

# Stanford

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## Taylor Broek

Environmental Measurements Facility Laboratory Manager, Stanford Doerr School of Sustainability - Dean's Office

### Bio

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#### BIO

I co-manage the Environmental Measurements Facility (EMF) alongside Guangchao Li and Juan Lezama Pacheco, and oversee the Ecosystems Laboratory shared sample preparation space. In EMF, I am responsible for maintaining a range of analytical instruments primarily used to measure carbon and nitrogen concentrations in solid, liquid, and gaseous environmental samples. I also train researchers across the Stanford scientific community in instrument operation, and provide technical expertise to support experimental design, method development, and data interpretation.

#### CURRENT ROLE AT STANFORD

Laboratory Manager, Environmental Measurements Facility and Ecosystems Laboratory

#### EDUCATION AND CERTIFICATIONS

- PhD, University of California, Santa Cruz , Ocean Sciences
- MS, University of California, Santa Cruz , Ocean Sciences
- BS, University of California, Santa Cruz , Chemistry

#### LINKS

- Environmental Measurements Facility: <https://sdssemf.stanford.edu/>
- Ecosystems Laboratory: <https://ecosystemslab.stanford.edu/>

### Publications

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#### PUBLICATIONS

- **Special delivery of proteinaceous matter to deep-sea microbes** *SCIENCE ADVANCES*  
Shen, Y., Benner, R., Broek, T. A. B., Walker, B. D., Mccarthy, M. D.  
2025; 11 (12): eadr0736
- **Dominant heterocyclic composition of dissolved organic nitrogen in the ocean: A new paradigm for cycling and persistence.** *Proceedings of the National Academy of Sciences of the United States of America*  
Broek, T. A., McCarthy, M. D., Ianiri, H. L., Vaughn, J. S., Mason, H. E., Knapp, A. N.  
2023; 120 (49): e2305763120
- **IMPROVING IONPLUS MICADAS PERFORMANCE WITH RECESSED GRAPHITE** *RADIOCARBON*  
Broek, T. A. B., Roberts, M. L.  
2024
- **Variable aging and storage of dissolved black carbon in the ocean** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*

Coppola, A. I., Druffel, E. R. M., Broek, T. A., Haghypour, N., Eglinton, T. I., Mccarthy, M., Walker, B. D.  
2024; 121 (13): e2305030121

- **RADIOCARBON ANALYSIS OF SOIL MICROBIAL BIOMASS VIA DIRECT CHLOROFORM EXTRACTION** *RADIOCARBON*  
Finstad, K. M., Nuccio, E. E., Grant, K. E., Broek, T. A. B., Pett-Ridge, J., McFarlane, K. J.  
2023
- **Optimization of the LLNL/CAMS gas-accepting ion source and 1 MV compact AMS for natural abundance radiocarbon analysis of CO<sub>2</sub>.** *Nuclear instruments & methods in physics research. Section B, Beam interactions with materials and atoms*  
Broek, T. A., Moreland, K. C., Ognibene, T. J., McFarlane, K. J., Brown, T. A.  
2022; 530: 1-7
- **Bacterial sources and cycling dynamics of amino acids in high and low molecular weight dissolved organic nitrogen in the ocean** *MARINE CHEMISTRY*  
Ianiri, H. L., Shen, Y., Broek, T. A. B., McCarthy, M. D.  
2022; 241
- **Conversion of the LLNL/CAMS 1 MV biological AMS system to a semi-automated natural abundance 14C spectrometer: system optimization and performance evaluation.** *Nuclear instruments & methods in physics research. Section B, Beam interactions with materials and atoms*  
Broek, T. A., Ognibene, T. J., McFarlane, K. J., Moreland, K. C., Brown, T. A., Bench, G.  
2021; 499: 124-132
- **Low Molecular Weight Dissolved Organic Carbon: Aging, Compositional Changes, and Selective Utilization During Global Ocean Circulation** *GLOBAL BIOGEOCHEMICAL CYCLES*  
Broek, T. A. B., Walker, B. D., Guilderson, T. P., Vaughn, J. S., Mason, H. E., McCarthy, M. D.  
2020; 34 (6)
- **Amino acid enantiomers in old and young dissolved organic matter: Implications for a microbial nitrogen pump** *GEOCHIMICA ET COSMOCHIMICA ACTA*  
Broek, T. A. B., Bour, A. L. B., Ianiri, H. L., Guilderson, T. P., McCarthy, M. D.  
2019; 247: 207-219
- **Direct Visualization of Individual Aromatic Compound Structures in Low Molecular Weight Marine Dissolved Organic Carbon** *GEOPHYSICAL RESEARCH LETTERS*  
Fatayer, S., Coppola, A. I., Schulz, F., Walker, B. D., Broek, T. A., Meyer, G., Druffel, E. R. M., McCarthy, M., Gross, L.  
2018; 45 (11): 5590-5598
- **Coupled ultrafiltration and solid phase extraction approach for the targeted study of semi-labile high molecular weight and refractory low molecular weight dissolved organic matter** *MARINE CHEMISTRY*  
Broek, T. A. B., Walker, B. D., Guilderson, T. P., McCarthy, M. D.  
2017; 194: 146-157
- **Radiocarbon Analysis of Individual Amino Acids: Carbon Blank Quantification for a Small-Sample High-Pressure Liquid Chromatography Purification Method.** *Analytical chemistry*  
Bour, A. L., Walker, B. D., Broek, T. A., McCarthy, M. D.  
2016; 88 (7): 3521-8
- **A new approach to  $\delta^{15}\text{N}$  compound-specific amino acid trophic position measurements: preparative high pressure liquid chromatography technique for purifying underivatized amino acids for stable isotope analysis** *LIMNOLOGY AND OCEANOGRAPHY-METHODS*  
Broek, T. A. B., McCarthy, M. D.  
2014; 12: 840-852
- **High-precision measurement of phenylalanine  $\delta^{15}\text{N}$  values for environmental samples: a new approach coupling high-pressure liquid chromatography purification and elemental analyzer isotope ratio mass spectrometry.** *Rapid communications in mass spectrometry : RCM*  
Broek, T. A., Walker, B. D., Andreasen, D. H., McCarthy, M. D.  
2013; 27 (21): 2327-37
- **Input of  $^{129}\text{I}$  into the western Pacific Ocean resulting from the Fukushima nuclear event** *JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY*  
Tumey, S. J., Guilderson, T. P., Brown, T. A., Broek, T., Buesseler, K. O.

