

Course Announcement

Autumn 2018 (Term 2): New Carbonyl Chemistry

Chemistry 8499: Advanced Topics in Organic Chemistry. New Carbonyl Chemistry

Instructor: T. V. (Babu) RajanBabu

Time and location: Oct 15 - Dec 05 (TENTATIVE) * MWF 4:10-5:05 Room 1040 McPherson Lab

Course Number: 34195

This course will build on the carbonyl chemistry covered in earlier courses (structure of carbonyl compounds, enols, enolates and equivalents, and their reactivities) with an emphasis on how the carbonyl group can be used for highly selective C-C and C-X bond formations (e. g., via nucleophilic additions to carbonyls or via enolate additions to electrophiles). Imine and iminium ion chemistry, catalytic (Lewis acid-, transition metal- and organ-catalytic) activation for selectivity, new photochemistry of carbonyl compounds (photo-redox and SOMO catalysis), radical chemistry of carbonyl groups, applications in polyketide and related natural products.

I expect this to be a fast-paced, seminar-type course where the students will be required to read extensively from original literature, in addition to background material.

The grade for the course will be decided based a term paper and a final examination.

Prerequisites Completion of Chem 6410, 6430, 6440 or permission from instructor.

Suggested Texts and Study Aids

1. Advanced Organic Chemistry, 5th Ed. Parts A and B, Carey, F. A.; Sundberg, R. J., Kluwer Academic: New York, 2007. ISBN-13 978-0-387-683-1 (soft cover).
2. Organic Synthesis, Strategy and Control, Wyatt, P.; Warren, S. Wiley: Chichester (2007) ISBN 978-0-471-92963-5 (paperback).
3. Classics in Stereoselective Synthesis, Carreira, E. M. and Kvaerno, L Wiley-VCH, 2009 ISBN 978-3- 527-29966-9 (softcover).
4. Catalytic Asymmetric Synthesis, 3rd Ed., I. Ojima, Ed.; Wiley-VCH: New York; 2010. ISBN 978-0-470-17577-4 (cloth).
5. Fundamentals of Asymmetric Catalysis, Walsh, P. J.; Kozłowski, M. C.; University Science Books, Sausalito, CA, 2009. ISBN 978-1-891389-54-2 (softcover).

Original articles to be distributed in class

A set of good molecular models

References

1. Modern carbonyl chemistry, J. Otera, Ed., Weinheim: New York (2007) ISBN 9783527298716.
2. Comprehensive Organic Synthesis, 2nd Edition, Molander, G. A.; Knochel, P., Eds.; Elsevier: Oxford, 2014. (Electronic version available at OSU library website).
3. Comprehensive Chirality; Carreira, E. M.; Yamamoto, H., Eds.; Elsevier: London, 2012. (Electronic Versions available through OSU Library).

* If there are serious conflicts with teaching or other classes, we may be able to find a suitable time outside the currently prescribed period since this class is likely to have only a small enrolment.