

## Kareem Hannoun, Ph.D.

Associate Scientist II  
Water Quality Solutions, Inc.



### Education

Ph.D. Chemistry – California Institute of Technology, Pasadena, California, 2019  
B.S. (with Honors) Chemistry – University of Chicago, Chicago, Illinois, 2013

### Experience & Qualifications

Dr. Hannoun provides technical analysis and model development for WQS, including DYRESM model calibration, modeling for vertical mixing applications, and 3D hydrodynamic modeling with AEM3D. He has conducted a study on the effects of the Thomas Fire on Lake Casitas and provided recommendations to the client to improve water quality. He has experience in assessment of air diffuser systems for management of harmful algal blooms (HABs) and other water quality concerns.

Dr. Hannoun brings significant chemistry knowledge to WQS, with experience in inorganic chemistry, redox processes, photochemistry, and nitrogen fixation. He has extensive experience in analytical chemistry and spectroscopic methods relevant to water quality analysis.

Dr. Hannoun is currently executing a 3D hydrodynamic study for indirect potable reuse at Miramar Reservoir in San Diego. He is modeling tracer injection and mixing under a broad range of environmental conditions to ensure water quality is maintained. In addition, he is calibrating and validating a 3D water quality model of the Inland Sea of Lake Champlain in Vermont. The Lake Champlain water quality model is a critical component of a broader climate change and land use study to characterize HABs in the shallow eastern bays. Dr. Hannoun is collaborating with University of Vermont on the climate change study.

Dr. Hannoun serves as a reviewer for Lake and Reservoir Management and authors reports and papers with WQS.

### Software Experience:

Modeling Platforms: AEM3D, DYRESM  
Software Platforms: Windows, Unix, Linux  
Software Suites: MATLAB, Tecplot

### Publications:

Pasek, J., **Hannoun, K. I.**, Rackley, I., Quicho, J. & Hannoun, I. Indirect Potable Reuse in Miramar Reservoir, *LakeLine* **2021**, 40(4), 9-13.

Deegan, M.; **Hannoun, K. I.** Peters, J. C. Non-Classical Dihydrogen Complexes as Precursors to H-atom and Hydride Transfer *Angew. Chem. Int. Ed.* **2020**, 59(50), 22631-22637.

Ahn, J. M.; Ratani, T. S.; **Hannoun, K. I.**; Fu, G. C.; Peters, J. C. Photoinduced, Copper-Catalyzed Alkylation of Amines: A Mechanistic Study of the Cross-Coupling of Carbazole with Alkyl Bromides *J. Am. Chem. Soc.* **2017**, 139 (36), 12716-12723.

Johnson, M. W.†; **Hannoun, K. I.**†; Tan, Y.; Fu, G. C.; Peters, J. C. A Mechanistic Investigation of the Photoinduced, Copper-Mediated Cross-Coupling of an Aryl Thiol with an Aryl Halide. *Chem. Sci.* **2016**, 7 (7), 4091–4100.

†Equal Contribution