

CH-816 Separations Science

Department of Chemistry, Clemson University, Clemson, SC. Fall 2007

<u>Instructor:</u>	Professor R. Kenneth Marcus, Biosystems Research Complex room 106 Email: marcusr@clemson.edu. Phone; 656-5011
<u>Textbooks:</u>	1. "Basic HPLC and CE of Biomolecules" R. L. Cunico, K. M. Gooding, T. Wehr, Bay Bioanalytical Laboratory, Richmond, CA, 1998 2. "Unified Separations Science" J. Calvin Giddings. John Wiley & Sons Inc., New York, 1991. (if found in print)
<u>Schedule:</u>	Class meetings on Wednesday 4:00-6:30 pm, in Hunter room 158.
<u>Office Hours:</u>	By arrangement.

Topics to be covered:

Introduction to separations science. Equilibria and separations; separative and bulk transport; zone formation and resolution. Classification of separations methods. Liquid chromatography, including hardware, packings, and modes of separation. Gas chromatography. Optimization in chromatography. Electrophoretic separations. Two-dimensional separations.

Grading.

Grades will be determined by two written exams, a written report to be prepared on a topic of the student's choosing near the end of the semester, and a short final exam.

Midterm exam	40 percent
Written report	15 percent
Presentation	10 percent
Final exam	35 percent

The midterm exam will be administered as take-home exam. It will cover topics from the lecture and the reading. The report will be on a topic determined by a draw from a hat and the presentation will be on the same topic. The final exam will cover only the material since the midterm exam, and it will be required.

A brief bibliography of separations books:

Books I expect to draw most of my lecture material from;

"Unified Separations Science" J. Calvin Giddings. John Wiley & Sons Inc., New York, 1991.

"Basic HPLC and CE of Biomolecules" R. L. Cunico, K. M. Gooding, T. Wehr, Bay Bioanalytical Laboratory, Richmond, CA, 1998.

"HPLC Columns: Theory, Technology, and Practice" Uwe D. Neue. Wiley-VCH Inc., New York, 1997.

More books I may draw lecture material from, and are in the library;

"Practical HPLC Method Development" L. R. Snyder, J. J. Kirkland, J. L. Glajch. John Wiley & Sons, New York: 1997. QP519.9.H53 S69 1997

"Modern Practice of Gas Chromatography" R. L. Grob, Editor. Wiley, New York, 1995. QD79.C45 M63 1995

"Capillary Electrophoresis" D. R. Baker, John Wiley & Sons, New York, 1995. QP519.9C36B25 1995

Links to some good separations-related web sites:

Chemical Separations; an online short course developed by James Hardy at the University of Akron, and supported by Supeleco
<http://ull.chemistry.uakron.edu/chemsep/index.html>

Western Carolinas Chromatography Discussion Group; a collection of links of interest to chromatographers.
<http://members.aol.com/chromgroup/links.htm>

Chromatography Forum; a place to post questions and get answers to chromatography-related questions.
<http://www.chromforum.com/>

