

Chemistry of Atmospheric Aerosols (Fall 2017)

T, Th 9:30 – 11:00 LSB 100

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Office hours are by appointment.

Aerosols have complex and important roles in Earth's atmosphere. They can affect atmospheric composition, human health, and climate. They may even have played an instrumental role in initiating life on this planet. This course explores the effects of aerosols in Earth's atmosphere, with an emphasis on chemistry that occurs within aerosols and at their surfaces. The course will begin with "big picture" discussions regarding the formation and importance of aerosols, followed by an in-depth discussion of physical and chemical processes involving atmospheric aerosols. Information covered in this course will be relevant to environmental and atmospheric chemistry, physical chemistry, analytical chemistry, and surface chemistry. Advanced mathematics are not required.

Section 1: Introduction to atmospheric aerosols

- What is an aerosol?
- Importance of aerosols
- Formation and composition of atmospheric aerosols
- Physical properties of atmospheric aerosols
- Methods of studying aerosols

Section 2: Effects of aerosols

- Health effects
- Optical properties / climate
- Chemistry

Section 3: Air-aerosol interactions

- Overview
- Uptake and incorporation
- Water uptake by aerosols
- Bulk vs. surface reactions

Section 4: Miscellaneous

- Big picture
- Review

Marks

Item	Number	Value (each)	Total value
Take-home exams	2	15%	30%
Quizzes	5	5%	25%
Project	1	40%	40%
Participation	∞	5%	5%

There will be no in-class final exam for this course. The dates of quizzes and exams will be posted on Blackboard.

Religious Observances Policy (http://supolicies.syr.edu/emp_ben/religious_observance.htm)

SU recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice/Student Services/Enrollment/My Religious Observances from the first day of class until the end of the second week of class. The religious observances policy requires accommodation for the religious holiday itself, not for travel days if a student will be observing the holiday elsewhere.

Academic Integrity: The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see http://supolicies.syr.edu/ethics/acad_integrity.htm.

Special Accommodations: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located at 804 University Avenue, room 309, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities "Accommodation Authorization Letters" as appropriate. As accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.