1, Vanderbilt, 1). He (Ph.D. Chemistry, 2005) is a tenure-tracked assistant professor at John Jay College. Ypsilantis (Masters, Geology, 2005) teaches high school science on Long Island.

Integrating field research to undergraduate teaching was highly successful under a grant from NSF CCLI (Table 3). The approach is now expanded to enhance diversity in geosciences by a recent NSF award to investigate geology, physics, chemistry and biology of Long Island Sound in collaboration with a team of faculty led by McHugh (Table 3).