

Synopsis of Experiments # 1-5 and Report Due Dates

Chemistry 2312
Honors Organic Chemistry Laboratory

Tuesday, September 3, 2024
T. R. Hoye

Course Outline: Experiments # 1-5.

1. Ketone Reduction by Sodium Borohydride:
3-Nitroacetophenone to 1-(3-Nitrophenyl)-1-ethanol and 9H-Fluoren-9-one to 9H-Fluoren-9-ol
2. Ozonolysis and Hydrogenation of Naturally Occurring Alkenes (Terpenes):
Nopinone from β -Pinene and Menthone from Pulegone
3. Reactions of Carboxylic Acid Derivatives:
Enolate Alkylation, Ester Hydrolysis, and DCC-Coupling with (R)-1-(1-naphthyl)ethylamine
4. Catalysis: *Palladium(0) Coupling of an Alkyne with an Aryl Halide, Enzymatic Kinetic Resolution of a Chiral Alcohol, and Mosher Ester Analysis of Absolute Configuration*
5. Diels-Alder Cycloaddition Reaction,* Photochemical 2+2 Cycloaddition, and Diketone Reduction: **Preparation of a Starting Material for Synthesis of Otteliones A and B, Natural Antitumor Agents*

Points	Experiment 1	110 points
	Experiment 2	220 points
	Experiments 3–5	330 points each

Lab Report (all due **by lab closing time** in a collection box in the 491 Kolthoff lab)

Due Dates	Report 1.	Experiment 1	Thursday, September 19, 2024
	Report 2.	Experiment 2	Saturday, October 5, 2024
	Report 3.	Experiment 3 (or 4 or 5)	Saturday, October 26, 2024
	Report 4.	Experiment 4 (or 5 or 3)	Saturday, November 16, 2024
	Report 5.	Experiment 5 (or 3 or 4)	Wednesday, December 11, 2024 (last day of classes/instruction)

Late Report Penalty A 10% penalty will be assessed for a late report; the report **MUST** be turned in no later than one week after its due date; one submission only – **No Exceptions.**

Interim Benchmarks (5 points for each one, added to that Report's grade):

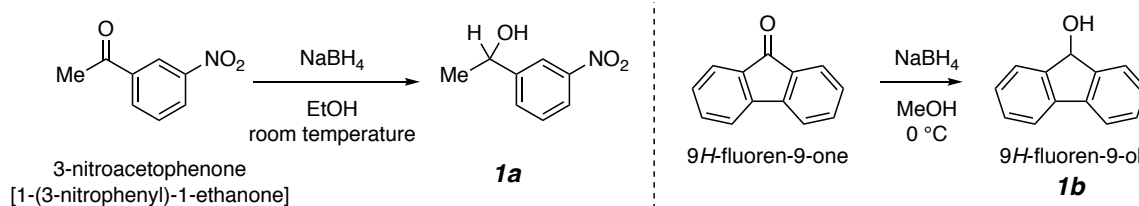
A ¹H NMR spectrum (.mnova file) uploaded to a Google Form by the following dates:

Report 1.	Expt. 1	Sat., September 14, 2024	1a or 1b
Report 2.	Expt. 2	Sat., September 28, 2024	3 or 5-cis
Report 3.	Expt. 3 (or 4 or 5)	Sat., October 12 // 19, 2024	7 (or 12 or 17) // 8 (or 13 or 18-19)
Report 4.	Expt. 4 (or 5 or 3)	Sat., November 2 // 9, 2024	12 (or 17 or 7) // 13 (or 18-19 or 8)
Report 5.	Expt. 5 (or 3 or 4)	Sat., Nov. 23 // Dec. 7, 2024	17 (or 7 or 12) // 18-19 (or 8 or 13)

Graphical Synopsis of Experiments # 1-5

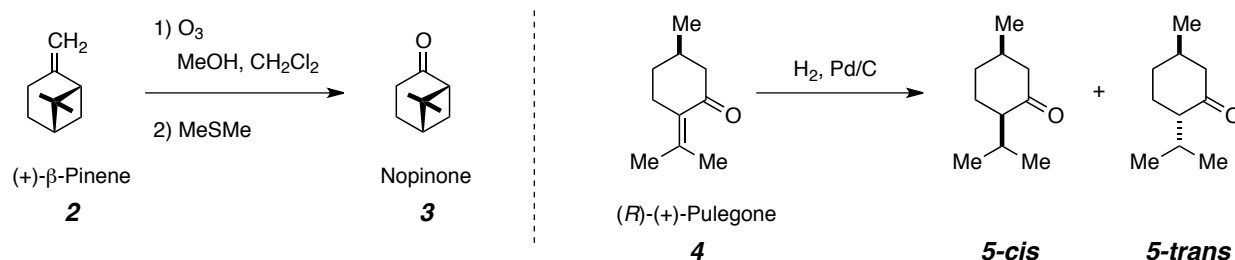
1. Ketone Reduction by Sodium Borohydride:

1-(3-Nitrophenyl)-1-ethanol (1a) and 9H-Fluoren-9-ol (1b)

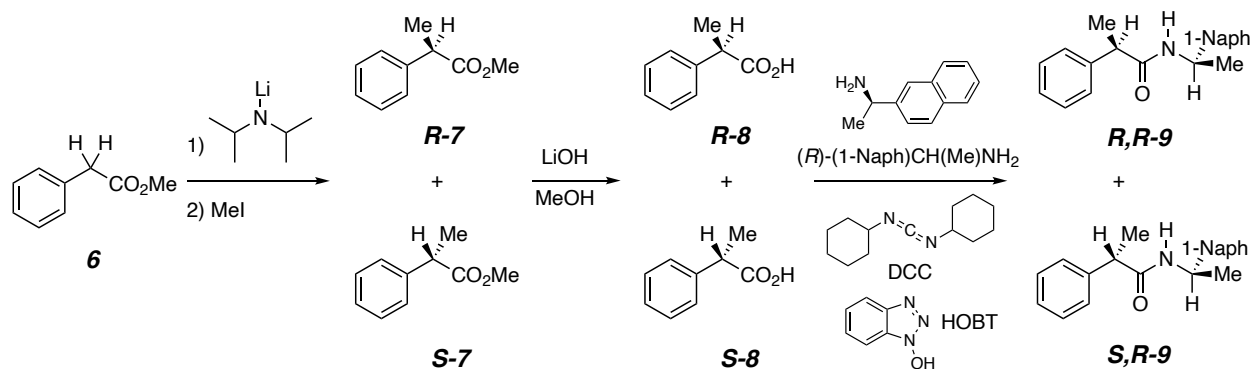


2. Ozonolysis and Hydrogenation of Naturally Occurring Alkenes (Terpenes):

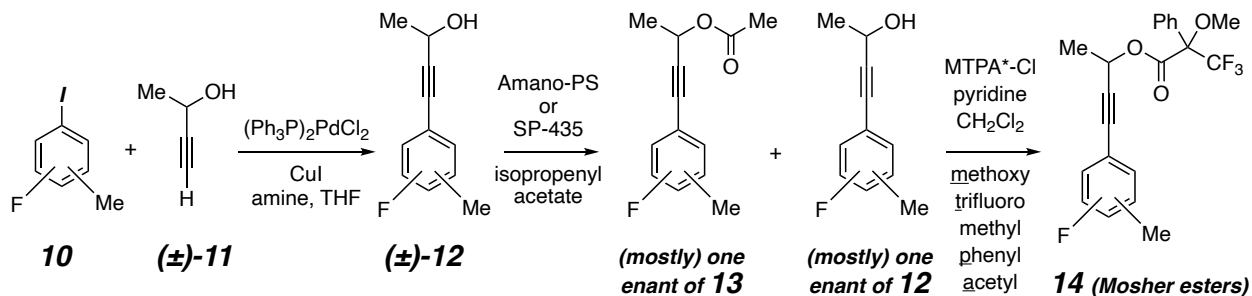
Nopinone (3) from β-Pinene (2) and Menthone Diastereomers (5) from Pulegone (4)



3. Common Organic Chemistry Transformations: Enolate Alkylation, Ester Hydrolysis, and DCC-Coupling in the Preparation of Phenyl-N-(1-naphthylethyl)propanamide (9)



4. Catalysis: Palladium Coupling of an Alkyne (11) with an Aryl Iodide (10), Enzymatic Kinetic Resolution of a Chiral Alcohol (12 to 13), and Mosher Ester Analysis of Absolute Configuration



5. Cycloadditions: Diels-Alder, Photochemical 2+2, (and Diketone Reduction)

