

Dr. Hussain A. Abdulla

Texas A&M University-Corpus Christi

Science & Engineering, Physical & Environmental Sciences

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Education

PhD, Old Dominion University, 2009.

MS, Old Dominion University, 2005.

BS, University of Bahrain, 1998.

Professional Employment

Assistant Professor, Texas A&M University Corpus Christi. (August 2014 - Present).

Research Assistant Professor, Department of Ocean, Earth and Atmospheric Sciences, Old Dominion University. (November 2013 - August 2014).

Research Fellow, Jones Institute for Reproductive Medicine, Eastern Virginia Medical School. (July 2012 - August 2014).

Identification of Biomarkers of Human Embryo Developmental Potential in IVF: A Novel Non-invasive Metabolomics Approach

Postdoctoral Research Associate, Department of Chemistry and Biochemistry, Old Dominion University. (May 2009 - July 2013).

I investigated the photochemical transformation mechanisms of terrestrial dissolved organic matter, and the interactions between trace metals and organic matter and how these interactions affect the chemical/physical transformation of organic matter in both marine and terrestrial ecosystems. Furthermore, I collaborated with colleagues in a study which demonstrated that anthropogenic aerosols are a significant source of ancient dissolved organic matter in glaciers. I also have examined the effects of the seasonal variations in the molecular signatures of Arctic rivers organic matter on the bioavailability and reactivity of terrestrial dissolved organic matter in Arctic Ocean. In addition, I used to run the stable isotope mass spectroscopy (IRMS) facility at the College of Sciences Major Instrumentations Cluster at Old Dominion University. Lastly, I developed a high-precision TOC/DOC analyzer with nM detection limit (project funded by NSF)

Research Assistant, Department of Chemistry and Biochemistry, Old Dominion University. (September 2005 - August 2009).

Teaching Assistant, Department of Ocean, Earth and Atmospheric Sciences & Department of Chemistry and Biochemistry, Old Dominion University. (September 2005 - May 2008).

Teaching Introduction to Oceanography Laboratory course (OEAS 107N) and Organic Chemistry Laboratory course (CHEM 212)

Environmental Chemist, General Directorate of Environmental & Wildlife Protection. (April 1999 - August 2005).

I involved in many environmental monitoring programs covering the marine environment, air pollution, acid rain, drinking water and industrial effluents. Analyzing samples for wide varieties of parameters including petroleum hydrocarbons, chlorinated pesticides, trace metals and wet analysis. I was also responsible for evaluating the capability of the environmental laboratories in the region (at UAE, Qatar, Bahrain, Saudi Arabia, Oman and Kuwait) for running the analysis of trace metals, petroleum hydrocarbons, chlorinated

pesticide and nutrients and report that to both the Regional Organization for the Protection of the Marine Environment (ROPME) and Marine Environmental Laboratory at International Atomic Energy Agency (IAEA-MEL), I also worked as ROPME scientific observer and the chemical oceanography co-team leader during the entire ROPME Oceanographic cruise-summer 2001.

Professional Memberships

Metabolomics Society
American Geophysical Union
American Society of Limnology & Oceanography
American Chemical Society
College of Science Society

TEACHING

Teaching Experience

CHEM 4292, SENIOR CHEMISTRY SEMINAR
CHEM 4696, The effects of sunlight exposure on different types of surfactants
CMSS 6361, Organic & Isotope Geochemistry
CMSS 6996, RESEARCH
ESCI 3351, OCEANOGRAPHY

SCHOLARLY AND CREATIVE ACTIVITIES

Publications

Refereed

Journal Articles

Bundy, R. M., Abdulla, H. A., Hatcher, P. G., Biller, D. V., Buck, K. N., Barbeau, K. A. (2015). Iron-binding ligands and humic substances in the San Francisco Bay estuary and estuarine-influenced shelf regions of coastal California. *Marine Chemistry*, 173, 183-194.

Mesfioui, R., Abdulla, H. A., Hatcher, P. G. (2015). Photochemical Alterations of Natural and Anthropogenic Dissolved Organic Nitrogen in the York River. *Environmental science & technology*, 49(1), 159–167.

Chen, H., Abdulla, H. A., Sanders, R. L., Myneni, S. C., Hatcher, P. G. (2014). Production of Black Carbon-like and Aliphatic Molecules from Terrestrial Dissolved Organic Matter in the Presence of Sunlight and Iron. *Environmental Science & Technology Letters*, 1(10), 399–404. doi: 10.1021/ez5002598

Sleighter, R. L., Cory, R. M., Kaplan, L. A., Abdulla, H. A., Hatcher, P. G. (2014). A Coupled Geochemical and Biogeochemical Approach to Characterize the Bioreactivity of Dissolved Organic Matter from a Headwater Stream. *Journal of Geophysical Research: Biogeosciences*, 119, 1520–1537. doi:10.1002/2013JG002600

Abdulla, H. A., Hatcher, P. G. (2014). Dynamics of Dissolved Organic Matter: A View from Two Dimensional Correlation Spectroscopy Techniques. *Journal of Molecular Structure*, 1069, 313-317.

Zigah, P. K., Minor, E. C., Abdulla, H. A., Werne, J. P., Hatcher, P. G. (2014). An Investigation of Size-fractionated Organic Matter from Lake Superior and a Tributary Stream Using Radiocarbon, Stable Isotopes and NMR. *Geochimica et Cosmochimica Acta*, 127, 264-284.

Sun, L., Chen, H., Abdulla, H. A., Mopper, K. (2014). Estimating Hydroxyl Radical Photochemical Formation Rates in Natural Waters During Long-term Laboratory Irradiation Experiments. *Environmental Science: Processes & Impacts*, 16(4), 757-763.

Helms, J. R., Mao, J., Schmidt-Rohrb, K., Abdulla, H. A., Mopper, K. (2013). Photochemical Flocculation of Terrestrial Dissolved Organic Matter and Iron. *Geochimica et Cosmochimica Acta*, 121, 398-413.

Wozniak, A. S., Shelley, R. U., Sleighter, R. L., Abdulla, H. A., Morton, P. L., Landing, W. M., Hatcher, P. G. (2013). Relationships Among Aerosol Water Soluble Organic Matter, Iron and Aluminum in European, North African, and Marine Air Masses from the 2010 US GEOTRACES Cruise. *Marine Chemistry*, 154, 24-33.

Abdulla, H. A., Minor, E. C., Dias, R. F., Hatcher, P. G. (2013). Transformations of the Chemical Compositions of High Molecular Weight DOM Along a Salinity Transect: Using Two Dimensional Correlation Spectroscopy and Principal Component Analysis Approaches. *Geochimica et Cosmochimica Acta*, 113, 231-246.

Abdulla, H. A., Sleighter, R. L., Hatcher, P. G. (2013). Two Dimensional Correlation Analysis of Fourier Transform Ion Cyclotron Resonance Mass Spectra of Dissolved Organic Matter: A New Graphical Analysis of Trends. *Analytical Chemistry*, 85(8), 3895-3902.

Stubbins, A., Hood, E., Raymond, P. A., Aiken, G. R., Sleighter, R. L., Hernes, P. J., Butman, D., Hatcher, P. G., Striegl, R. G., Schuster, P., Abdulla, H. A., Vermilyea, A. W., Scott, D. T., Spencer, R. G. (2012). Anthropogenic Aerosols as a Source of Ancient Dissolved Organic Matter in Glaciers. *Nature Geoscience*, 5, 198-201.

Abdulla, H. A., Minor, E. C., Hatcher, P. G. (2010). Using Two-Dimensional Correlations of ¹³C NMR and FTIR to Investigate Changes in the Chemical Composition of Dissolved Organic Matter along an Estuarine Transect. *Environmental Science & Technology*, 44(21), 8044-8049.

Abdulla, H. A., Minor, E. C., Dias, R. F., Hatcher, P. G. (2010). Changes in the Compound Classes of Dissolved Organic Matter along an Estuarine Transect: A Study Using FTIR and ¹³C-NMR. *Geochimica et Cosmochimica Acta*, 74(13), 3815-3838.

Abdulla, H. A., Dias, R. F., Minor, E. C. (2009). Understanding the Enhanced Aqueous Solubility of Styrene by Terrestrial Dissolved Organic Matter Using Stable Isotope Mass Balance and FTIR. *Organic Geochemistry*, 40(5), 547-552.

Minor, E. C., Pothen, J., Dalzell, B., Abdulla, H. A., Mopper, K. (2006). Effects of Salinity Changes on the Photodegradation and UV-visible Absorbance of Terrestrial Dissolved Organic Matter. *Limnology & Oceanography*, 51(5), 2181-2186.

Ali-Mohammed, A. Y., Abdulla, H. A. (2001). Estimation of Atmospheric Inorganic Water-Soluble Particulate Matter in Muharraq Island, Bahrain, (Arabian Gulf), by Ion Chromatography. *Atmospheric Environment*, 35, 761-768.

Presentations

Douglas, A. (Author & Presenter), Abdulla, H. A. (Author), Maupins, M. (Author), Jemison, C. (Author), Murgulet, D. (Author), "Molecular Characterization of Dissolved Organic Matter in Surface and Groundwater in a Highly Disturbed Semi-Arid Secondary Bay," ASLO Aquatic Sciences Meeting, ASLO, Honolulu, Hawai'i. (February 26, 2017).

Maupins, M. (Author & Presenter), Abdulla, H. A. (Author), "Identifying Refractory Deaminated Peptides in Aquatic Environment. Oral Presentation," 13th Annual Pathways Symposium, Texas A&M University system, Prairie View A&M University, TX. (November 3, 2016).

Maupins, M. (Author & Presenter), Abdulla, H. A. (Author), "Identifying Refractory Deaminated Peptides in Aquatic Environment," Gulf Coast Undergraduate Research Symposium, Rice University, Rice University, TX. (October 22, 2016).

Abdulla, H. A. (Author & Presenter), Komada, T. (Author), Burdige, D. (Author), "Accumulation of Refractory Deaminated Peptides in Anoxic Sediments of Santa Barbara Basin," Texas A&M University- Galveston seminar series, Texas A&M University- Galveston, Texas A&M University- Galveston. (October 13, 2016).

Komada, T. (Author & Presenter), Fox, C. (Author), Li, H. (Author), Burdige, D. (Author), Abdulla, H. A. (Author), Lewicki, J. (Author), "What constitutes the refractory component of pore-water dissolved organic matter?," ASLO Aquatic Sciences Meeting, ASLO, New Orleans, Louisiana. (February 21, 2016).

Abdulla, H. A. (Author & Presenter), Mopper, K. (Author), "The Removal of Terrestrial Dissolved Organic Matter in Coastal Regions by Photo-Flocculation Process," AGU Fall Meeting 2015, AGU, San Francisco, CA. (December 16, 2015).

Abdulla, H. A. (Co-Chair), Helms, J. (Co-Chair), "Phase transitions and boundary interactions in aquatic systems: The role of solubility and adsorption in organic biogeochemical cycles.," American Geophysical Union (AGU) Fall meeting 2015, American Geophysical Union, San Francisco, CA. (December 16, 2015).

Abdulla, H. A. (Author & Presenter), Burdige, D. (Author), Komada, T., "Transformations and alterations of pore water dissolved organic matter in an anoxic sediment," Marine Science Institute, University of Texas at Austin, Port Aransas, TX. (October 2, 2015).

Fox, C. (Author & Presenter), Abdulla, H. A. (Author), Lewicki, J. (Author), Burdige, D. (Author), Magen, C. (Author), Chanton, J. (Author), Komada, T. (Author), "CHARACTERIZATION OF WHOLE POREWATER DISSOLVED ORGANIC MATTER IN ANOXIC SEDIMENTS BY ¹H NMR," Aquatic Sciences Meeting 2015, Granada, Spain. (February 27, 2015).

Abdulla, H. A. (Author & Presenter), Komada, T. (Author), Hatcher, P. G. (Author), Burdige, D. J. (Author), "Changes in the Chemical Compositions of Porewater Dissolved Organic Matter Across the Sulfate Methane Transition Region," Goldschmidt 2014 Conference, Geochemical Society and the European Association of Geochemistry, Sacramento, 8-13 June 2014. (June 18, 2014).

Fox, C. (Author & Presenter), Abdulla, H. A. (Author), Lewicki, J. (Author), Burdige, D. J. (Author), Magen, C. (Author), Chanton, J. (Author), Komada, T. (Author), "Changes in the Chemical Compositions of Porewater Dissolved Organic Matter Across the Sulfate Methane Transition Region," Goldschmidt 2014 Conference, Geochemical Society and the European Association of Geochemistry, Sacramento, CA. (June 18, 2014).

Contracts, Grants and Sponsored Research

Grant

Abdulla, Hussain A. (Principal), Zimba, Paul V. (Co-Principal), Conkle, Jeremy L. (Co-Principal), "Acquisition of hybrid mass spectrometer for geochemistry and environmental studies," Sponsored by NSF, Federal, \$681,416.00. (September 15, 2016 - August 31, 2017).

Abdulla, Hussain A (Principal), "The Removal of Terrestrial Dissolved Organic Matter in Coastal Regions by Photo-Flocculation Process," Sponsored by College Research Enhancement, Texas A&M University-Corpus Christi, \$3,000.00. (September 1, 2015 - August 31, 2016).

Abdulla, Hussain A (Co-Principal), Oehninger, Sergio (Principal), Horcajadas, José A (Co-Principal), "Identification of Biomarkers of Human Embryo Developmental Potential in IVF: A Novel Non-invasive Metabolomics Approach," Sponsored by Howard and Georgeanna Jones Foundation for Reproductive Medicine, Private, \$200,000.00. (July 1, 2013 - June 30, 2015).

Scholarly and Creative Awards and Honors

NIH travel fellowship, NIH. (2014).

Carnegie Postdoctoral Fellowship, Geophysical Laboratory, Carnegie Institution of Washington. Washington D.C. (2011).

Dorothy Brown Smith Scholarship, Department of Ocean, Earth & Atmospheric Sciences, Old Dominion University. (2006).

Fulbright Student Scholarship, U.S. Department of State. (2003).

Scholarship to study B.Sc. in Chemistry, Ministry of Education. (1992).

SERVICE

Department

Committee Member, Faculty Search Committee, Organic Chemist. (September 2016 - May 2017).

College

Committee Member, Distinguished Lecture Speaker Committee. (September 2016 - May 2017).

Committee Member, Awards and Scholarship Committee. (October 2014 - August 2016).

Professional

Reviewer, Journal Article, Scientific Journal. (September 2014 - Present).

Conference-Related, American Geophysical Union. (December 2015).

Consulting

Academic, Eastern Virginia Medical School, Norfolk, VA. (September 1, 2014 - June 30, 2015).

Public

Workshop Organizer, Organize an interactive seminar on "Gas Chromatography Solutions for Refinery Gas Analysis", (November 2016 - Present).