

Yi-Wei Liu

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EDUCATION

2011 – 2015

University of Michigan, Ann Arbor, Michigan, USA

Ph. D., Geology

2008 – 2010

National Taiwan University, Taipei, Taiwan

M. S., Geosciences

2004 – 2008

National Taiwan University, Taipei, Taiwan

B. S., Geosciences

CURRENT RESEARCH INTERESTS

Isotope geochemistry, paleoclimate, paleo-environmental change, and biogeochemistry: My research interests are applying different isotopic and geochemistry tools to study changing environmental and climatic conditions over different time scales and the associated impact on marine calcifying organisms.

PUBLICATIONS

Yi-Wei Liu*, Jill N. Sutton, Justin B. Ries, and Robert A. Eagle*, (2020), Regulation of calcification site pH is a polyphyletic but not always governing response to ocean acidification. *Science Advances*, **6**(5), eaax1314, <https://doi.org/10.1126/sciadv.aax1314>.

Yi-Wei Liu*, Robert A. Eagle*, Sarah M. Aciego, Rosaleen E. Gilmore and Justin B. Ries, (2018), A coastal coccolithophore maintains pH homeostasis and switches carbon sources in response to ocean acidification. *Nature Communications*, **9**(1), 2857, <https://doi.org/10.1038/s41467-018-04463-7>.

Jill N. Sutton*, **Yi-Wei Liu**, Justin B. Ries, Maxence Guillermic, Emmanuel Ponzevera, and Robert A. Eagle*, (2018), $\delta^{11}\text{B}$ as monitor of calcification site pH in divergent marine calcifying organisms. *Biogeosciences*, **15**(5), 1447-1467, <https://doi.org/10.5194/bg-15-1447-2018>.

Yi-Wei Liu*, Sarah M. Aciego, and Alan D. Wanamaker Jr., (2015), Environmental controls on the boron and strontium isotopic composition of aragonite shell material of cultured *Arctica islandica*. *Biogeosciences*, **12**(11), 3351-

3368, <https://doi.org/10.5194/bg-12-3351-2015>.

Yi-Wei Liu*, Sarah M. Aciego, Alan D. Wanamaker Jr., and Bryan K. Shell, (2013), A high-throughput system for boron microsublimation and isotope analysis by total evaporation thermal ionization mass spectrometry. *Rapid Communications in Mass Spectrometry*, **27**(15): 1705-1714, <https://doi.org/10.1002/rcm.6619>.

THESES

Yi-Wei Liu, (2015), Environmental Controls on $\delta^{11}\text{B}$ in Unconventional Biogenic Carbonate Archive. *PhD Thesis*. University of Michigan.

Yi-Wei Liu, (2010), Natural variation of Sr isotopes in coral *Porites* collected from Nanwan Bay, southern tip of Taiwan. *MS Thesis*. National Taiwan University.

MANUSCRIPTS IN PREPARATION

Yi-Wei Liu, Meghan A. Taylor, Ingrid L. Hendy, Sarah M. Aciego, A. Schneider, and Mark G. Flanner, Radiogenic strontium isotopic composition of fine-grained particulates in Arctic sea ice: variable provenance of sediment and dust
Li Lo, **Yi-Wei Liu**, Bärbel Hönisch, Nina Ruprecht, Yuan-Pin Chang, Chuan-Chou Shen, Kuo-Yen Wei, Horng-Sheng Mii, Intermediate water pH values changes during the past 30 kyr in the equatorial Pacific revealed by benthic foraminiferal boron isotope.

POSITION HELD

2020 – Present

Institute of Earth Science, Academia Sinica, Taipei, Taiwan
Assistant Research Fellow

2019 – 2020

Institute of Earth Science, Academia Sinica, Taipei, Taiwan
Academia Sinica Postdoctoral Research Associate

2016 – 2018

Institute of Earth Science, Academia Sinica, Taipei, Taiwan
Postdoctoral Research Associate

2015 – 2016

European Institute for Marine Studies (IUEM), University of Western Brittany (UBO), France
Postdoctoral Researcher

2013 – 2015

Department of Earth and Environmental Sciences, University of Michigan, USA
Graduate Student Instructor
Graduate Student Research Assistant

2010 – 2011

Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan (Der-Chuen Lee)
Research Assistant

2006 – 2007

Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan (Typhoon Lee)
Part-time Research Assistant

GRANTS

- 2019 Academia Sinica Distinguish Postdoctoral Scholarship, Academia Sinica (150000 NTD/year, 2 years)
- 2014 Rackham Conference Travel Grant, University of Michigan (2014-2015 Academic Year) (\$1050)
- 2014 The Scott Turner Award, University of Michigan (\$1900)
- 2013 Rackham Graduate Student Research Grants, University of Michigan (Post-candidate) (\$3,000)
- 2013 Geochemical Society 2013 Goldschmidt Travel Grant (\$1,250)
- 2013 Rackham Conference Travel Grant, University of Michigan (2013-2014 Academic Year) (\$950)
- 2013 Rackham International Research Award, University of Michigan (\$4,000)
- 2013 The Scott Turner Award, University of Michigan (\$2,000)
- 2013 GSA 2013 Research Grant, Geological Science of America (\$2,500)
- 2013 Rackham Conference Travel Grant, University of Michigan (2012-2013 Academic Year) (\$950)
- 2012 Sigma Xi Grants-in-Aid of Research Award (\$400)
- 2012 The Scott Turner Award, University of Michigan (\$1,600)
- 2011 Rackham Graduate Student Research Grants, University of Michigan (Pre-candidacy) (\$1,500)
- 2007 College Student Research Training Fellowship, National Science Council
Project Title: Using $^{87}\text{Sr}/^{86}\text{Sr}$ ratios in coral skeletons to discuss the hydrological variations in South China Sea in the past thousands of years (NSC 96-2815-C-002-048-M) (47000 NTD)

AWARDS AND FELLOWSHIPS

- 2019 2018 Postdoctoral Research Paper Award, Ministry of Science and Technology, Taiwan.
- 2018 2019 Distinguished Postdoctoral Scholar, Academia Sinica, Taiwan
- 2017 2017 Regular Postdoctoral Scholar, Academia Sinica, Taiwan
- 2012 Departmental Fellowship, Department of Earth and Environmental Sciences, University of Michigan, USA
- 2011 Departmental Fellowship, Department of Earth and Environmental Sciences, University of Michigan, USA
- 2009 Most Outstanding Student Paper Award in 2009 Youth Forum in Department of Geosciences, National Taiwan University, Taiwan
- 2008 Chinese Taipei Geophysical Society Scholarship, Taiwan
NTU Dean of Sciences Award, Taiwan
- 2006 Honorable Mention of Summer Program in Institute of Earth Sciences, Academia Sinica, Taiwan
Jhu, Jia-Hua's Scholarship, Taiwan

ACADEMIC SERVICES

Reviewer for *Chemical Geology*, *Rapid Communication of Mass Spectrometry*, *Quaternary International*

GRADUATE STUDENT SUPERVISION

2015 – 2016 (MS) Clément Tanvet, Study of the isotopic chemistry of divergent

growth responses of marine calcifying organisms to CO₂.

TEACHING

- 2015 The Physical World, Graduate Student Instructor, University of Michigan
- 2014 The Physical World, Graduate Student Instructor, University of Michigan
- 2013 The Physical World, Graduate Student Instructor, University of Michigan
- 2009 Introduction to field geology (II), Teaching Assistant, National Taiwan University
- 2009 Analysis of geochemical data, Teaching Assistant, National Taiwan University
- 2009 Summer field geology (Metamorphic rock), Teaching Assistant, National Taiwan University
- 2009 Geochemistry, Teaching Assistant, National Taiwan University
- 2008 Introduction to field geology (II), Teaching Assistant, National Taiwan University
- 2008 Summer field geology (Metamorphic rock), Teaching Assistant, National Taiwan University

INVITED TALKS

- 2021 Department of Medical and Applied Chemistry, Kaohsiung Medical University: "Geochemical constraints on the calcification fluid pH of marine organisms and their responses to ocean acidification."
- 2020 Department of Earth Sciences, National Taiwan Normal University: "Geochemical constraints on the calcification fluid pH of marine organisms and their responses to ocean acidification."
- 2018 Department of Geography, National Taiwan University: "A coastal coccolithophore maintains pH homeostasis and switches carbon sources in response to ocean acidification."
- 2017 Institute of Oceanography, National Taiwan University: "Applications of $\delta^{11}\text{B}$ -pH relationships in unconventional marine biogenic carbonate archives."
- 2017 Department of Geosciences, National Taiwan University: "Environmental controls on the boron and strontium isotopic composition of the aragonite shell material of cultured *Arctica islandica*."
- 2017 Department of Geography, National Taiwan University: "The Subglacial Environment – Fieldwork to data: Lemon Creek Glacier".
- 2017 Department of Geosciences, National Taiwan University: "Geochemical constraints on calcification site pH in coccolithophore species and their responses to CO₂-induced ocean acidification".
- 2016 Institute of Earth Sciences, Academia Sinica: "Geochemical constraints on the calcification pH of marine organisms and their responses to CO₂-induced ocean acidification".
- 2015 Alfred Wegener Institute for Polar and Marine Research: "Environmental controls on $\delta^{11}\text{B}$ in *Arctica islandica* shells and future implications in unconventional biogenic carbonate archives".
- 2013 Department of Geosciences, National Taiwan University: "Development and application of boron isotopes in *Arctica islandica*: a potential geological pH

indicator”.

- 2013 Institute of Earth Sciences, Academia Sinica: “Development and application of boron isotopes in *Arctica islandica*: a potential historical, prehistorical and geological seawater pH indicator”.

PROFESSIONAL AFFILIATIONS

American Geophysical Union
European Geosciences Union
Geochemical Society
Geological Society of America
Geological Society Located in Taipei
Sigma Xi

MEETING AND WORKSHOP ATTENDANCE

- 2019 Goldschmidt Geochemical Conference, Barcelona, Spain
2019 2019 Conference on Pan-Pacific Anthropocene, Taipei, Taiwan
2017 Goldschmidt Geochemical Conference, Paris, France
2016 Workshop “Impact of Ocean Acidification and Warming on Tropical and Cold-Water Coral Calcification”, Delmenhorst, Germany
2016 EGU General Assembly 2016, Vienna, Austria
2014 FALL AGU, San Francisco, CA, USA
2014 2014 GSA Annual Meeting, Vancouver, Canada
2013 Goldschmidt Geochemical Conference, Florence, Italy
2013 2013 Goldschmidt Geochemical Conference Workshop: *Pushing forward boron isotope analytics: Advancing methodologies, analytical uncertainty and inter-comparability of data*, Pisa, Italy
2013 3rd International Sclerochronology Conference, Caernarfon, North Wales, UK
2013 1st International Sclerochronology Fieldweek Workshop: *Comparison of shell processing techniques led by researchers from SOS Bangor and JGU Mainz*, Menai Bridge, North Wales, UK
2012 Custom class for researchers at Lemon Creek offered by Alaska Mountain Guides & Climbing School, Inc., Davidson Glacier, Haines, Alaska (Three days)
2012 Wilderness First Aid Course offered by Director Outdoor Adventures, University of Michigan (Three days)
2011 FALL AGU, San Francisco, CA, USA
2011 Annual Meeting of the Geological Society of China
2009 FALL AGU, San Francisco, CA, USA
2009 Annual Meeting of the Geological Society of China
2008 FALL AGU, San Francisco, CA, USA
2008 Annual Meeting of the Geological Society of China
2007 Taiwan Geosciences Assembly
2004 Taiwan Geosciences Assembly

MEETING ABSTRACTS:

- Yi-Wei Liu, Sebastian Rokitta, Björn Rost, and Robert A. Eagle, (2019),
Geochemistry constraints on diverse growth and calcification responses of multiple coccolithophore species to ocean acidification. *Goldschmidt Abstracts*,

2019. (Flash talk + Poster)

- Yi-Wei Liu**, Sebastian Rokitta, Björn Rost, and Robert A. Eagle, (2019), Geochemistry constraints on diverse growth and calcification responses of multiple coccolithophore species to ocean acidification. *Abstract T6-77-P presented at 2019 Conference on Pan-Pacific Anthropocene, Taipei, Taiwan, 14-16 May.* (Poster)
- Yi-Wei Liu**, Robert A. Eagle, Jill N. Sutton, and Justin B. Ries, (2017), Diverse responses of internal pH regulation to CO₂-induced ocean acidification in marine calcifying organisms. *Goldschmidt Abstracts, 2017.* (Oral Presentation)
- Yi-Wei Liu**, Robert E. Tripati, Sarah M. Aciego, Rosaleen E. Gilmore, and Justin B. Ries, (2016), Combined $\delta^{11}\text{B}$, $\delta^{13}\text{C}$, and $\delta^{18}\text{O}$ analyses of coccolithophore calcite constrains the response of coccolith vesicle carbonate chemistry to CO₂-induced ocean acidification. *Geophysical Research Abstracts*. Vol. 18, EGU2016-11760-1
- Yi-Wei Liu**, Sarah M. Aciego, and Alan D. Wanamaker Jr., (2014), Comparisons of multiple isotope systems in the aragonitic shells of cultured *Arctica islandica* clams. *Abstract PP42A-06 presented at 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.* (Oral Presentation)
- Yi-Wei Liu**, Sarah M. Aciego, and Alan D. Wanamaker Jr., (2014), Boron and Strontium Isotopic Composition in the Aragonitic Shell Material of Cultured *Arctica islandica*. *Geological Society of America Abstracts with Programs*. Vol. 46, No. 6, p.129
- Yi-Wei Liu**, Sarah M. Aciego, and Alan D. Wanamaker Jr., (2013), Boron isotopic composition in *Arctica islandica* shell: a potential historical, prehistorical and geological seawater pH indicator. *Goldschmidt2013 Conference Abstract: 1631*
- Yi-Wei Liu**, Sarah M. Aciego, and Alan D. Wanamaker Jr., (2013), Boron isotopic composition in *Arctica islandica* shell: a potential historical, prehistorical and geological seawater pH indicator. *3rd International Sclerochronology Conference 2013*, ISC2013-A019 (Oral Presentation)
- Der-Chuen Lee, **Yi-Wei Liu**, and Li-Hong Lin, (2010), Precise Sr isotopic compositions determined by the double-spike technique. *Eos Trans. AGU, 91(26), West. Pac. Geophys. Meet. Suppl., Abstract V43A-073*
- Yi-Wei Liu**, Hong-Wei Chiang, Chuan-Chou Shen, Der-Chuen Lee, and Yue-Gau Chen, (2009), Natural variation of $^{87}\text{Sr}/^{86}\text{Sr}$ in coral *Porites* from southern Taiwan. *Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract PP11A-1298*
- Yu-Chen Chou, Yun-Chieh Lo, Ching-Chih Chang, **Yi-Wei Liu**, and Chuan-Chou Shen, (2009), Toward Pb isotopic determination with ppm-level precision in subnanogram quantities on multi-collector inductively coupled plasma mass spectrometry *2009 Asia Oceania Geosciences Society*
- Yu-Chen Chou, Yun-Chieh Lo, Ching-Chih Chang, **Yi-Wei Liu**, and Chuan-Chou Shen, (2009), Toward Pb isotopic determination with ppm-level precision in subnanogram quantities on multi-collector inductively coupled plasma mass spectrometry *2009 Annual Meeting of the Geological Society of China*
- Yi-Wei Liu**, Sylvain Gallet, Hong-Wei Chiang, In-Tian Lin, Yue-Gau Chen, and Chuan-Chou Shen, (2009), Seasonal and annual skeletal $^{87}\text{Sr}/^{86}\text{Sr}$ variability recorded in coral *Porites* from southern Taiwan: A potential proxy for mixing of water masses. *2009 Annual Meeting of the Geological Society of China*, p.113
- Yi-Wei Liu**, Sylvain Gallet, Hong-Wei Chiang, In-Tian Lin, Ching-Chih Chang, Yue-Gau Chen, Chuan-Chou Shen, (2008), Seasonal coral skeletal $^{87}\text{Sr}/^{86}\text{Sr}$ anomaly as a new potential proxy of tracing water masses. *Eos Trans. AGU*,

89(53), *Fall Meet. Suppl., Abstract PP31A-1482*

Yi-Wei Liu, Sylvain Gallet, Hong-Wei Chiang, Yue-Gau Chen, and Chuan-Chou Shen, (2008), Natural variation and attributed reason of Strontium isotope in coral skeletons from southern Taiwan. *2008 Annual Meeting of the Geological Society of China*

Hsin Wei Chen, Typhoon Lee, Der-Chuen Lee, Yoshiyuki Iizuka, and **Yi-Wei Liu**, (2007), *In Situ* Meteoritic Ti Isotopic Measurements by Laser Ablation MC-ICP-MS and the Homogeneity in Refractory Inclusions. *Workshop on the chronology of meteorites and the early solar system*

FIELDWORK AND CULTURE EXPERIMENT EXPERIENCES

- 2015 Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany: Multi-species coccolithophore acclimation culture experiment, including setup, maintenance, on-site measurements and harvest. (47 days)
- 2014 Tromsø, Norway: pH control *Arctica islandica* culture experiment. (12 days in February: Set up, initial water sampling; 9 days in May: Instrument calibrations, water sampling)
- 2013 Ingøya, Norway: Living and dead *Arctica islandica* shells and water samples collection (Ten days)
- 2012 Lemon Creek Glacier, Juneau, Alaska, USA: Daily melt water and suspended sediments sampling (Two months)
- 2009 Nanwan Bay, Taiwan: Seawater CTD profiles measuring, and seawater and fresh water sampling (Two days)

INSTRUMENT EXPERIENCE

Field Emission Scanning Electron Microscope:

JEOL FE-SEM (JSM-7100F), equipped with an energy dispersive X-ray spectrometer (EDS: Oxford EDS: Xmax 80 and an electron back-scattered diffraction meter (EBSD) (HKL Channel-5))

The Hitachi S3200N Scanning Electron Microscope

Phenom G2 pro Scanning Electron Microscope

Mass Spectrometers:

Thermo Scientific™ MAT 253™ stable isotope ratio mass spectrometer system

Thermo Scientific™ ELEMENT 2™ ICP-MS

Thermo Scientific™ NEPTUNE high-performance multicollector ICPMS

Thermo Scientific™ TRITON™, TRITON™ Plus, and TRITON™ XT multicollector thermal ionization mass spectrometer

TC/EA (thermochemical elemental analyzer) with zero-blank autosampler, coupled with Thermo Scientific™ DELTA isotope ratio mass spectrometers

Micromilling:

The Merchantek micromill with a Leica GZ6 microscope

Multisizer III hemocytometer:

Beckman-Coulter, Fullerton