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## Applications of Thermodynamic Modelling Techniques in Earth and Environmental Sciences

Jihua Hao  
*Rutgers University*

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**MONTCLAIR STATE**  
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The Doctoral Program in Environmental Science & Management  
and MSU Sustainability Seminar Series Present:

# Applications of Thermodynamic Modelling Techniques in Earth and Environmental Sciences

WHEN: November 2, 4:00 pm via Zoom

**Dr. Jihua Hao**

**Department of Marine and Coastal Sciences, Rutgers University**



Jihua Hao earned a B.S. in Environmental Sciences in University of Science and Technology of China in 2012 and a Ph.D. in Geochemistry from Johns Hopkins University in 2016. After graduation, he worked as a postdoctoral fellow at University of Lyon 1 and Ens-Lyon from December 2016 to August 2019. Since September 2019, he worked as a postdoctoral associate at Rutgers University. Dr. Hao has wide research interests including early Earth surface environments, origin and evolution of life, high temperature-pressure geochemistry, chemical compositions of other planetary oceans, and photogeochemistry.

In nature, kinetic laws control how fast one reaction is, but thermodynamic laws determine whether one reaction can happen or not. In this talk, Dr. Hao will introduce some basic thermodynamic theories and explain how to determine affinity of reaction in natural environments. In addition, Dr. Hao will present several examples of using thermodynamics to understand cycles of elements on our Earth based on his own research outputs. Furthermore, this talk will cover some discussions on how to apply thermodynamic simulations to figure out potential ways to maintain sustainability in nature.