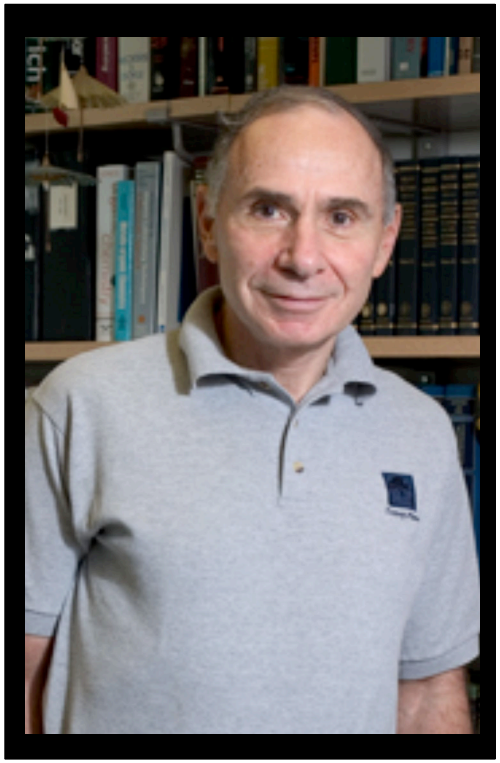
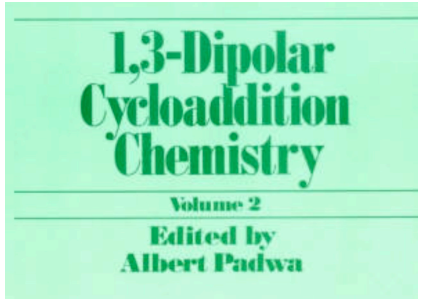
The Chemistry of Albert Padwa

Paul Krawczuk



Albert Padwa Ph.D.



Born on October 3, 1937 in New York City
-Brief Biography: http://www.arkat-usa.org/get-file/18783/

Education:
-Columbia University, B.A. 1959
-Columbia University, Ph.D. 1962
-University of Wisconsin, Postdoc 1962-1963

Academic Appointments:
-Assistant Professor of Chemistry - Ohio State University 1963-1966
-Associate Professor of Chemistry - SUNY at Buffalo, 1966-1969
-Professor of Chemistry - State University of New York at Buffalo, 1969-1979
-William P. Timmie Professor of Chemistry, Emory University, Atlanta, Ga., 1979-present

-Recipient of Many Awards (http://euch6f.chem.emory.edu/padwa.html)

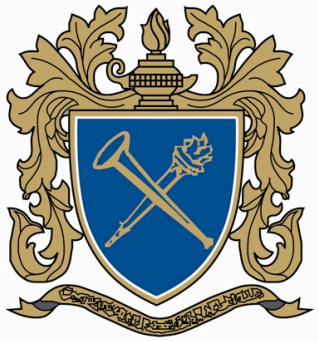
-Mentored around 200 Graduate Students and Postdocs

-Aproximately 820 publications including 130 reviews and book chapters

-Editorial Boards of JACS, JOC, Org. Lett. among others

-Avid Mountain Climber and Runner

Research Interests Broadly Summarized:
-Tandem Cascade Chemistry
-1,3-Dipolar Cycloaddition Chemistry
-Pummerer Induced Processes
-Amino Furan Cycloadditions
-Synthetic Organic Photochemistry
-Heterocycle Synthesis
-Alkaloid Synthesis



The Chemistry of Albert Padwa

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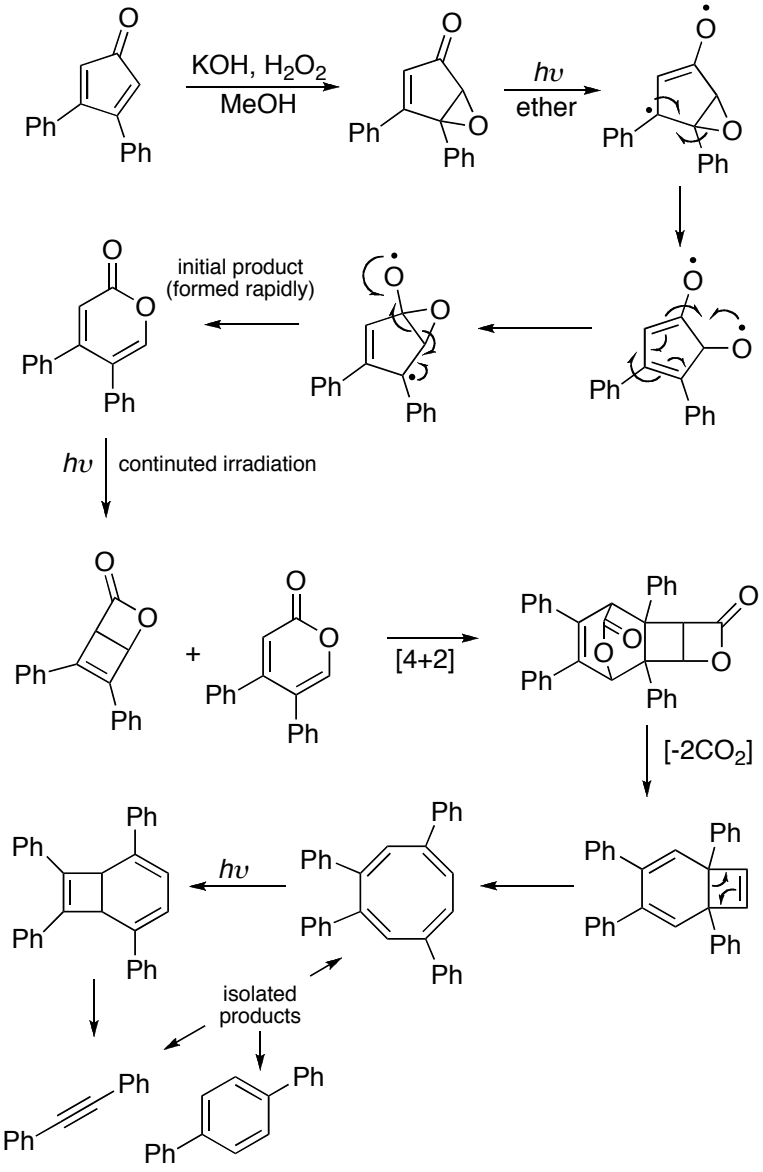
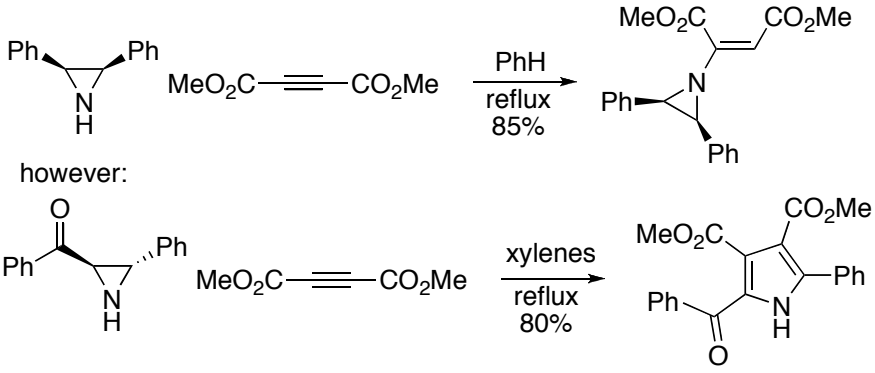
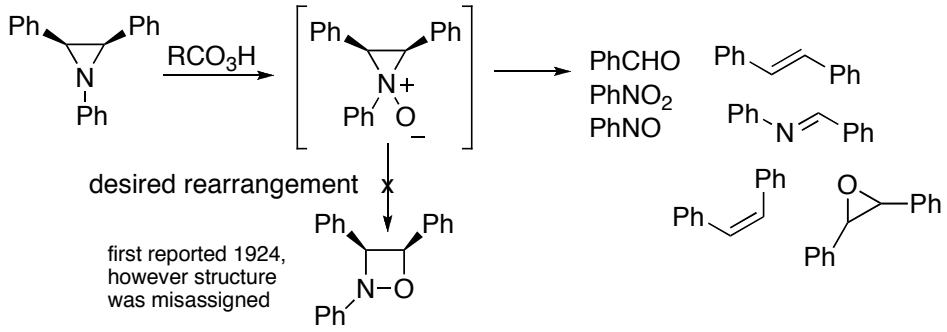
Mechanistic Photochemistry:
Tet. Lett. 1964, 15, 813-817.
JACS 1964, 86, 4212-4213.



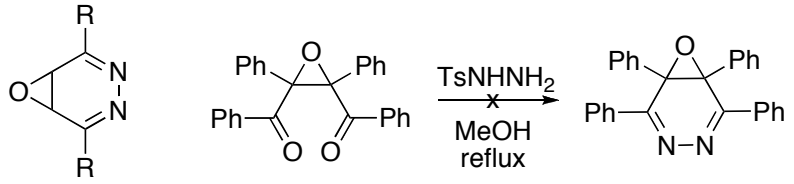
Reactions of Aziridines with DMAD:
Tet. Lett. 1965 48, 4363-4367.



Oxidation of Substituted Aziridines with Peracids:
JOC 1966, 88, 1995-1996.



Novel Rearrangements of *cis*-Dibenzoylstilbene Oxide with Hydrazines:
Tet. Lett. 1968, 3, 281-284.



first reported 1921,
however structure
was misassigned

continuted on next page...

The Chemistry of Albert Padwa

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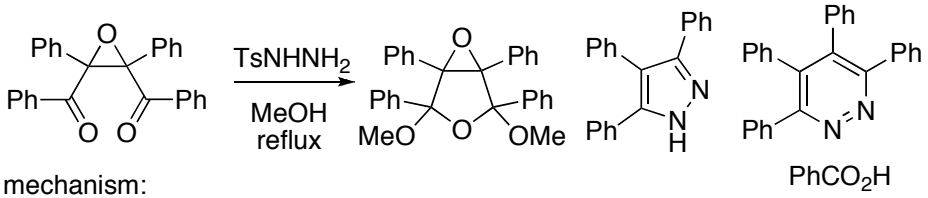
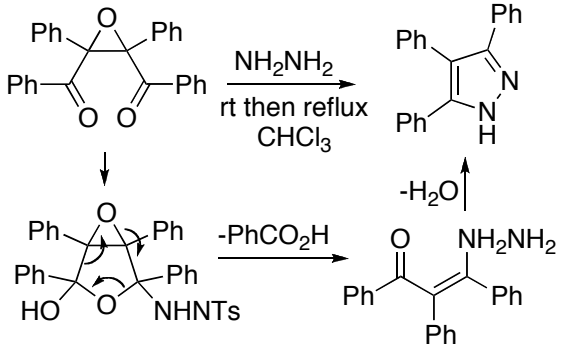
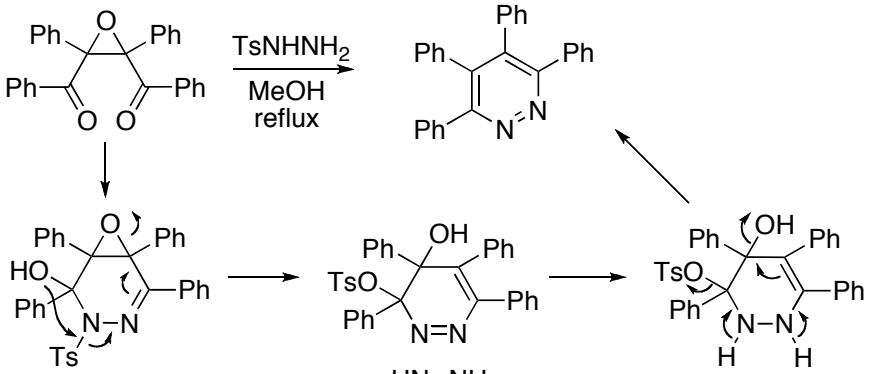
Novel Rearrangements of *cis*-Dibenzoylstilbene Oxide with Hydrazines:
Tet. Lett. 1968, 3, 281-284.



mechanism:

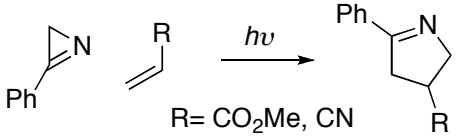


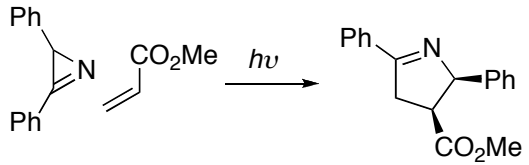
mechanism:



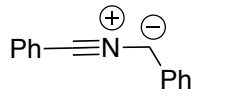
TsNHNH2 $\xrightarrow{\Delta}$ HN=NH
JACS 1961, 83, 3729

Photocycloadditon of Arylazirenes with Electron-Deficient Olefins:
JACS 1971, 93, 548-550.

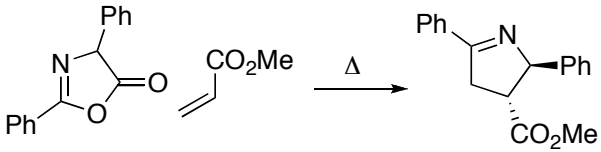




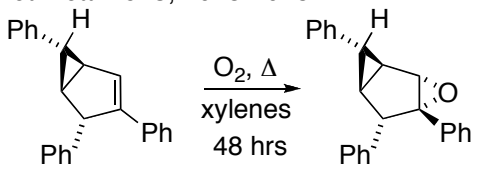
intermediate must be:



however:

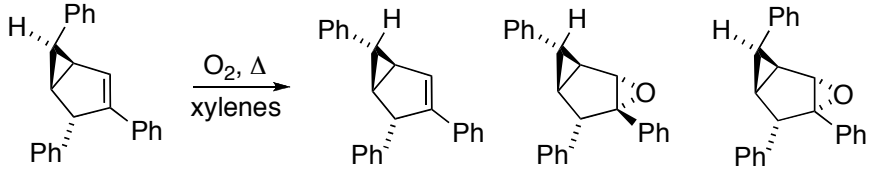


Novel Thermal Epoxidation of Bicyclo[3.1.0]hex-2-ene by O_2:
Tet. Lett. 1973, 1045-1048.

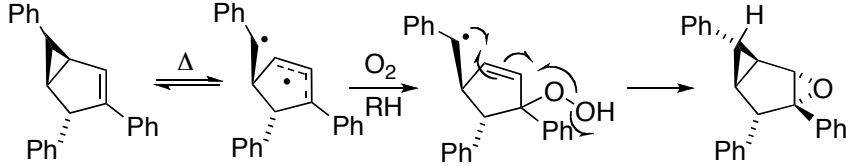


76% along with polymers

(no reaction in tetrachloroethylene)



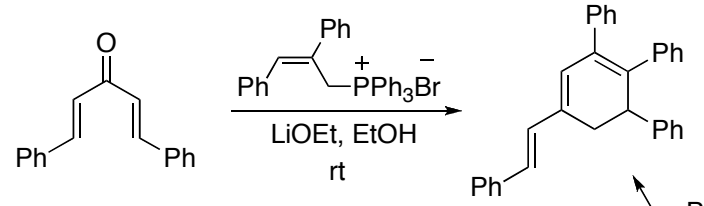
mechanism:



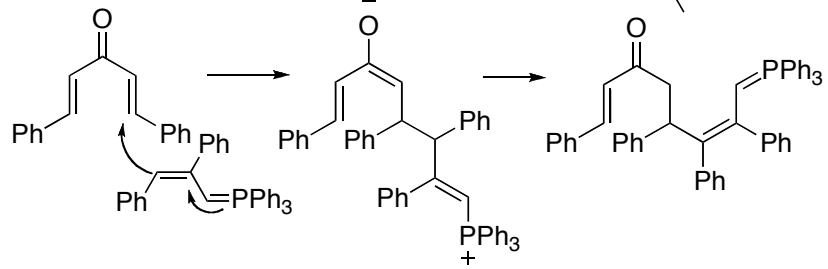
The Chemistry of Albert Padwa

Paul Krawczuk

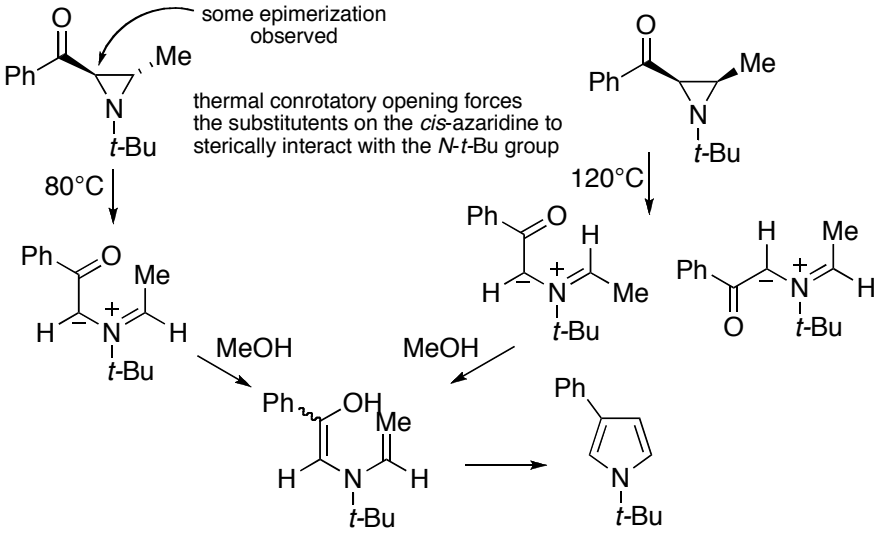
Utilization of the 1,4-Conjugated Wittig Reaction for the Synthesis of Substituted 1,3-cyclohexadienes:
JOC 1973, 39, 1318-1320.



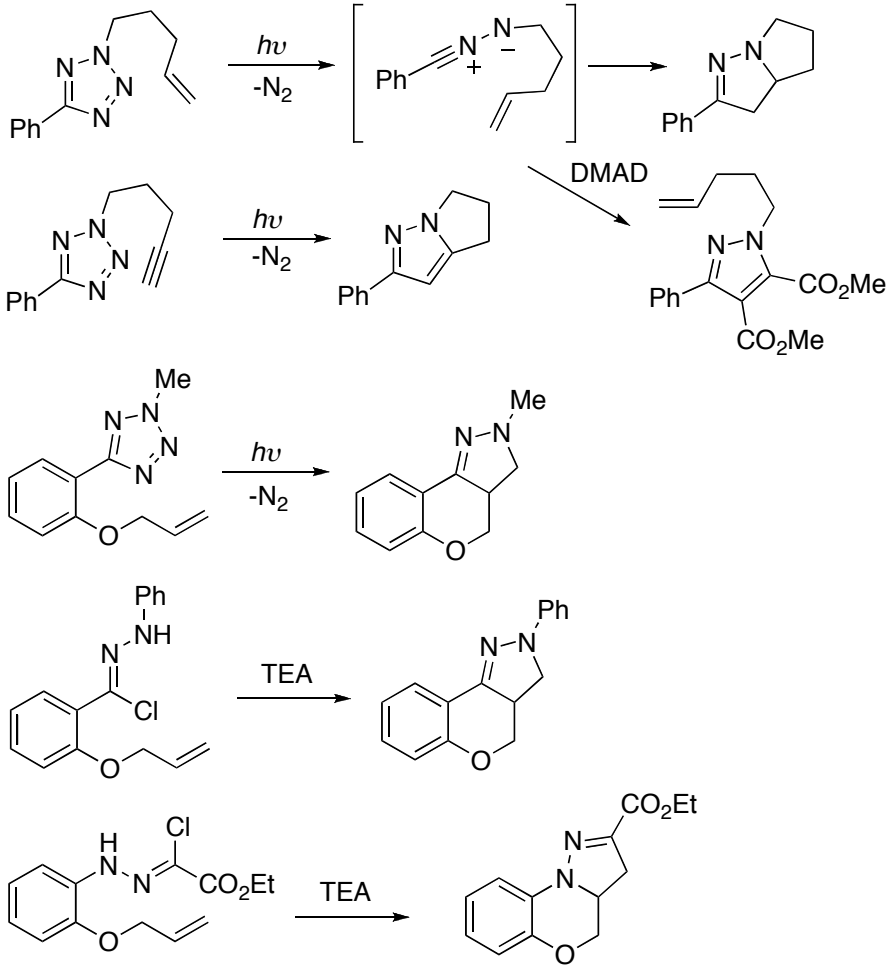
mechanism:



Rearrangement of Aziridinyl Ketones to Pyrroles:
JACS 1973, 95, 7168-7169.
JACS 1975, 97, 2822-2829.



Intramolecular 1,3-Dipolar Cycloaddition Reactions of Alkenyl-Sustituted Nitrile Imines:
JOC 1978, 43, 1664-1671.



The Chemistry of Albert Padwa

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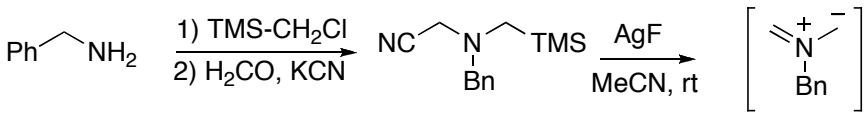
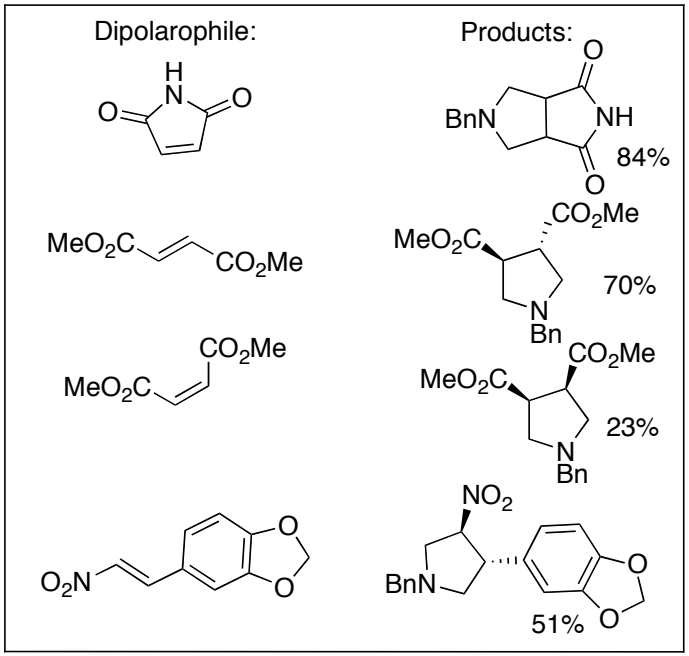
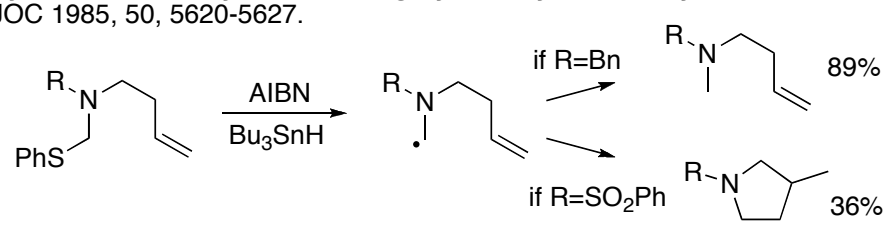
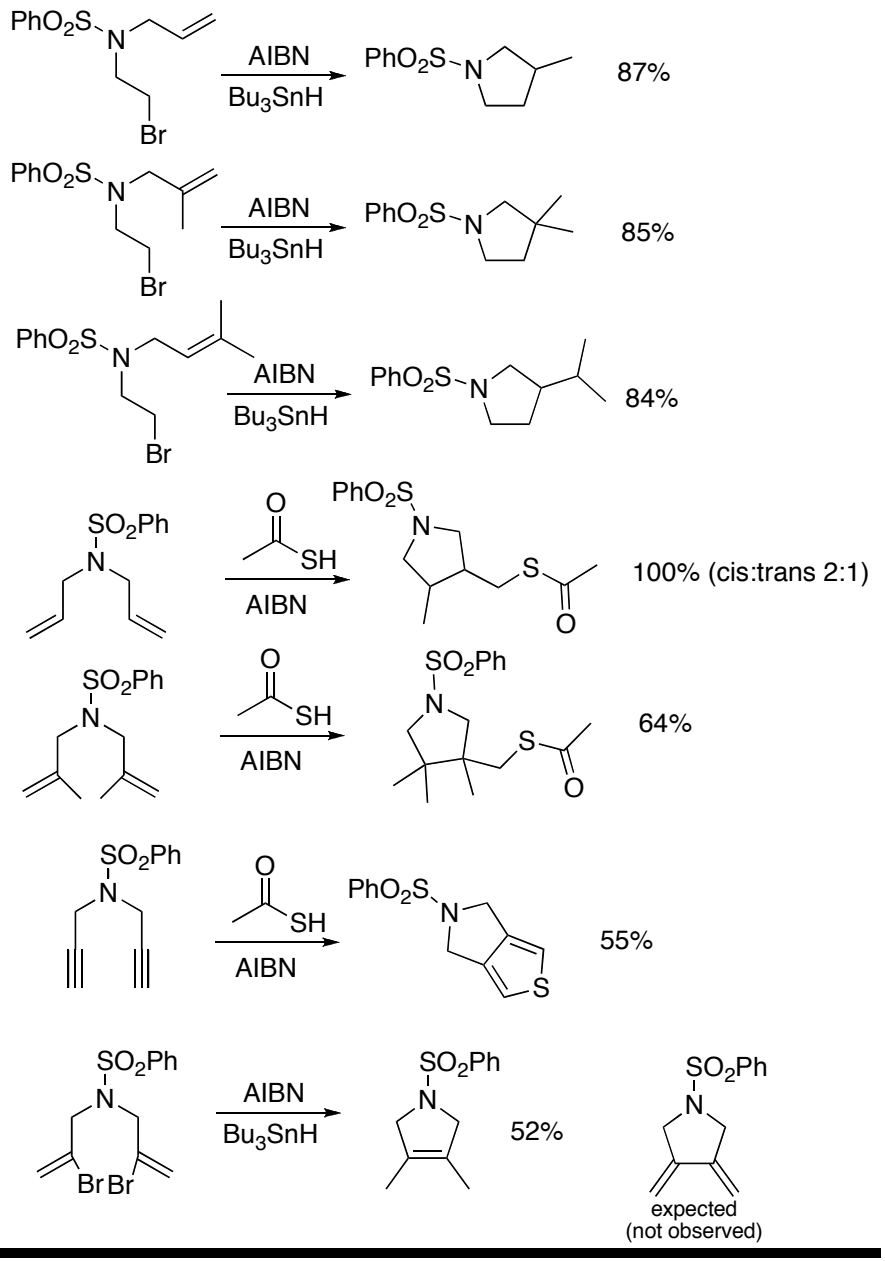
Syntheis of Pyrrolidines Using an α-Cyanoaminosilane as an Azomethine Ylide Equivalent:
Tet. Lett. 1983, 24, 3447-3450.





Synthesis of the Pyrrolidine Ring System by Radical Cyclization:
JOC 1985, 50, 5620-5627.



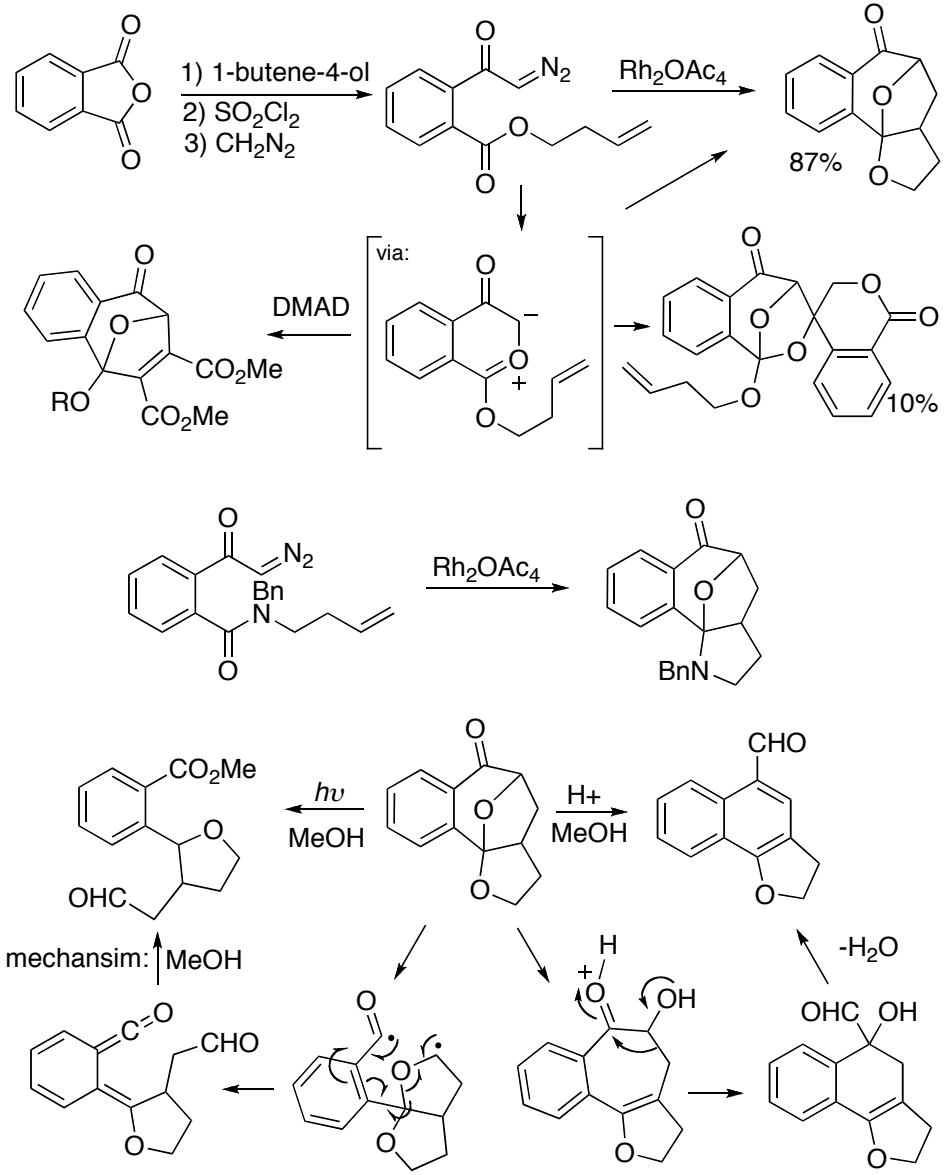


The Chemistry of Albert Padwa

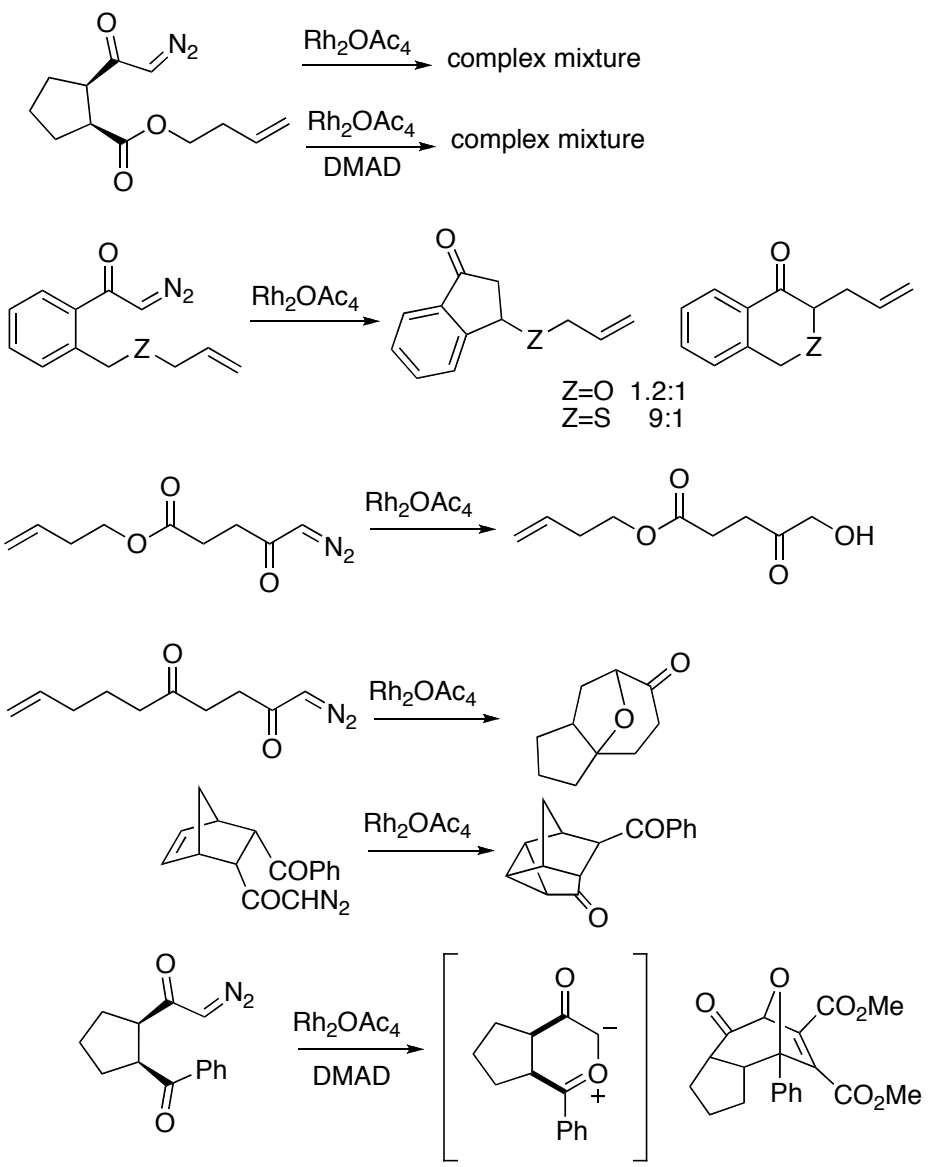
Paul Krawczuk

Rhodium Carbenoid Induced Tandem Cyclization-Cycloaddition Reactions of α-Diazoketones

JOC 1986, 51, 1157-1158.



JOC 1989, 54, 817-824.



The Chemistry of Albert Padwa

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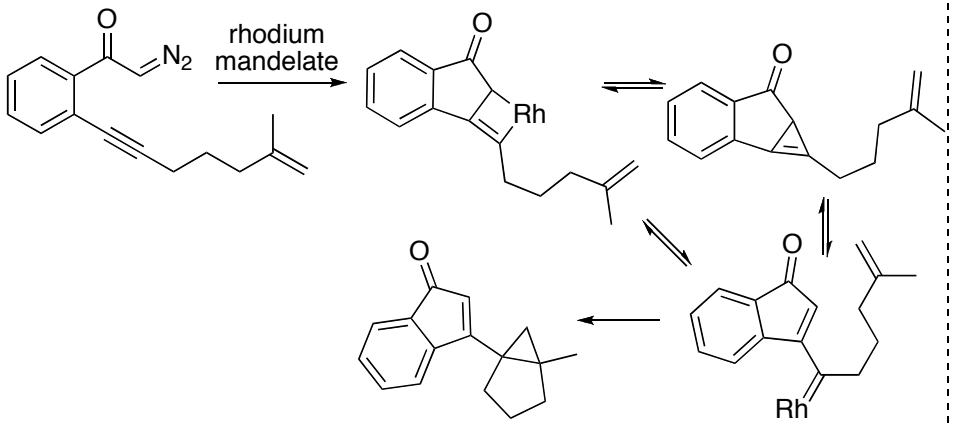
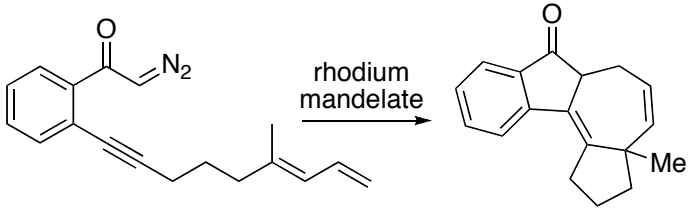
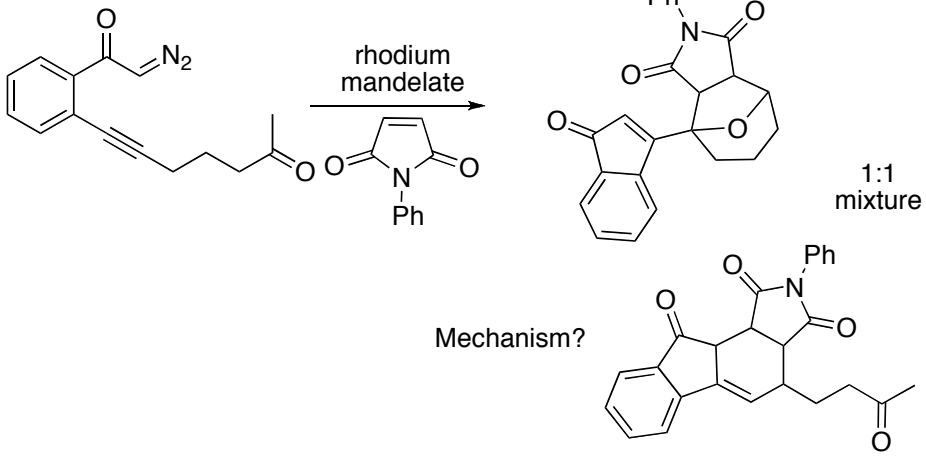
Rhodium(II)-Catalyzed Cyclization Reactions of Alkynyl-Substituted α-Diazo Ketones:
JOC 1991, 56, 2523-2530.

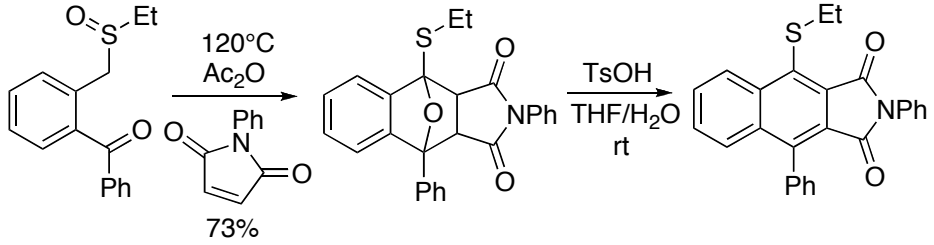


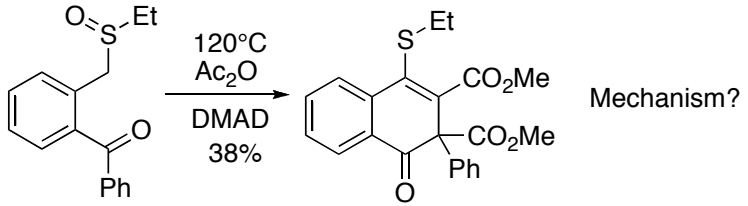


Mechanism?



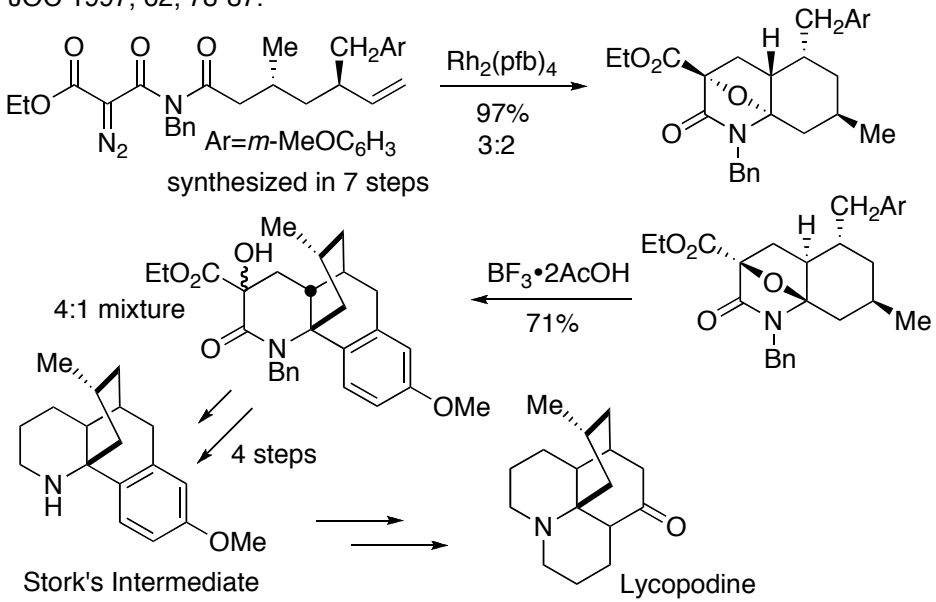
Tandem Pummerer Diels-Alder Sequence for the Preparation of α-Thio Substituted Naphthalene Derivatives:
Tet. Lett. 1995, 36, 3495-3498.





Mechanism?

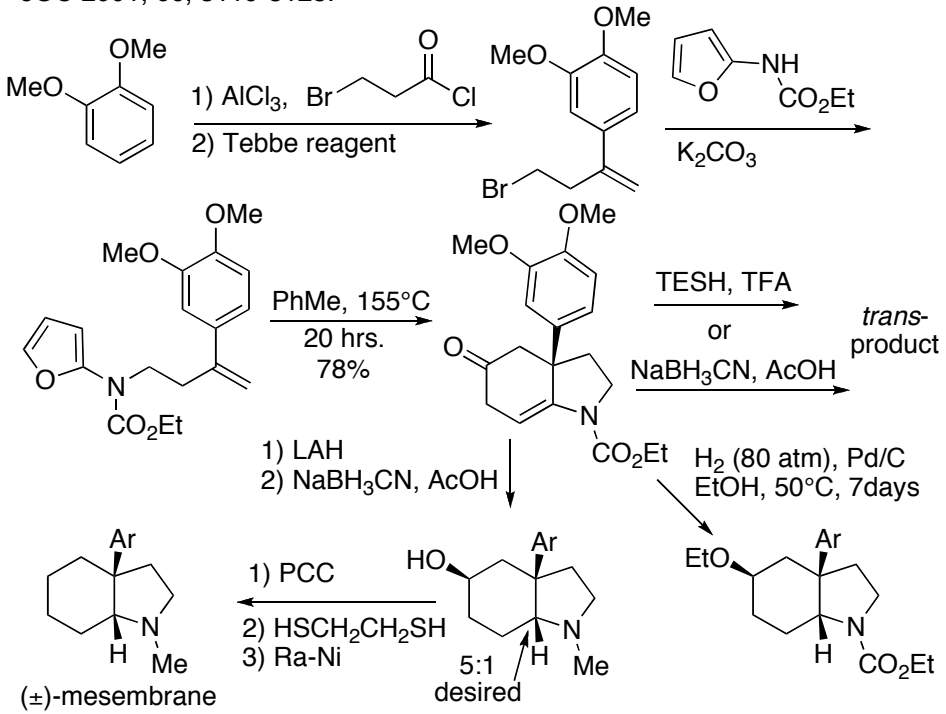
Utilization of the Intramolecular Cycloaddition-Cation π-Cyclization of an Isomüchnone Derivative for the Synthesis of Lycopodine:
JOC 1997, 62, 78-87.

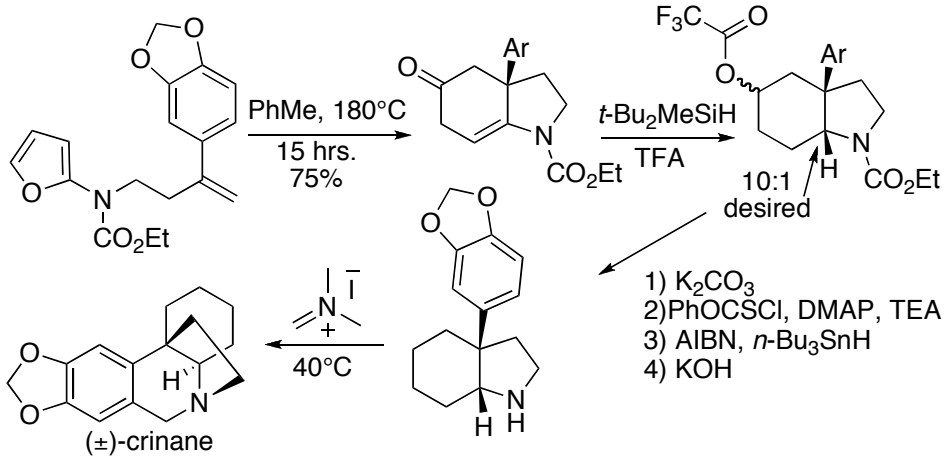


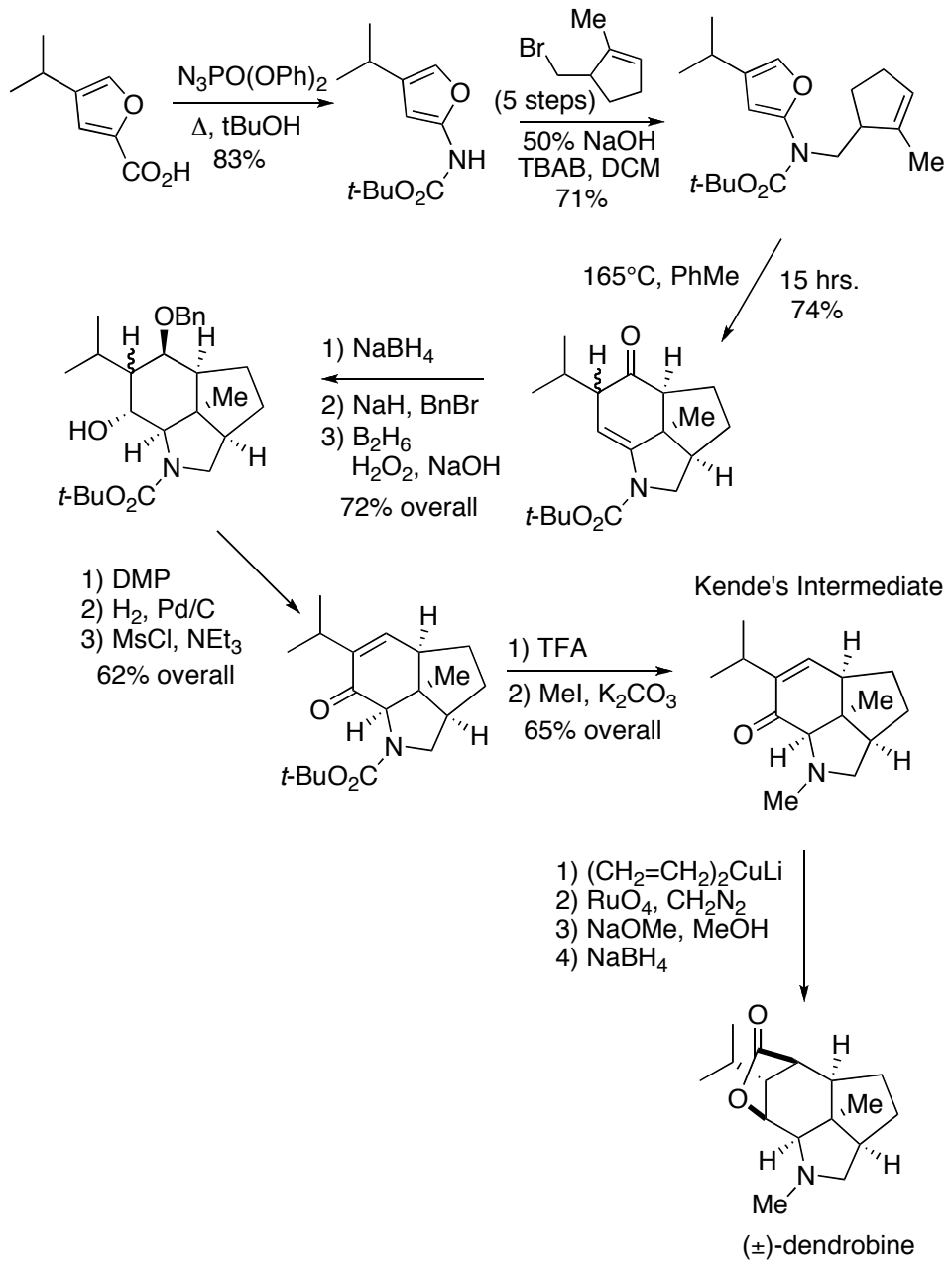
The Chemistry of Albert Padwa

Paul Krawczuk

Application of Furanyl Carbamate Cycloadditions Toward the Synthesis of Hexahydroindoline Alkaloids:
JOC 2001, 66, 3119-3128.







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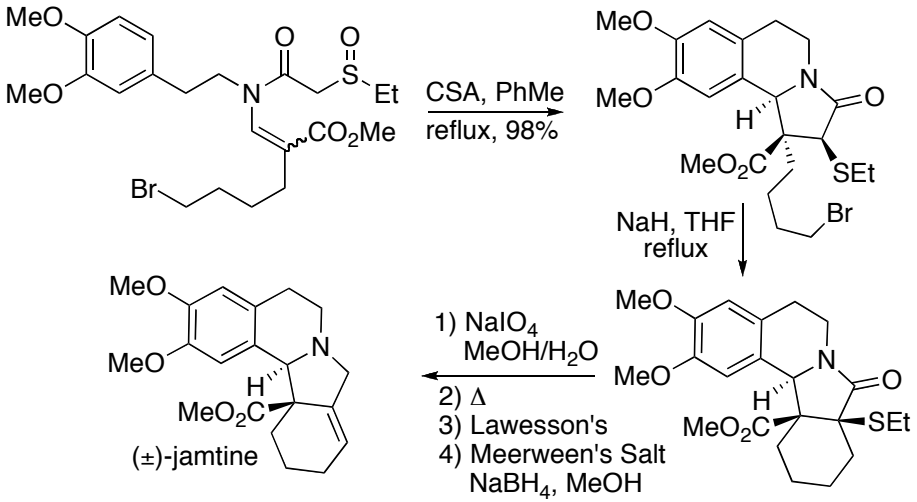
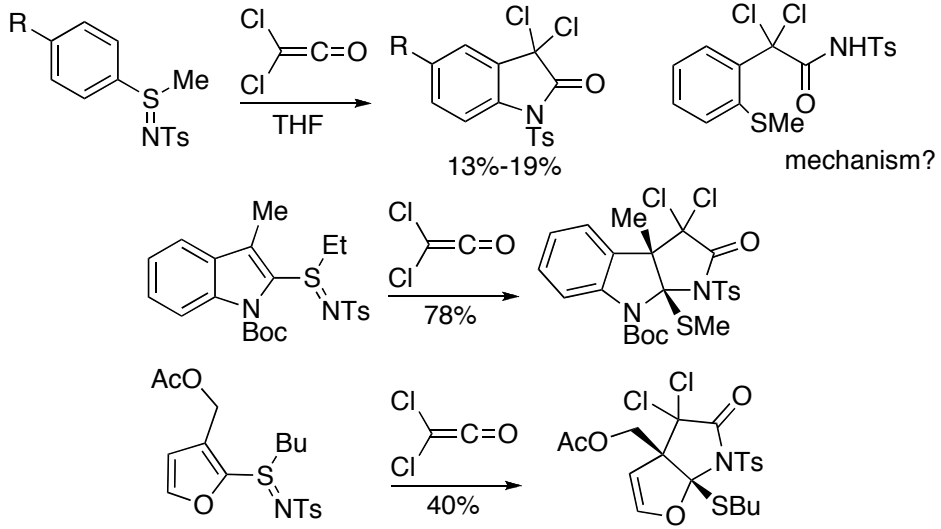
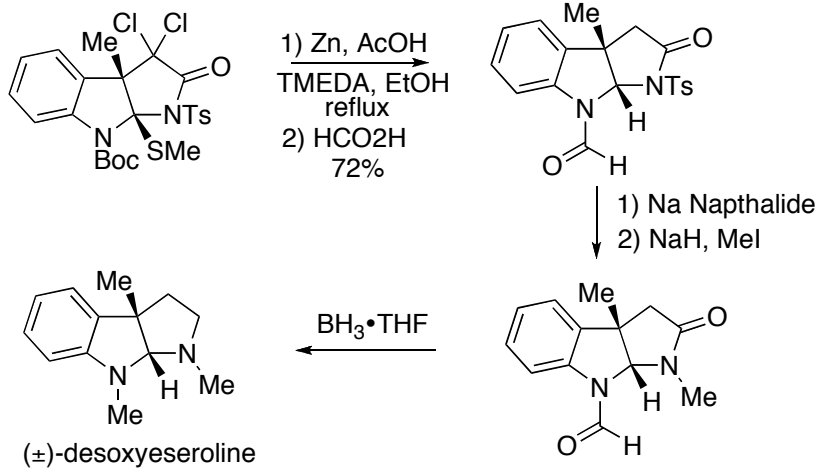
Total Synthesis of (±)-Jamtine Using a Thionium/N-Acyliminium Ion Cascade:
Org. Lett. 2002, 4, 715-717.

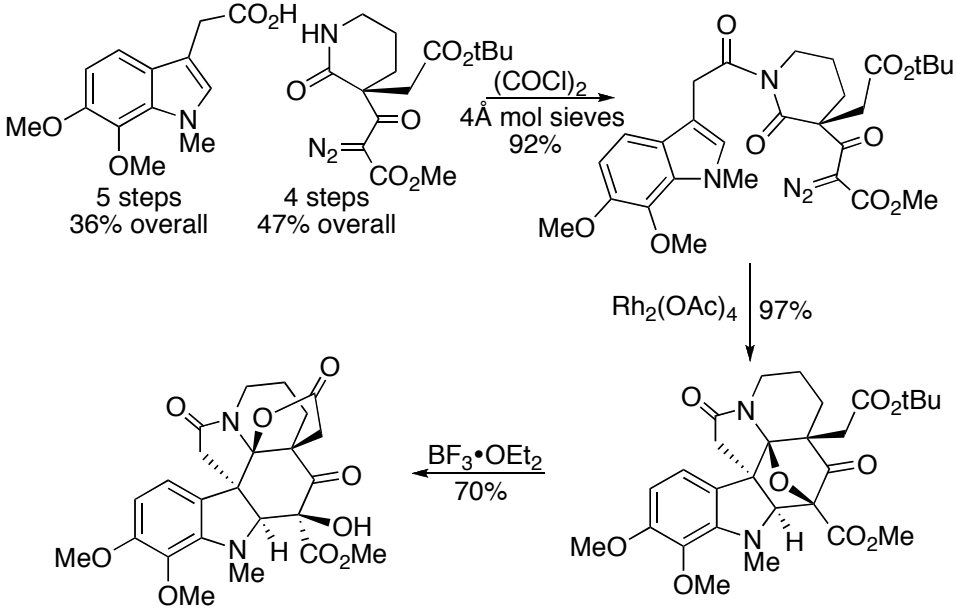


Dichloroketene-Induced Cyclizations of Vinyl Sulfiminies: Applications of the Method in the Synthesis of (±)-Desoxyeseroline:
JOC 2005, 70, 8538-8549.





Application of the Rh(II) Cyclization/Cycloaddition Cascade for the Total Synthesis of (±)-Aspidophytine:
Org. Lett. 2006, 8, 3275-3278.



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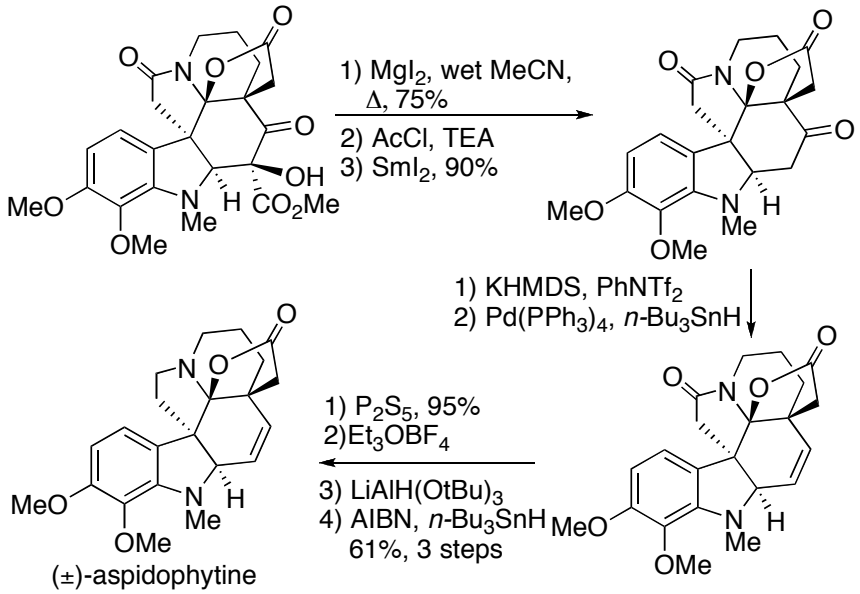
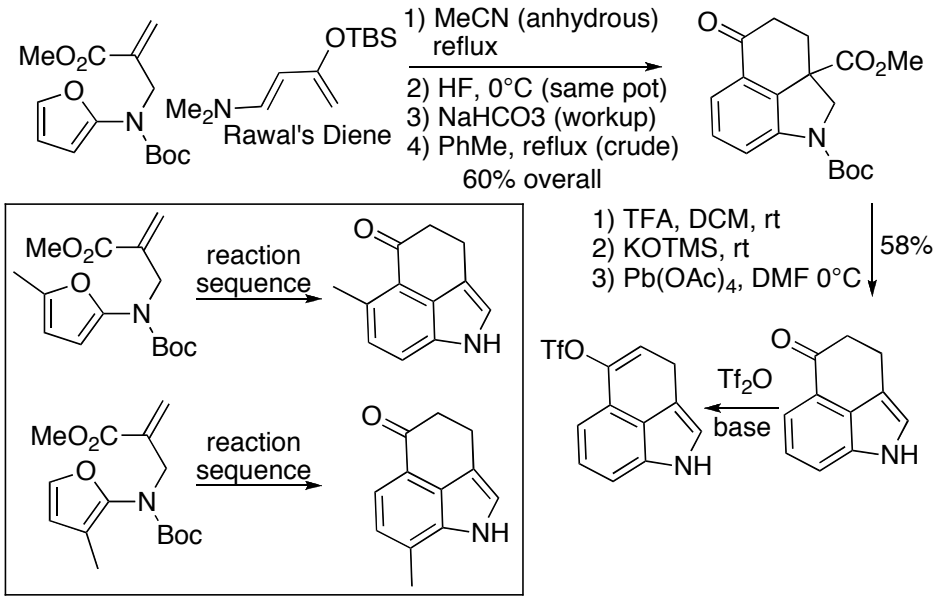
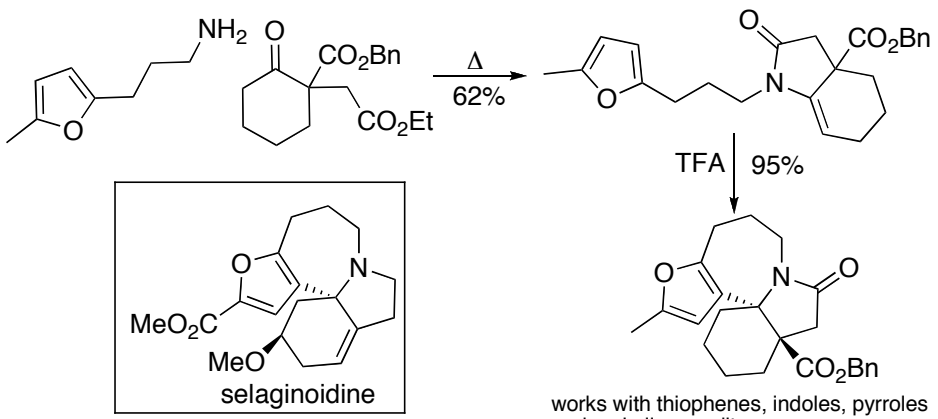


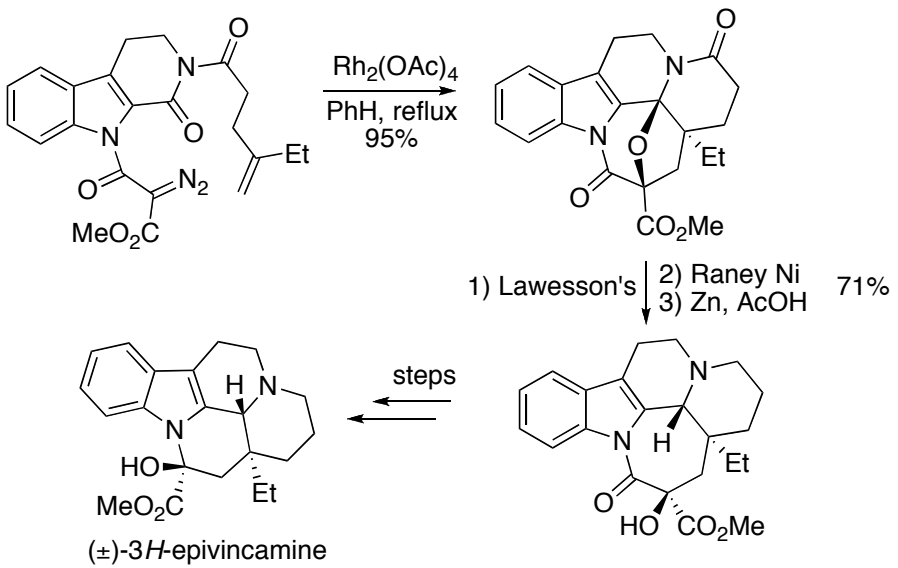
Sequential Aminodiene Diels-Alder Approach to the Ergoline Skeleton:
JOC 2005, 70, 6833-6841.



Acid Promoted Cyclization Reactons of Tetrahydroindolinones. Model Studies for Possible Application in a Synthesis of Selaginoidine:
JOC 2007, 72, 538-549.



General Access to the Vinca and Tacaman Alkaloids Using a Rh(II)-Catalyzed Cyclization/Cycloaddition Cascade:
JOC 2008, 73, 2792-2802.

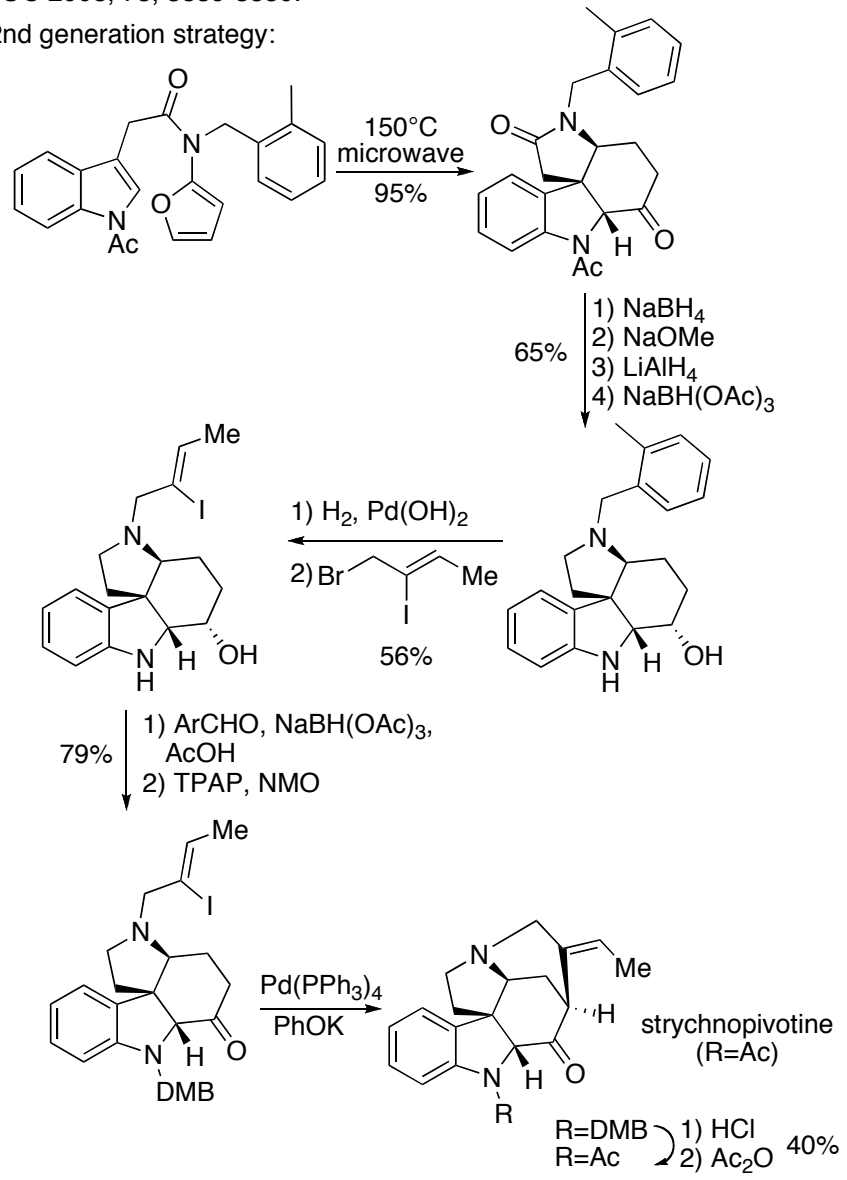
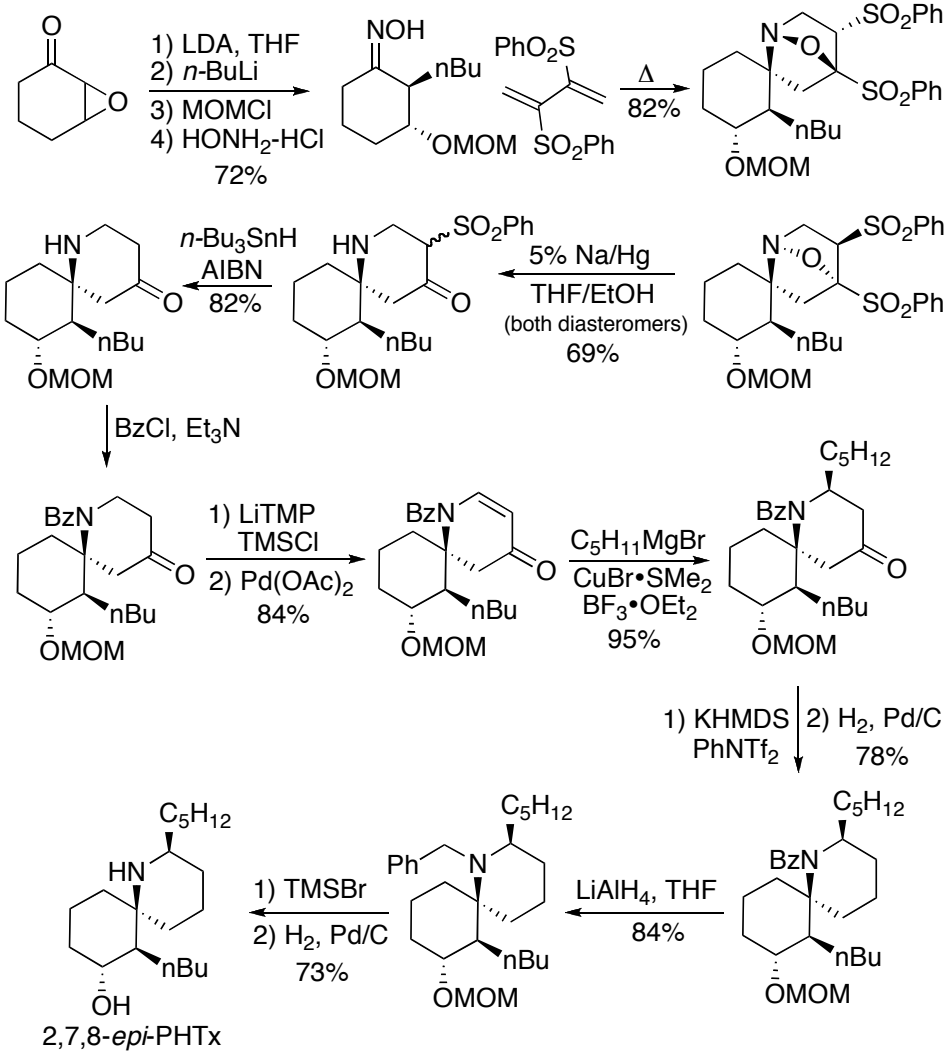


The Chemistry of Albert Padwa

Paul Krawczuk

A General Synthetic Entry to the Pentacyclic Strychnos Alkaloid Family, Using a [4+2]-Cycloaddition/Rearrangement Cascade Sequence:
JOC 2008, 73, 3539-3550.

2nd generation strategy:



A Steroselective Approach to the Azaspiro[5.5]undecane Ring System Using a Conjugate Addition/Dipolar Cycloaddition Cascade:
JOC 2008, 73, 9601-9609.