



## "Diverse Ices in the Atmospheres of Earth and Other Planets"

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On any planet, the interplay of ice clouds with solar radiation can lead to beautiful displays of light and color. Most atmospheres in our solar system of appreciable density contain ice clouds of varied composition (e.g. water, ammonia, carbon dioxide and even hydrocarbons). In addition to their aesthetic value, these particles are important both as a component of planetary solar radiation budgets and in heterogeneous chemical reactions. Current research in my laboratory includes the characterization of microscale structures of, and the adsorption of chemical species on various ice films characteristic of the upper atmospheres of Earth and Jupiter. These films are grown on a high-vacuum cryostat at temperatures from 30 - 150 K and are analyzed using techniques including p-polarized, grazing-angle, FT-IR reflection-absorption spectroscopy and temperature-programmed desorption mass spectrometry. Some recent results of these studies will be presented along with their relevance to atmospheric processes.



### \*\*\* About the Speaker \*\*\*

For the past dozen years, James Boulter's research has been clustered around topics related to heterogeneous chemistry and atmospheric particulate matter. After graduating with a BS in Chemistry from Pacific Lutheran University in 1992, he took a job at the National Renewable Energy Laboratory in Golden CO, researching heterogeneous photocatalytic techniques for decontaminating gas-phase and aqueous waste streams. In 2002, he received his Ph.D. in analytical and atmospheric chemistry from the University of Colorado-Boulder, where he designed and evaluated a sampling inlet to isolate atmospheric aerosol particles in real-time and also participated in a field campaign at Summit Greenland, measuring ozone profiles above the arctic snowpack. His NSF postdoctoral fellowship at SRI International in Menlo Park CA included laboratory experiments to evaluate possible heterogeneous reactions of atomic oxygen on surfaces representative of particles present in the terrestrial middle atmosphere. Since 2004, he has served as an assistant professor at the University of Wisconsin-Eau Claire, teaching courses in general, analytical and environmental chemistry, and he currently serves on the Chancellor's advisory committee on campus greenhouse gas emissions. His ongoing research with undergraduate students continues to cross disciplinary boundaries to apply fundamental chemical understanding to current problems in terrestrial and planetary atmospheric science.

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Gather at 5:30. Eat at 6:00 at Sweetwaters Restaurant, 1104 W. Clairemont Ave, Eau Claire (near the intersection of Clairemont (US 12) and State Highway 37). Reservations should be made by contacting **Dave Lewis** at **715-836-4744** or email **lewisd@uwec.edu** before noon on **Wednesday, February 6.**  
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