

Post-Doctoral Fellow in Aqueous Thermodynamics for
Planetary Science Applications
Texas A&M University

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Posted Jun. 20, 2022, set to expire Oct. 20, 2022

Job Title	Post-Doctoral Fellow in Aqueous Thermodynamics for Planetary Science Applications
Department	Mechanical Engineering
Institution	Texas A&M University College Station, Texas
Date Posted	Jun. 20, 2022
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Post-Doc
Academic Field(s)	Planetary Sciences Physics - Condensed Matter/Low Temperature Physics - General Natural Sciences Mathematics/Applied Mathematics Materials Sciences/Polymer Sciences Geology - Hydrogeology Geology - Geophysics Geology - Geochemistry Geology/Geosciences - General Environmental Sciences/Ecology/Forestry Earth Sciences Chemistry - Physical Chemistry - Inorganic Chemistry - General Atmospheric Sciences Astronomy and Astrophysics
Apply By Email	powellpalm@tamu.edu

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Job Description

Post-Doctoral Fellow in Aqueous Thermodynamics for Planetary Science Applications

Prof. Matthew J. Powell-Palm

Dept. of Mechanical Engineering

Texas A&M University

Keywords: Materials Thermodynamics; Planetary Science; Phase Diagrams; Icy oceans; water and ice.

Post-doctoral position available to study the complex thermodynamics of multicomponent aqueous systems at the low-temperatures and high-pressures relevant to the many icy worlds in our solar systems that represent the best candidates to host life abroad. Position will combine theoretical/computational work with extensive experimentation to measure never-before-measured multiphase (2-, 3-, and 4-phase) equilibria in multi-component aqueous systems, generating both critical new reference data for the compositional analysis of high-pressure icy oceans and fundamental thermodynamic insight into the evolution of 3- and 4-phase equilibrium configurations with pressure and temperature. Work will culminate in full and deployable thermodynamic descriptions of multicomponent thermodynamic spaces, including 2-, 3-, and 4-dimensional phase diagrams, and may optionally include extension of the acquired data to pressing modeling and experimental design considerations in planetary science and cryobiology.

Minimum Qualifications

Ph.D. in Materials Science, Planetary Science, Mechanical Engineering, Physics, or other relevant field.

Extremely strong foundation in classical materials thermodynamics.

Experience in thermal metrology / measurement of multiphase equilibria, preferably in the high-temperature low-pressure regime.

Experience in thermodynamic modeling in MATLAB or Python, preferably in the construction of phase diagrams or comprehensive equations of state.

Excellent oral communication and written skills in English, with good organizational and analytical abilities.

Preferred Qualifications

Background in planetary science or water thermodynamics.

Experience in device design within the thermal metrology space, and esp. with low-temperature or high-pressure applications

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Additional experience in thermodynamic modeling relevant to icy worlds, including compositional modeling of icy oceans, cryovolcanism, or related.

This position will be based out of Texas A&M University, Dept. of Mechanical Engineering, and rely heavily on inter-institution collaborations with University of Washington and the University of Arkansas. There will be regular opportunities to travel to our many partner labs at different institutions around the country. Salary commensurate with experience, and guaranteed to be above NIH standards. Applications should be sent to powellpalm@tamu.edu with the subject line "Postdoc Aqueous Thermodynamics"; and addressed to Prof. Matt Powell-Palm, and should contain a brief cover letter or statement of interest, an up-to-date CV, and the names / contact details of 2-3 professional or academic references.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact Prof. Matthew J. Powell-Palm
Mechanical Engineering
Texas A&M University
College Station, TX

Phone Number 4065393068

Contact E-mail powellpalm@tamu.edu