

## **GUIDELINES AND PROCEDURES FOR 84.601-602/202 ANALYTICAL/ENVIRONMENTAL SEMINARS**

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1. All full-time graduate students in the Chemistry Department's Analytical Division or the Environmental Studies Ph.D. Program are required to attend all meetings of Seminar and Colloquium whether they are officially enrolled or not. Seminars should be considered a learning experience and attendees are expected to pay attention and ask thoughtful questions at the appropriate time. This is especially true for seminars by outside speakers.
2. All doctoral degree candidates will present two formal seminars to graduate students and faculty. The first seminar must be presented before the end of the student's second year, however, it is highly recommended that it be given in the second or third semester of study. Only one of the two seminars is allowed to be on a topic closely related to the student's dissertation research.
3. All masters degree candidates will present one formal seminar to graduate students and faculty. This may be given anytime during the students tenure as a master's degree candidate.
4. The first scheduled seminar of each semester will be an organizational meeting for all graduate students in the Chemistry Department's Analytical Division or Environmental Studies Ph.D. Program. At this meeting procedural details will be reviewed and a preliminary schedule will be distributed.

To aid candidates in the preparation and presentation of their seminars, the following timetable and expectations are offered.

A. Selection of Topic

1. Selection of the seminar topic is the job of the student. However, every topic must be approved by the seminar instructor and the student's thesis advisor.
2. A definite seminar topic must be submitted four weeks in advance of the actual presentation date. Any changes thereafter will require the approval of the seminar instructor. Individuals intending to present a seminar in the first half of the semester should actually begin selecting and preparing their topic in the prior semester.
3. Select a topic which is sufficiently well-defined (of sufficient breadth and specialty) to allow coverage of all background material within 10 to 20 minutes. The remainder of the seminar should cover new developments of primary significance to the topic based on current research papers.
4. The primary focus should be on new developments. Reproduction of textbook material, review articles, or formerly-encountered lecture material on an extensive scale will be considered unacceptable.

B. Abstract (see attached sample abstract)

1. An abstract should be designed to be of permanent value to your student peers and faculty. It should be written so as to provide the reader with "the state of the art" in the field, a concise introduction to the area of interest and an entry into the current literature.
2. The abstract should be limited to one page (single spaced) and include a few key bibliographic references (possibly 5). The bibliographic citations should have a consistent style and conform to a standard journal format (e.g. Analytical

Chemistry or Environmental Science and Technology). Abbreviations should be fully described at their first occurrence. Tabular data or figures are inappropriate for a one page abstract.

3. The abstract must be checked by the seminar instructor before duplication at least one week in advance of the actual presentation. Students are expected to type, photocopy and distribute their own abstract. Abstracts can be submitted for photocopying, free of charge at the North Campus Duplicating Center (Kitson 2<sup>nd</sup> floor) with the appropriate form from the seminar instructor. A one day turn around time should be expected. Abstracts should be in the departmental mail boxes and posted in designated areas (see list below) on the Thursday preceding the seminar presentation. Seminar notices and abstracts should not be posted on the outside of doors, hallway walls or any location not designated for such announcements.

Locations for posting notices and abstracts:

Bulletin board in Chemistry Department office (O 520)

All Chemistry faculty mailboxes

Door of room O 518. Do not post notices on door of O 522.

Olney third floor bulletin board across from elevators

Olney fourth floor bulletin board across from elevators

Doors of O 314, O 313, O 309, E 114, E 105, E 117

Civil & Environmental Engineering office (Falmouth 108) bulletin board and mailboxes

Center for Complex Environmental Systems (CCES) in Olsen Hall

Biology Dept. Office in Olsen Hall

Environmental, Earth & Atmospheric Sciences office (O 301c)

bulletin board and mailboxes (in O 301c)

In graduate student mailboxes of those attending seminars (5<sup>th</sup> floor)

## C. Presentations

1. A typical seminar should be planned to take 40 to 45 minutes followed by a 10 to 15 minute discussion period. Shorter presentations will probably receive more critical reviews and will result in awkward silences and embarrassment for the speaker. Excessively long seminars tend to lose the interest of the audience especially those who have classes or appointments immediately following. Long winded speakers can find themselves finishing their seminars with a much smaller group of bored and disinterested listeners who are reluctant to ask questions for fear of prolonging the agony.
2. It is assumed that the speaker will have a reasonable knowledge of every concept introduced during the talk. One must know vastly more material than can be presented in 45 minutes if a successful discussion period is to follow.
3. Do not read or memorize your talk. Speak clearly and loud enough for the audience to hear. Do not speak to the chalkboard or the projection screen.
4. Visual aids (slides, transparencies or PowerPoint presentations) are required, and should be prepared by the student well in advance of the seminar date. The quality of the visual aids is a direct reflection of the quality of your work and of your level of preparedness.
5. Avoid the use of slang; these presentations should be considered formal expositions.
6. Define thoroughly any and all abbreviations. Use of jargon or acronyms that are not clearly defined will also detract from the clarity of the talk.
7. It is a good idea to practice your seminar first by yourself, then with a "friendly" group (e.g. spouse, children, friends, dog, cat) and finally before a live, critical audience (e.g. labmates, fellow graduate students).

#### D. Grading

1. Evaluation sheets may be distributed at student seminars. All students are expected to provide constructive criticism of the seminars.
2. A passing or failing grade will be assigned by the faculty member in charge of the seminar. The student is encouraged to make an appointment after the seminar to review the seminar evaluations and to discuss strengths and weaknesses of the presentation.
3. Unsatisfactory performance in giving a seminar will result in the student being required to repeat the presentation at the earliest reasonable date. If the next available date is in the next semester, the student will receive a grade of incomplete until the requirement is satisfied.
4. Failure to give a seminar on the scheduled day may result in a failing grade.

## Spectroscopic Studies of Al(III) Ion Binding by Humic

### Material:

## Fluorescence Enhancement and Aluminum-27 NMR

Dr. David K. Ryan  
Department of Chemistry  
University of Massachusetts Lowell

Metal ion complexation by organic compounds including naturally occurring macromolecules such as humic and fulvic acids can be studied by a variety of spectroscopic techniques. We have employed Al-NMR, synchronous fluorescence, total luminescence, fluorescence quenching and fluorescence enhancement experiments to investigate an Al(III)-fulvate system over a wide range of Al and fulvic acid concentrations in a narrow pH range from 3.0 to 4.0.<sup>1-3</sup> Fluorescence data reveals behavior quite different from the quenching observed for paramagnetic metal ions.<sup>4</sup> Quantitative modeling of this behavior has been performed and will be discussed in detail. A two site binding model gives predictive curves that fit the experimental data and provide reasonable estimates of binding constants and ligand concentrations.

1. Hays, MD, Ryan, DK, and Pennell, S. *Appl. Spectros.* 2003; 57: 454-460.
2. Ryan, DK, Shia, CP and O'Conner, DV. In: JJ Gaffney, NA Marley and SB Clark eds. *Humic and Fulvic Acids: Isolation, Structure, and Environmental Role*. ACS Symposium Series 651, Washington, DC: American Chemical Society, 1996: 125-139.
3. Shotyk, W and Sposito, G. *Soil Sci. Soc. Am. J.* 1988; 52: 1293.
4. Cabaniss, SE. *Environ. Sci. Technol.* 1992; 26: 1133.

12:30 PM  
Wednesday  
September 12, 2007  
Olney 518

Pizza and soft drinks will be served at 12:00 noon