Sarpong 组会题选

214 道

选题 By　行秋-Official

（QQ：3073406466）

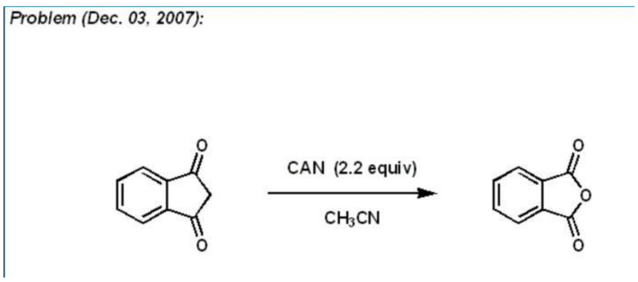
前　言

这些题又不是我出的，称之为“前言”或许也有点怪。只能算是这个选题集的一些说明吧。

我能找到的 sarpong 组会题只有一个压缩包中零散的图片，而没有什么 pdf 之类的东西。其实有人也做过合集，但他没做答案，而且也只是简单地复制粘贴了过来，没有进行什么删减。寒假的时候我正好打算做一做这些题目，于是就有了整理出这个合集的想法。

Sarpong 组会题整体难度是略低于福山 c 组的，但也参差不齐。以下几点是我整理过程中做的一些改动：

1. 我的“宗旨”是，要让一个大致写完了福山 c 组题的人在写这些题的时候有较好的体验。于是我删去了那些太屑以至于完全不可做的题。比如下面这个。我删掉的题大多数是接近这种难度的。



2. 以及那些过于简单（早期的），难度还不如福山 B 组的题。原来 270 道左右的题目，在这个合集里选了 214 道。

3. 有打错，画错之类的问题，我进行了改正。这种问题还不算多。

4. 在有必要给提示的地方我给了提示，一些有必要写上的加料顺序会补上，当然是查过原文献的。有些需要改动之处可能暂时没加上，后续应该会继续修改，不过这样的地方基本很少。

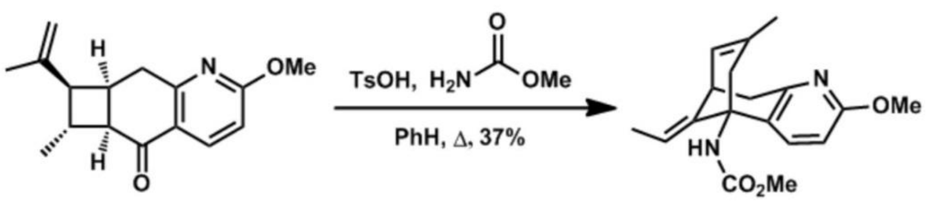
5. 关于“序号”，这些序号是我自己加上去的，由于技术力太屑，题目合集和答案合集里的题号可能对不上，不过相差应该在 5 以内，如果你对答案的时候对不上，就前后稍微翻翻。因此比较推荐把题目和答案分别都打印下来，方便对照。这里虽然是 214 道题目，但序号似乎只到 212。排版可能也不太好，请谅解。

该说的就说到这里了，祝做题愉快。　　行秋-Official

1

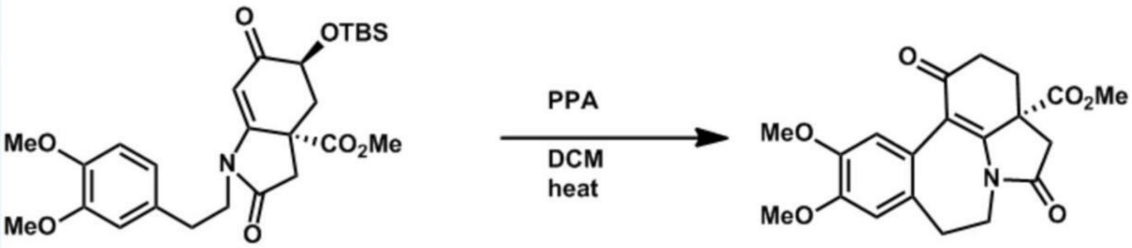
White, J. D.; Li, Y.; Kim, J.; Terinek, M. *Org. Lett.* **2013,** *13,* 882-885.

Solution (February 25, 2013):



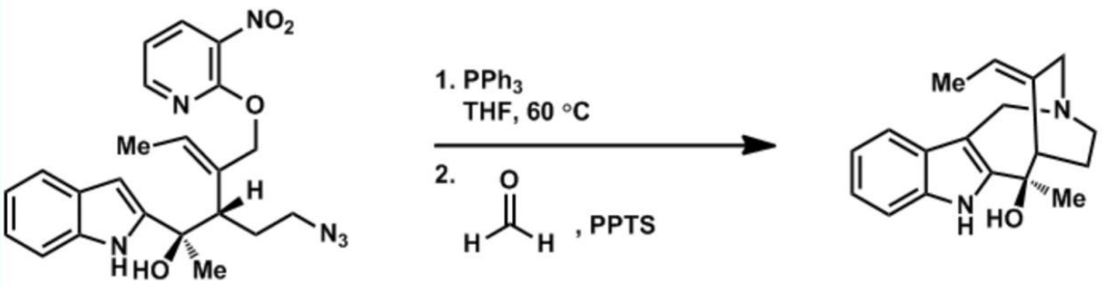
2

Problem (March 11, 2013):



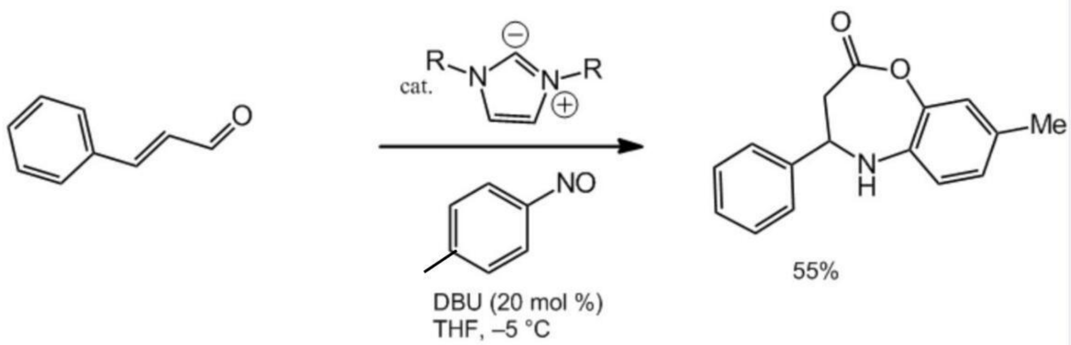
3

Problem (April 8, 2013):



4

Problem, (November 18th, 2013):



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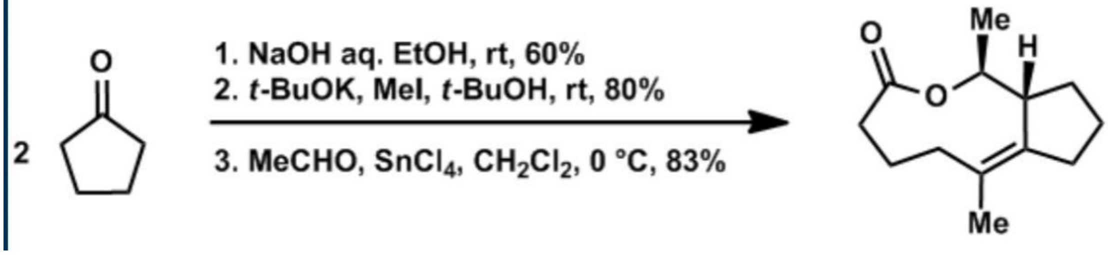
December 13 Problem:



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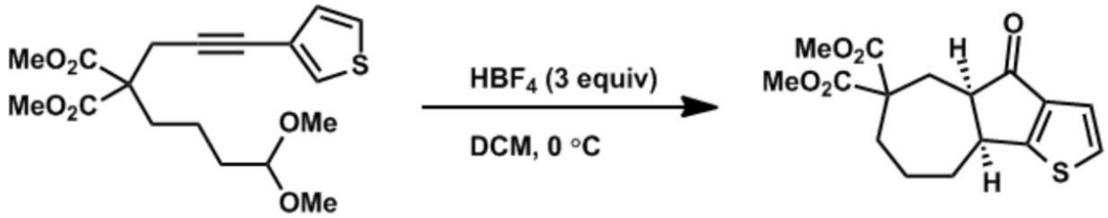
Problem (November 29, 2012):



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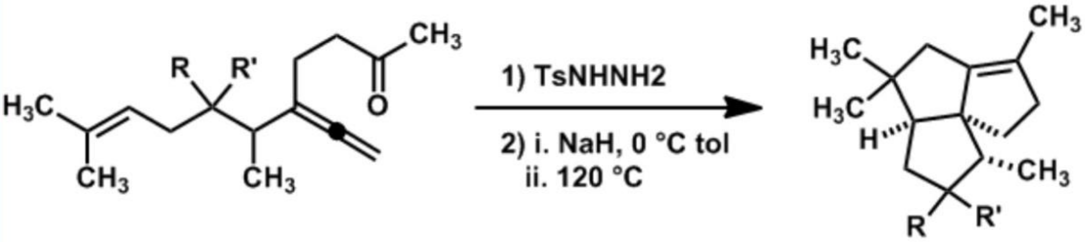
Problem (April 21, 2014):

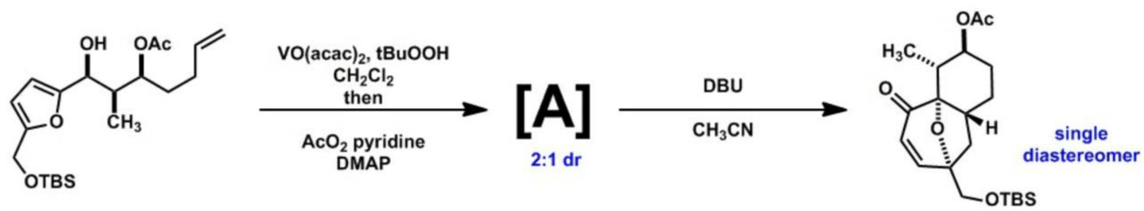


R = R' = H yield = 40%

R + R' = $S(CH_2)_3S$ yield = 80%

8

Problem (June 23, 2014):



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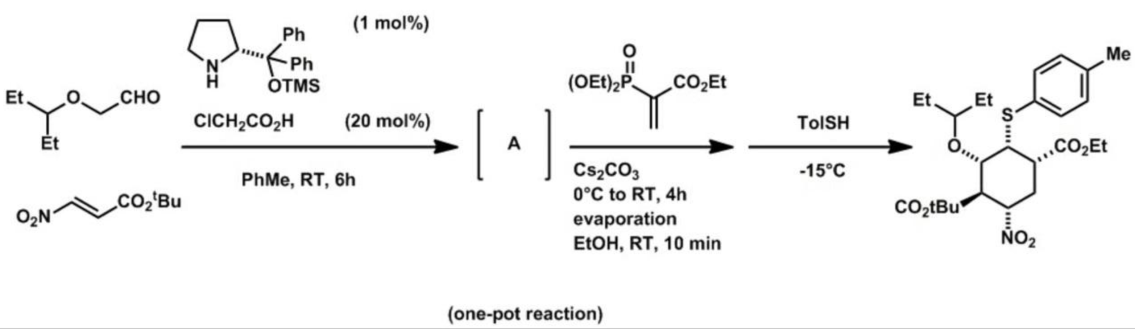
Problem (March 3, 2014):



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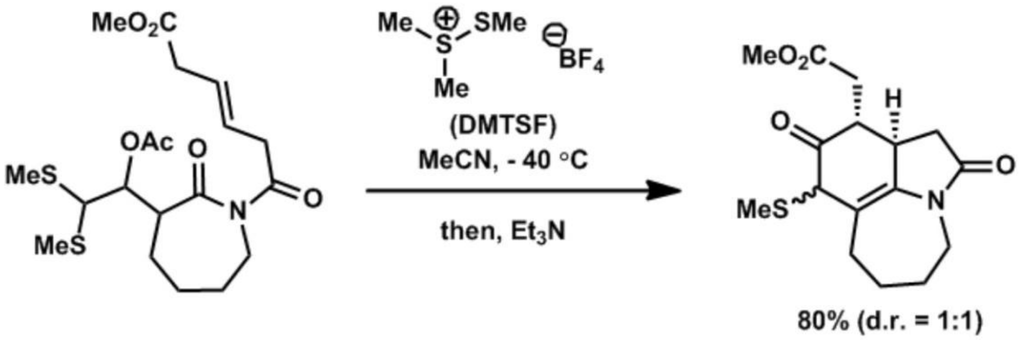
Problem (December 16, 2013):



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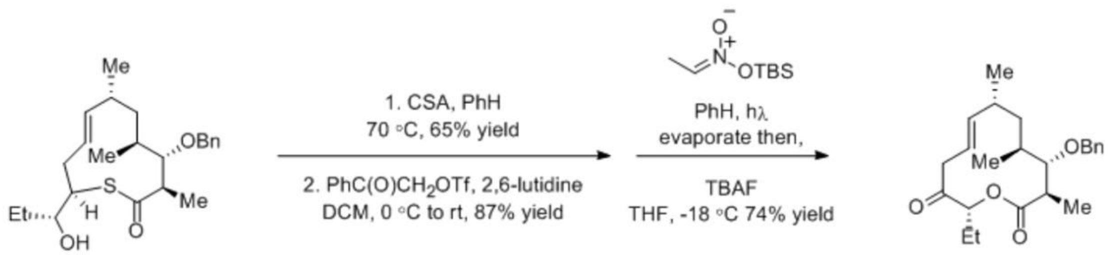
Problem August 19th, 2013:



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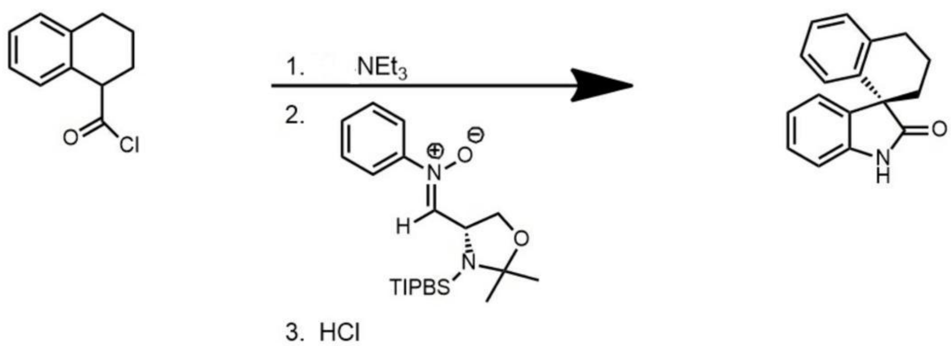
Problem (March 4, 2013):



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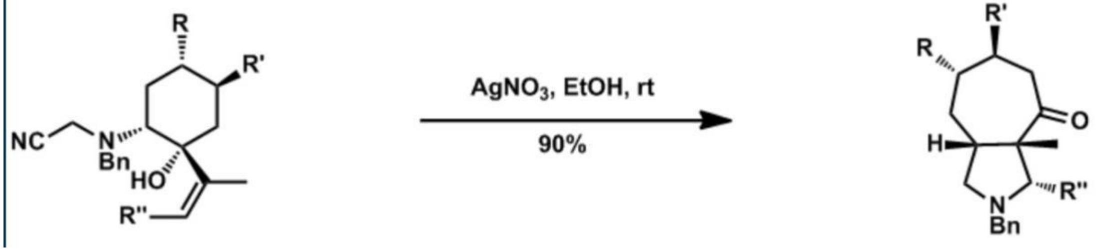
Problem (February 4, 2013):



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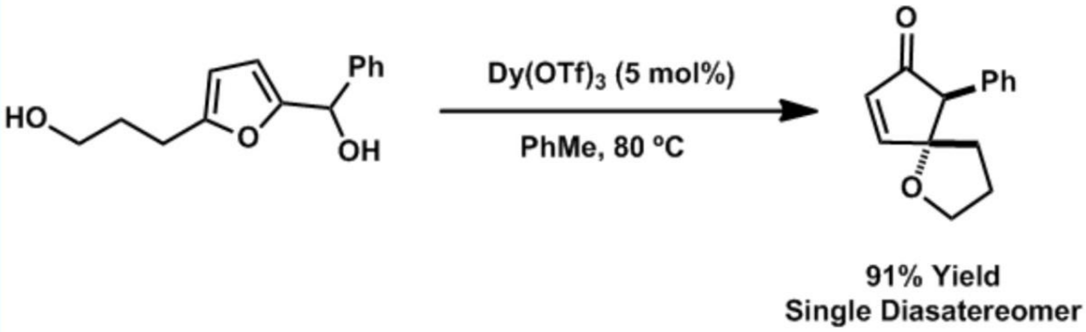
Problem (January 28, 2013):



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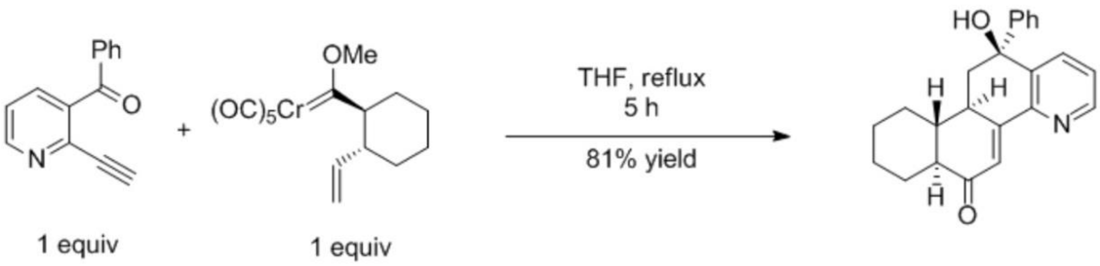

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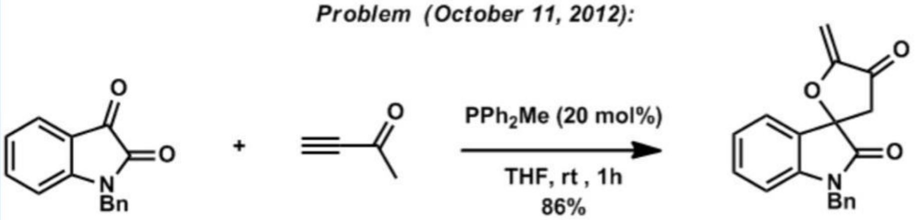
Problem (October 11, 2012):



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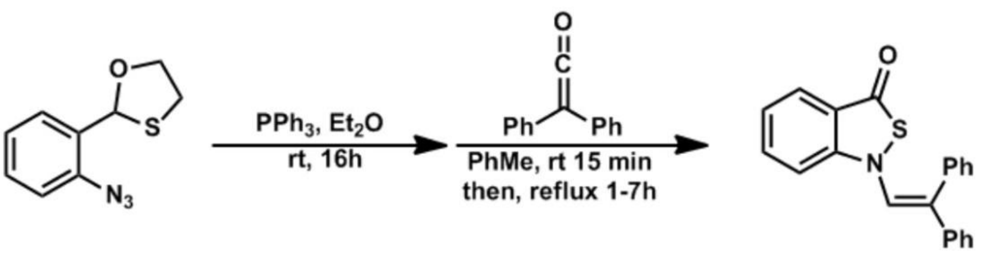
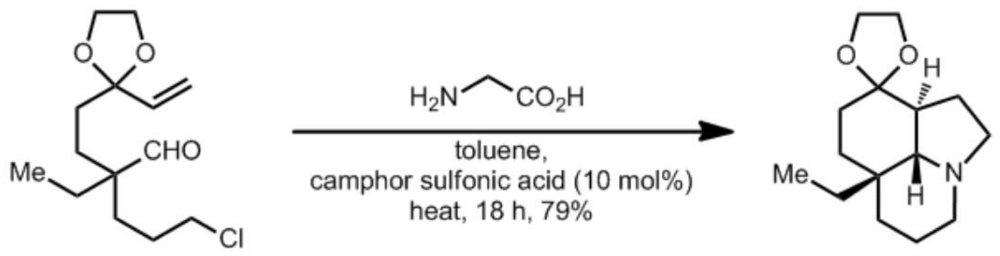
Problem (July 16, 2012):



18

Problem (June 11th, 2021):

Provide a mechanism for the following transformation, a 3-dimensional transition state that accounts for the stereochemistry of the product, and a FMO analysis for the key intramolecular reaction.



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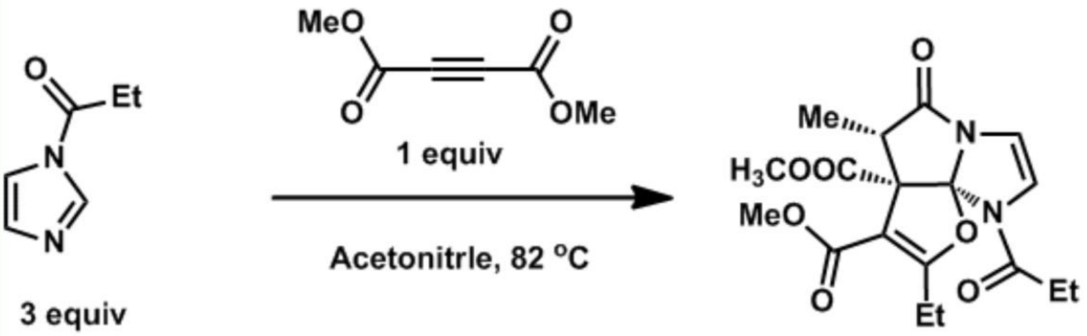
Problem (August 13, 2012):



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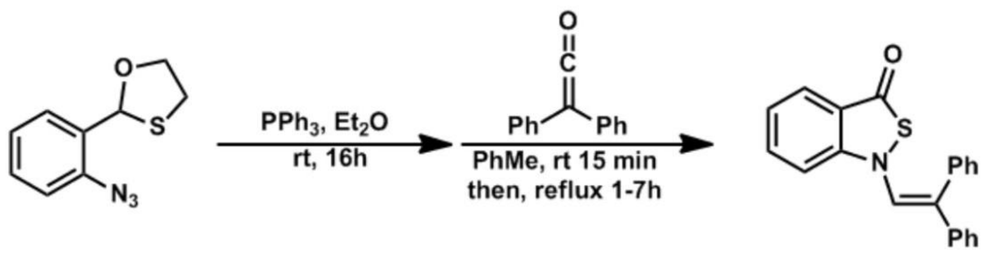
Problem (July 16, 2012):



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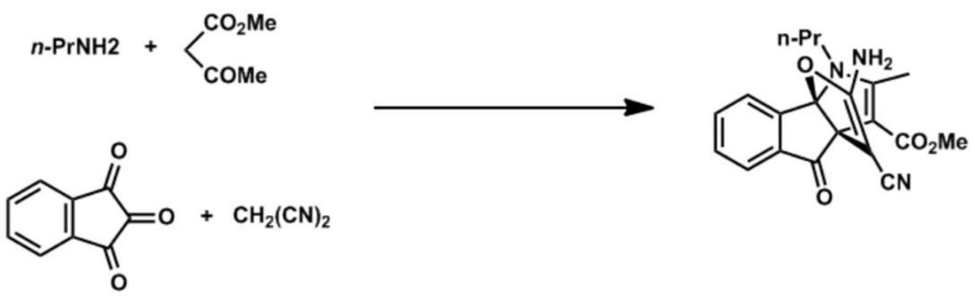
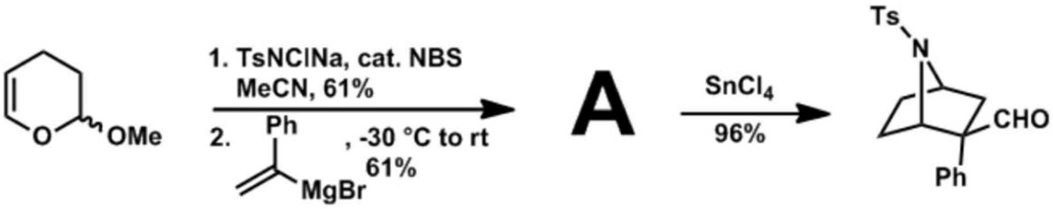
Problem (March 7, 2011):



22

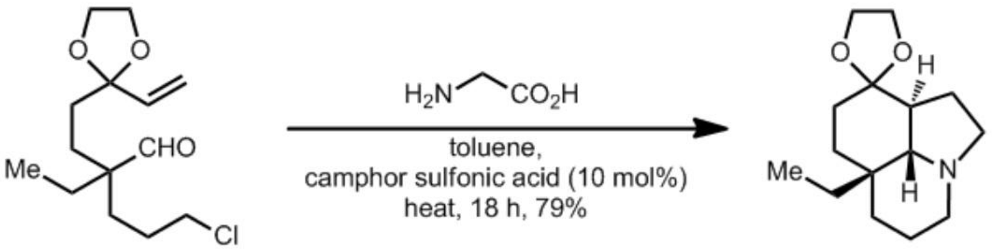
June 18 Problem:



23

Problem (June 11th, 2021):

Provide a mechanism for the following transformation, a 3-dimensional transition state that accounts for the stereochemistry of the product, and a FMO analysis for the key intramolecular reaction.

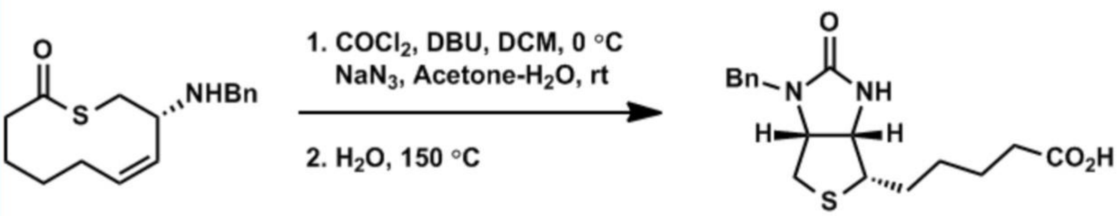


24 已知下面的反应有经历烯亚胺中间体

Problem (May 28, 2012)

25 已知下面的反应经历了 N-N 键的异裂

Problem (April 30, 2012):



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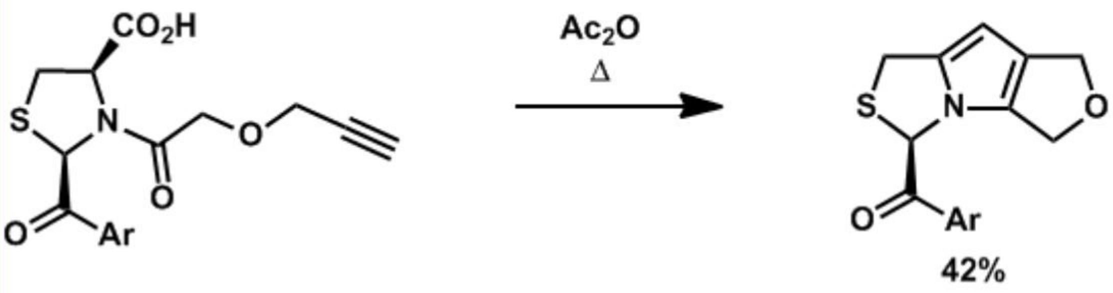
Problem (January 16, 2011):



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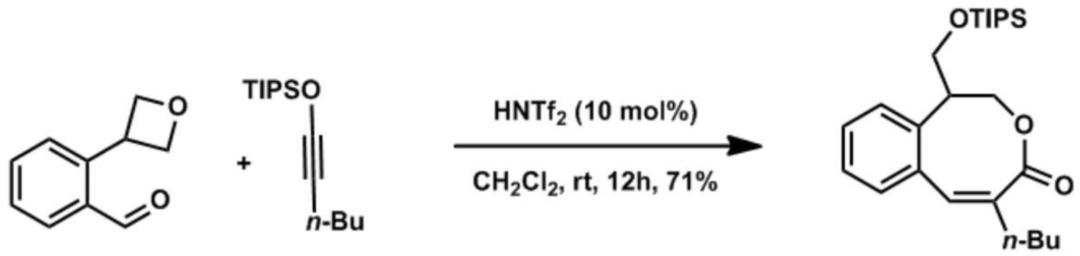
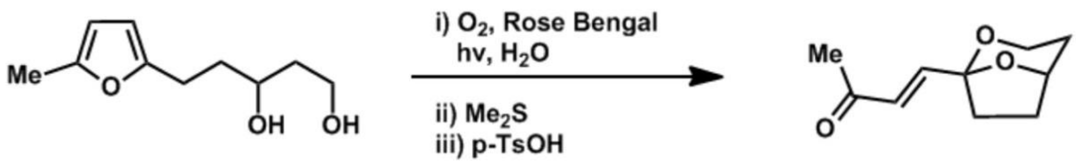
Problem (May 21, 2012):



28

Problem (May 14, 2012):



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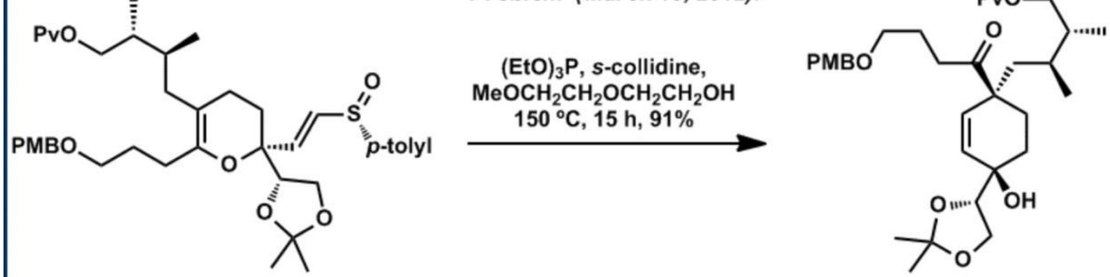
Problem (March 19, 2012):



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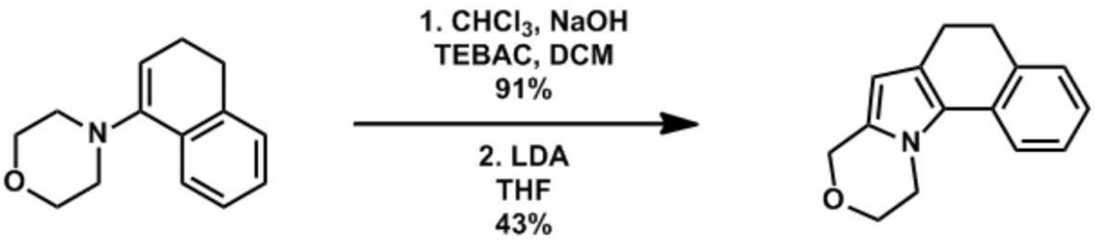
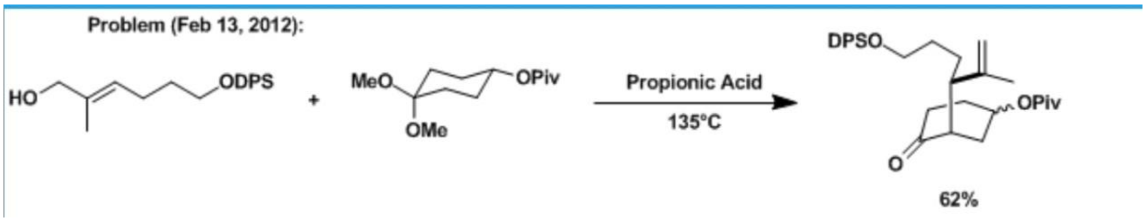
Problem (January 23, 2012):



31



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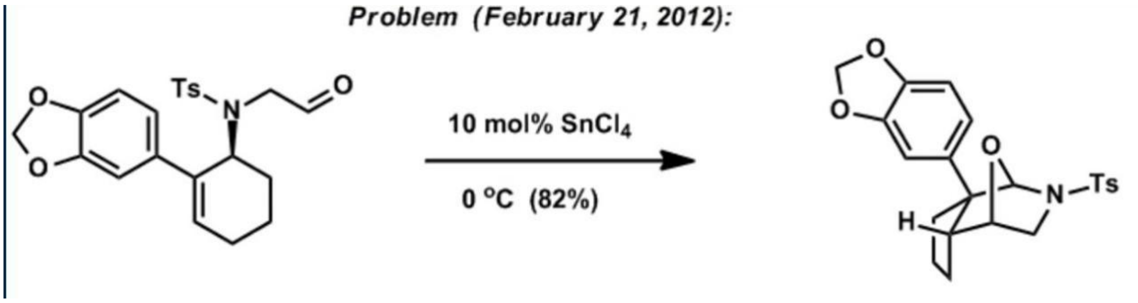

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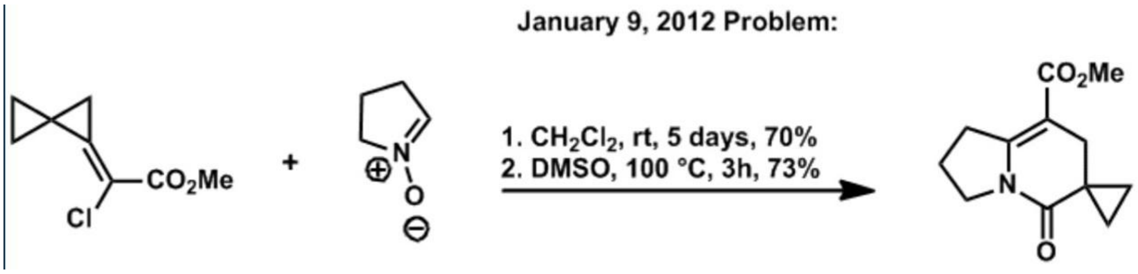
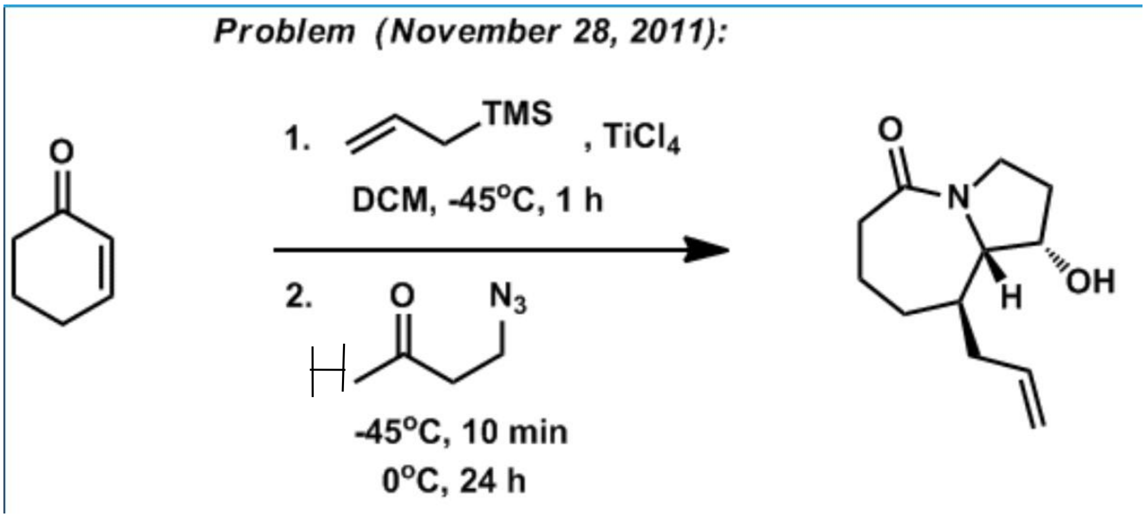


34 下面那题氢写成甲基了，我改了，但是改得太细了，所以在这里提醒一下



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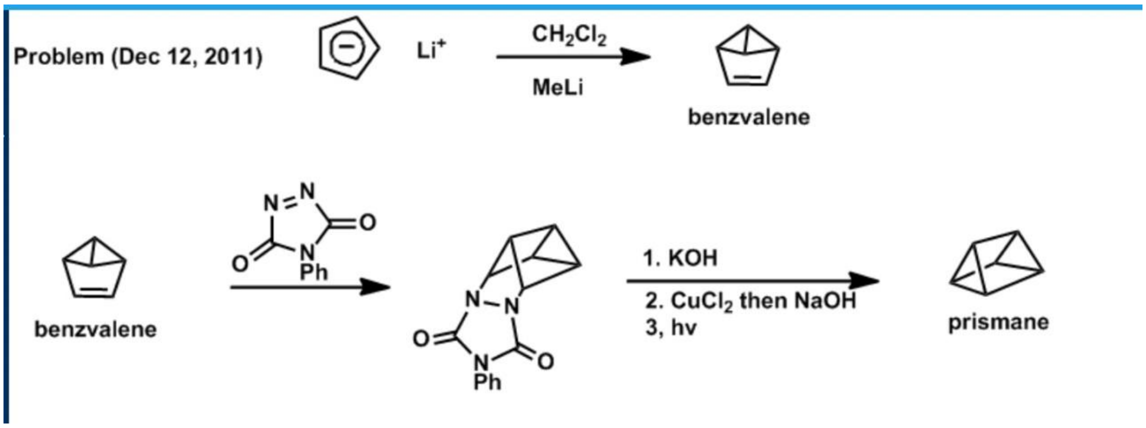
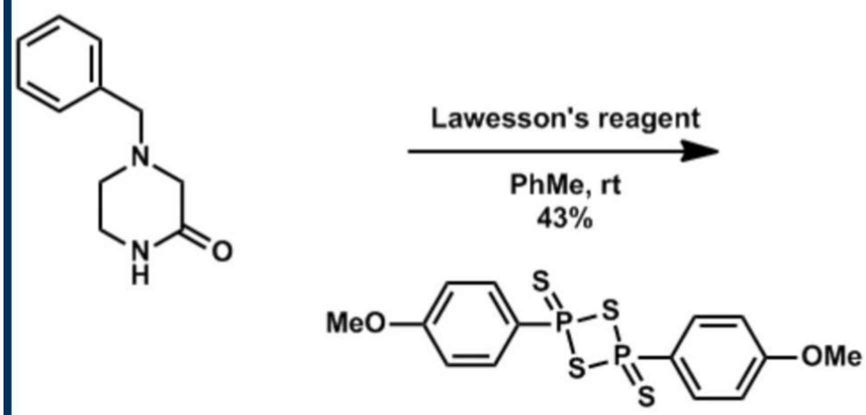


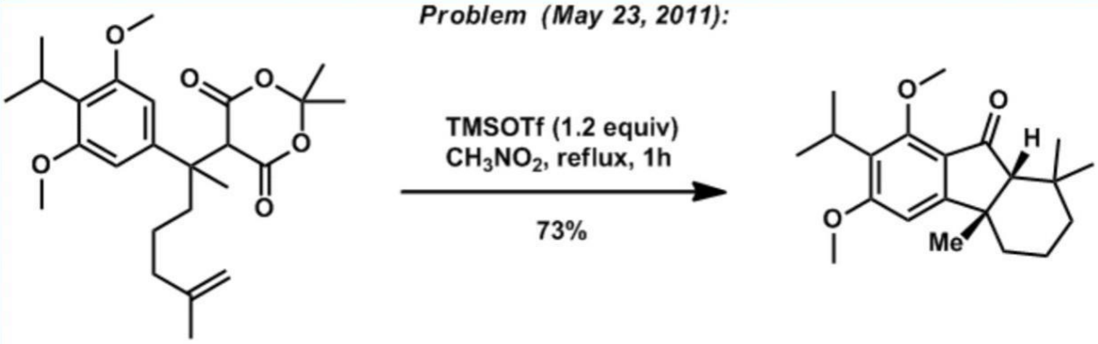
36

Problem (May 2, 2011):



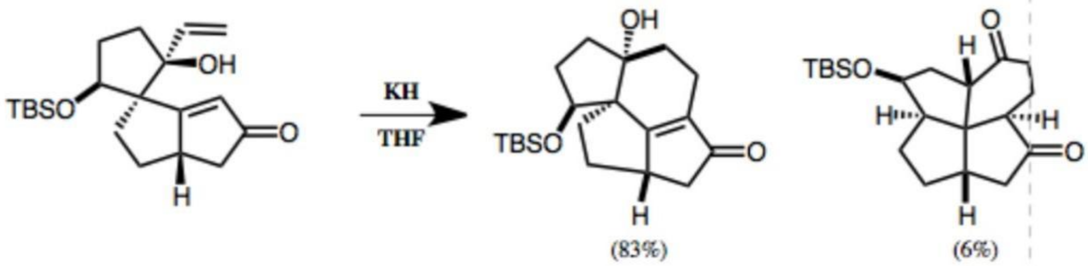
38

Problem (May 23, 2011):



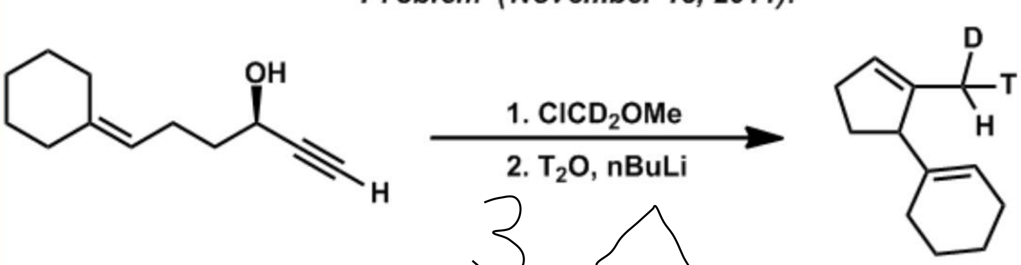
39

Problem (October 11, 2010):



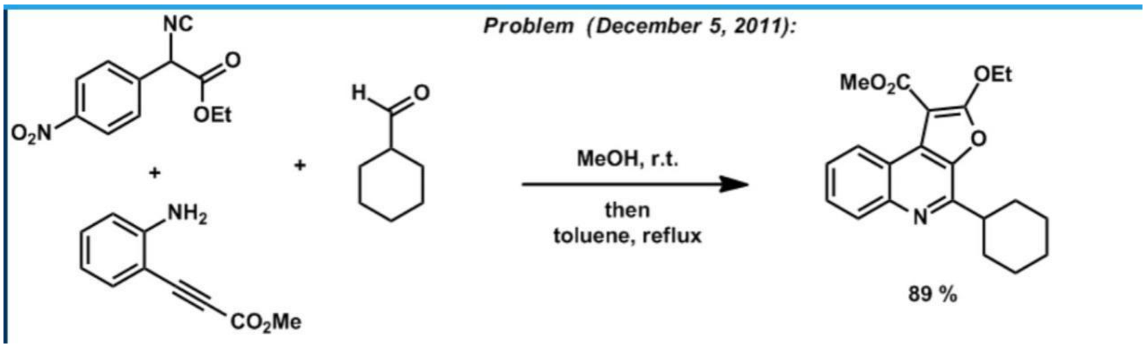
40

Problem (November 18, 2011):



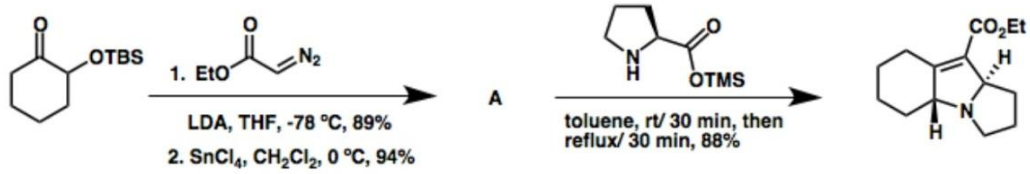
Stereochemistry?

41



42

January 31, 2011



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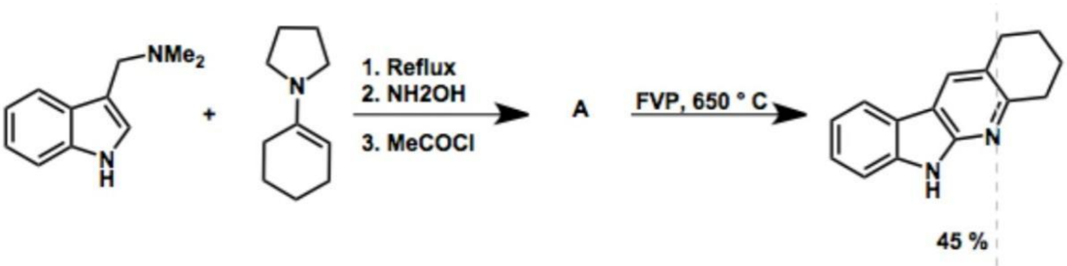
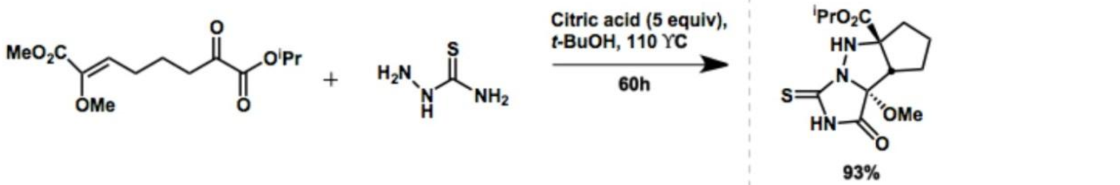


44

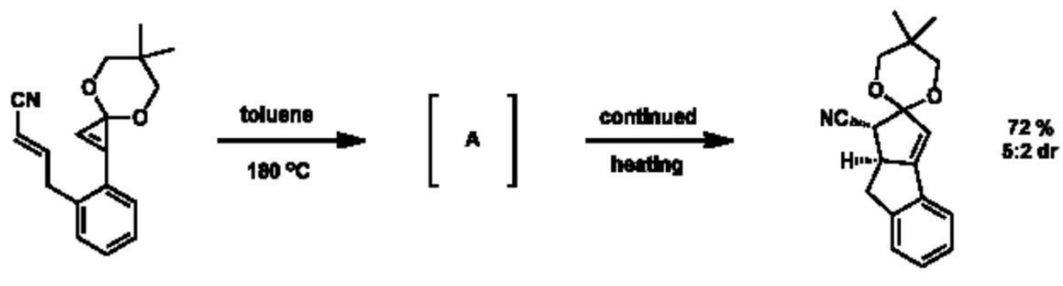
Problem (Aug 16, 2010):



L. Overman, et al., J. Org. Chem., 71, 9144 (2006)

45

Problem (August 9, 2010):



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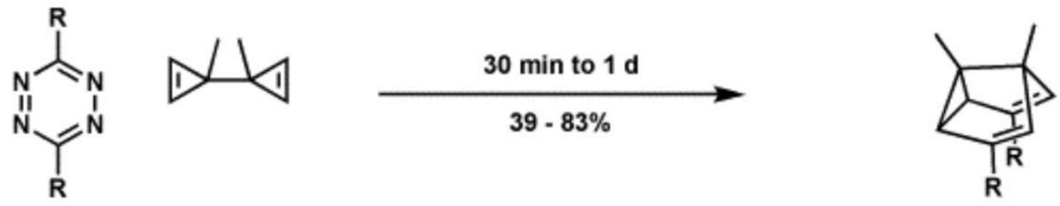
Problem (March 9, 2010):

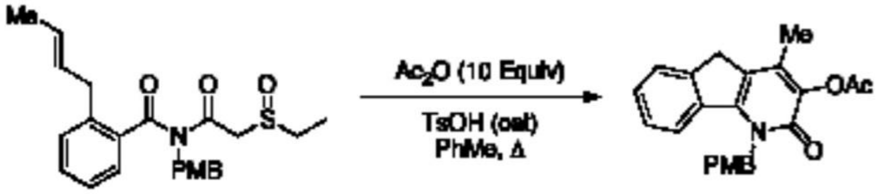


R = CF_3, CH_3, Ph

Which R group do you expect to have the fastest initial rate?

47

Problem (July 12, 2010):



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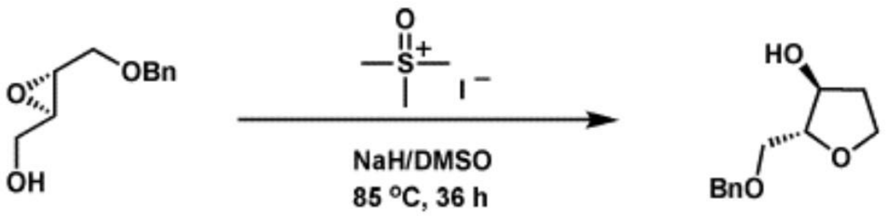
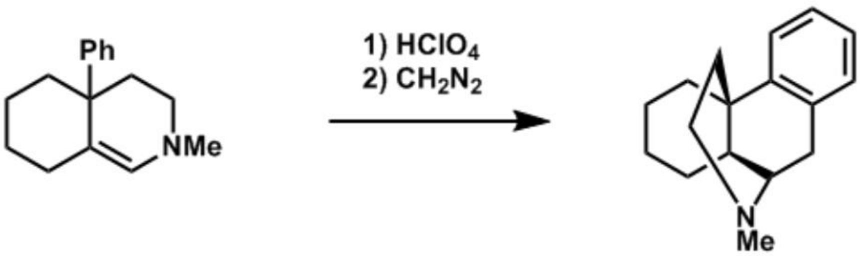


97% ee

78% / 97% ee

49

Problem (August 18, 2009):



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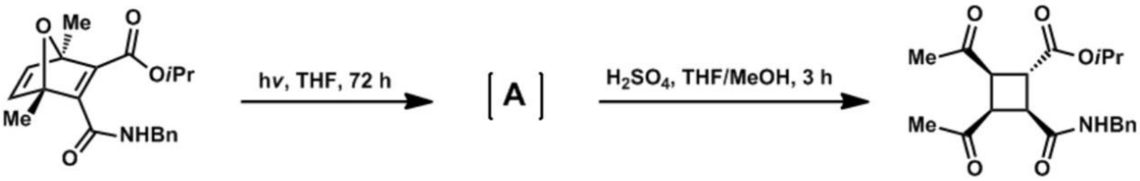
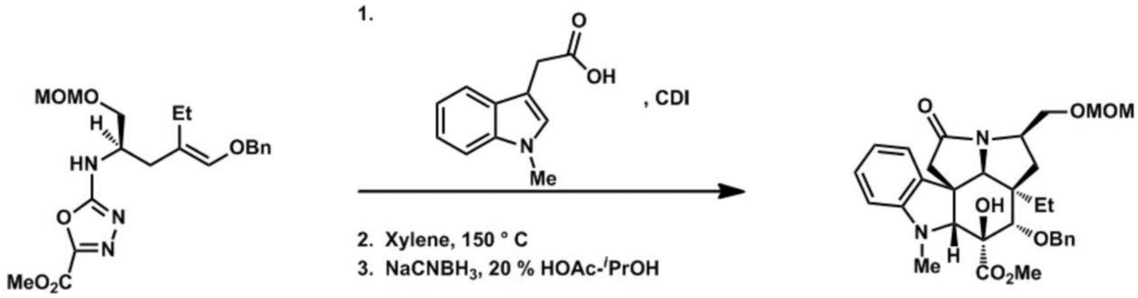
Problem (November 7, 2011):



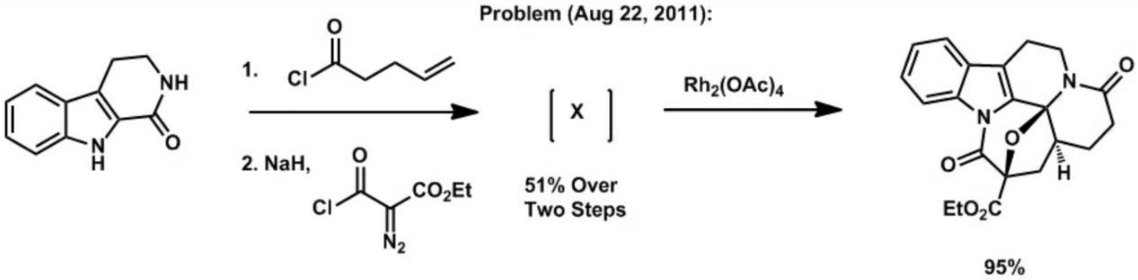
51

Problem (October 10, 2011):



52

Problem (Aug 22, 2011):



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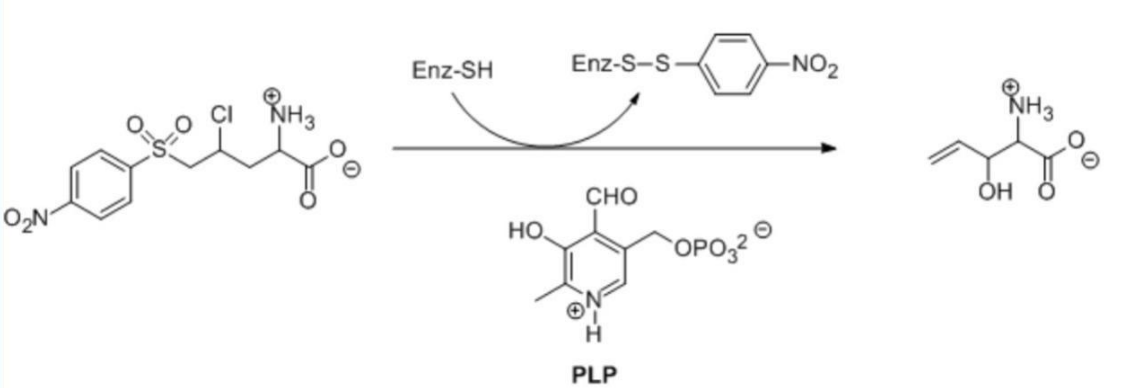
Problem (May 9, 2011):



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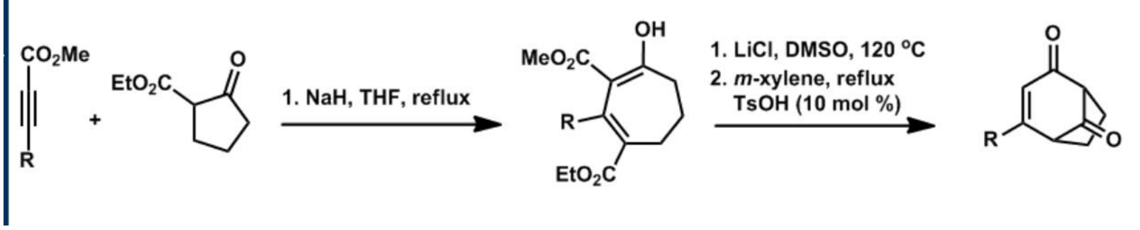
Problem (February 14, 2011):



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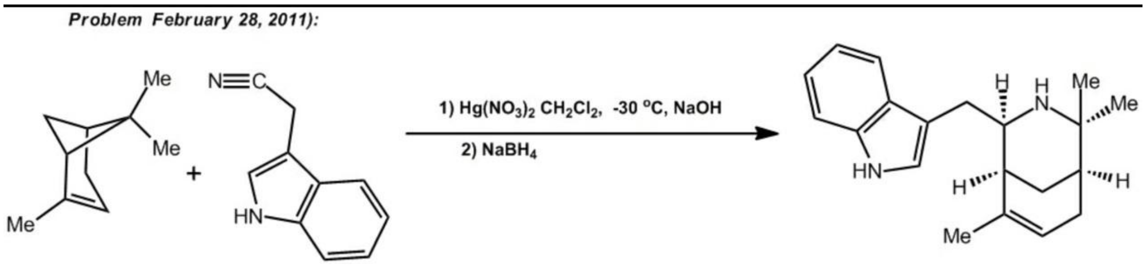

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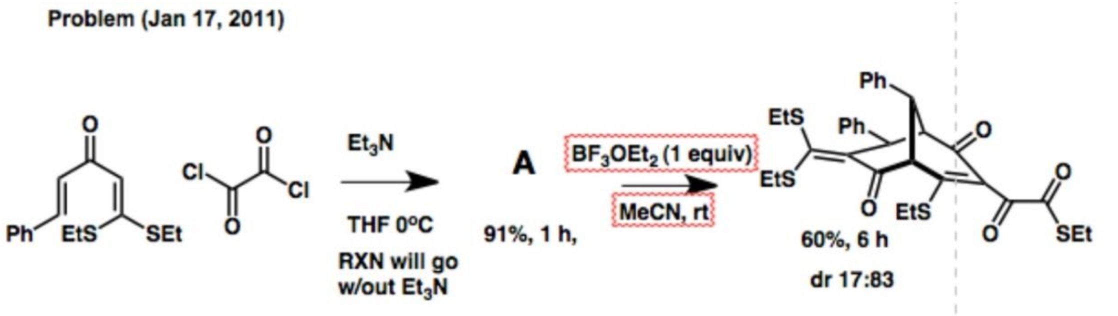

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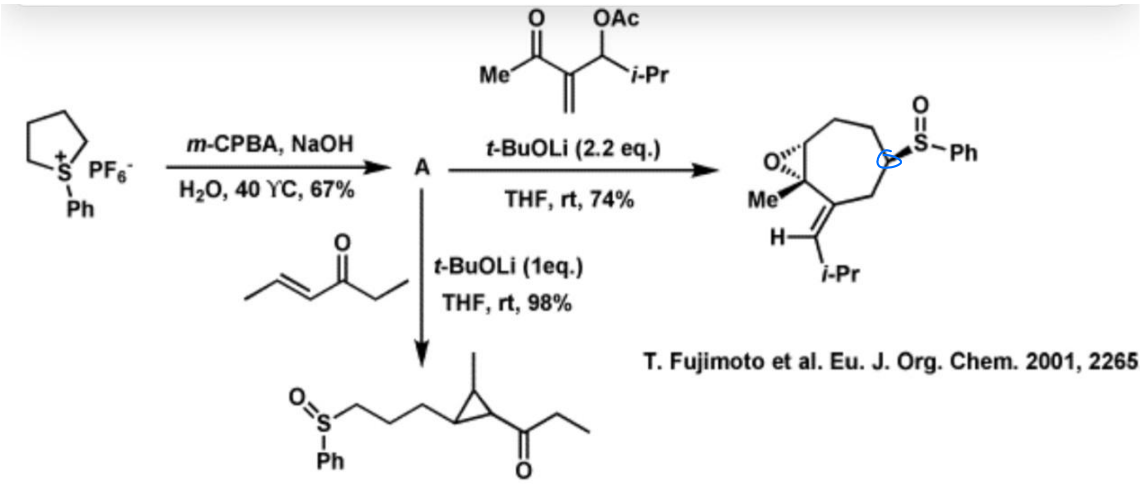

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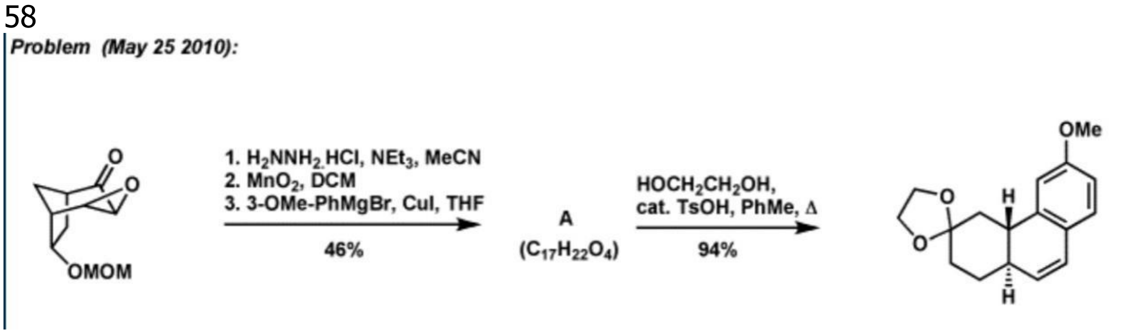

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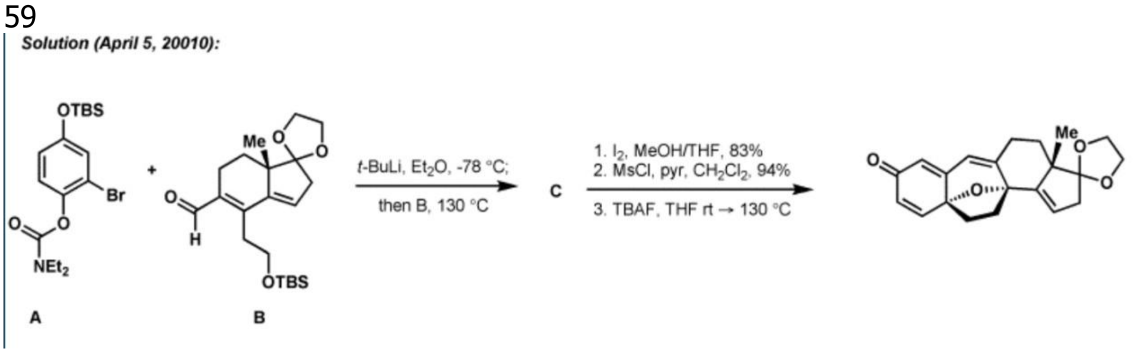
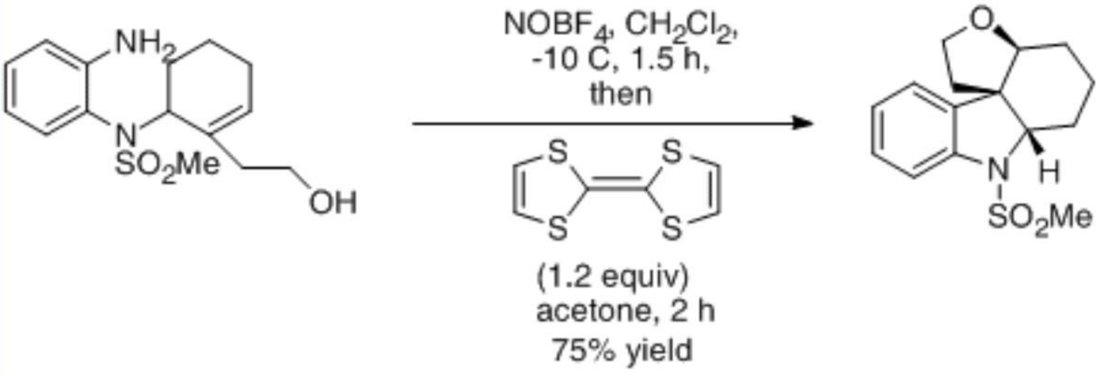
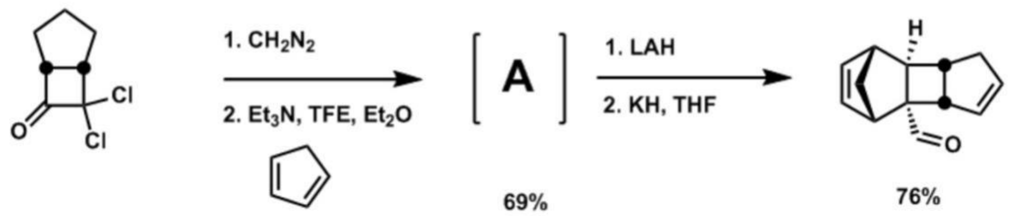


60 提示：下面这个反应的含硫杂环或许和 Cu(I)有类似的作用



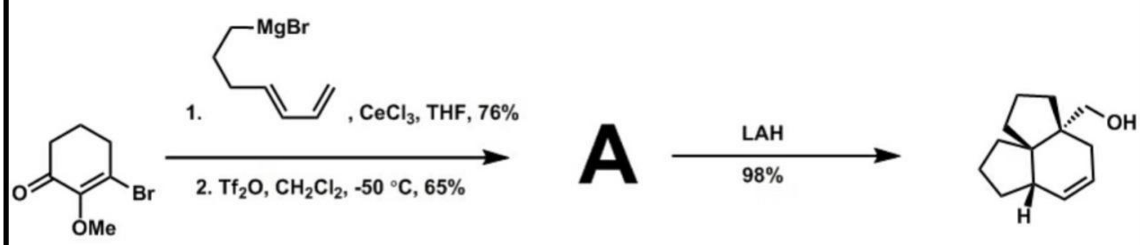
61

Problem (July 6, 2009):



62

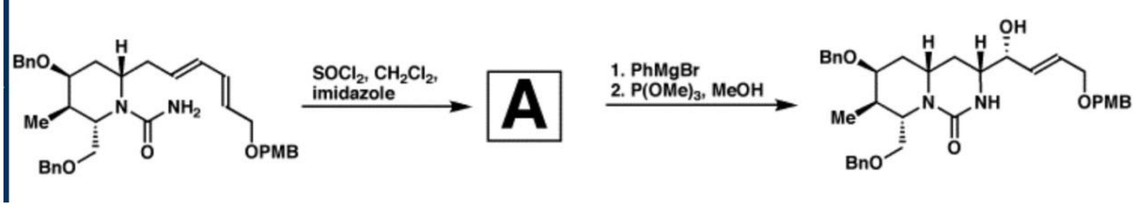
Problem (Aug 10, 2009)



J. Chem. Soc., Perkin Trans. 1, 1992, 3419 - 3429

63　提示：第一步脱去了两分子氯化氢

Problem (January 11, 2010):

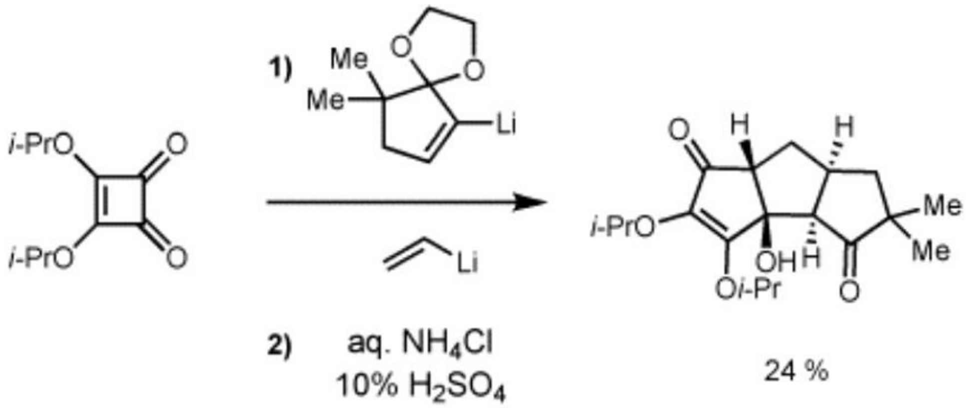


64

Problem (July 5, 2010):

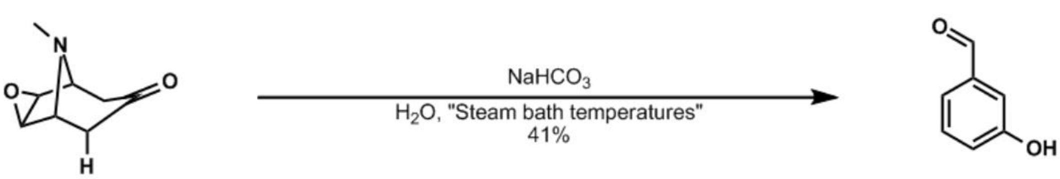
65

Problem (February 8, 2010)



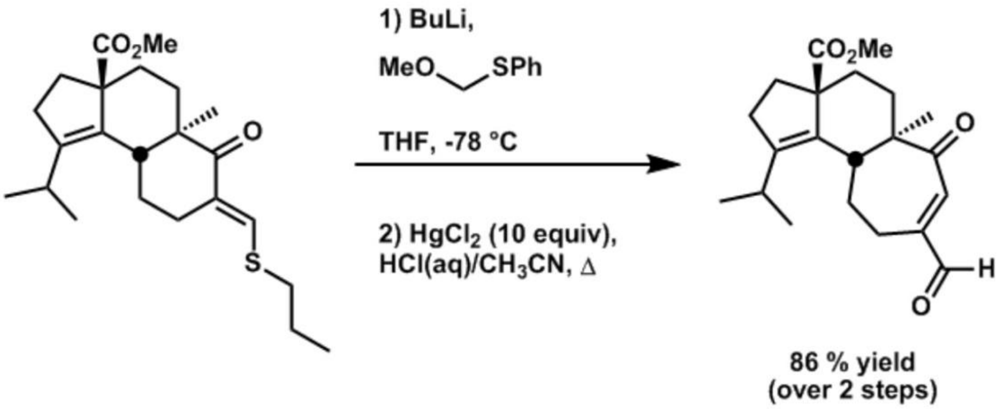
66

Problem (June 15, 2009):



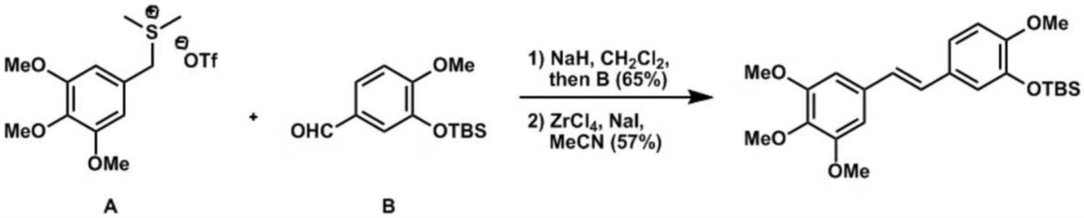
67

Problem (May 25, 2009):



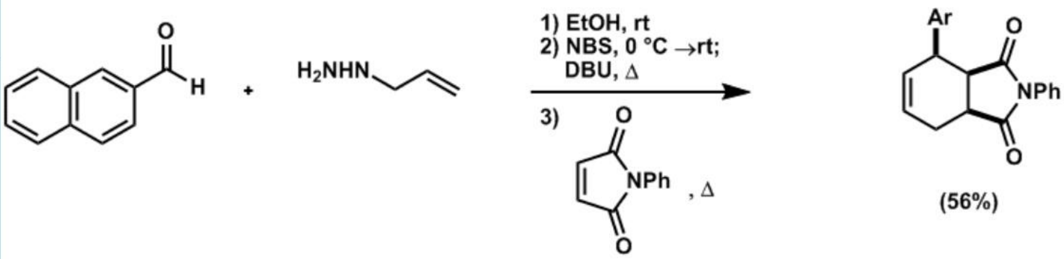
68

Problem #1 (May 11, 2009):



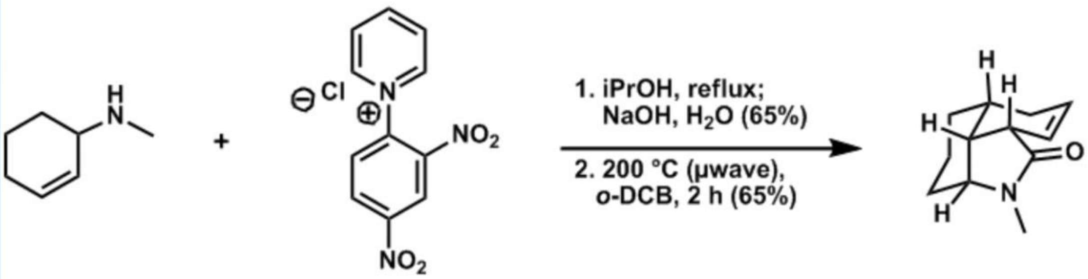
69

Problem #2 (May 11, 2009):



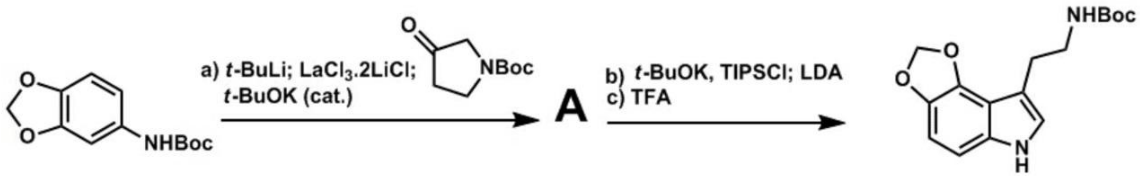
70

Problem (June 1, 2009):



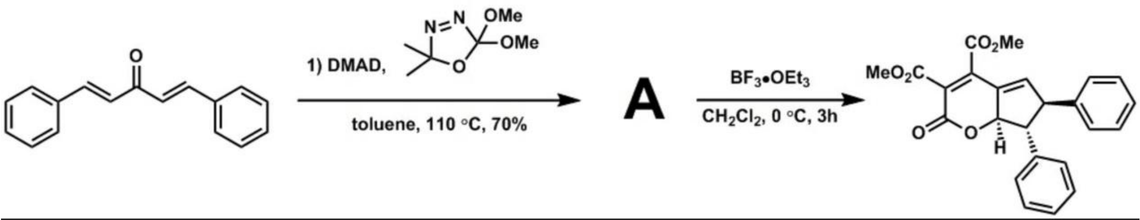
71

Problem (July 13, 2009):



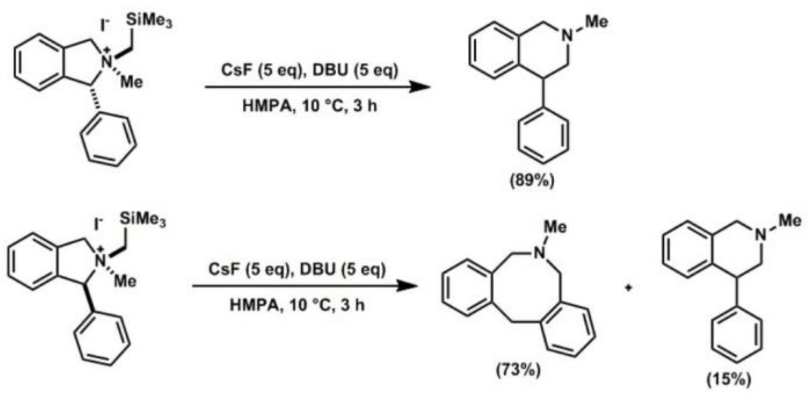
72

Problem (Apr 27, 2009):



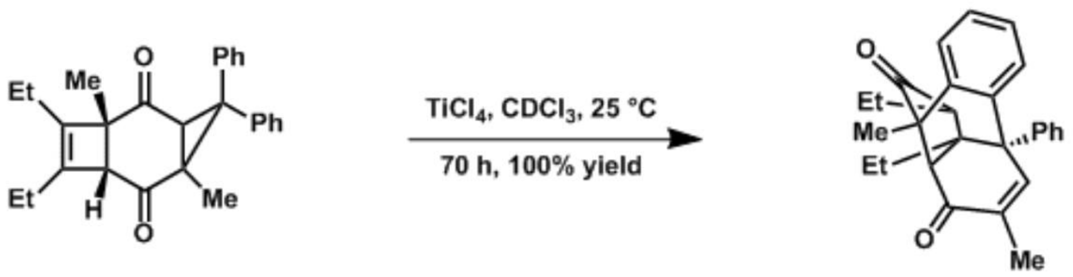
73

Solution (December 1, 2008):



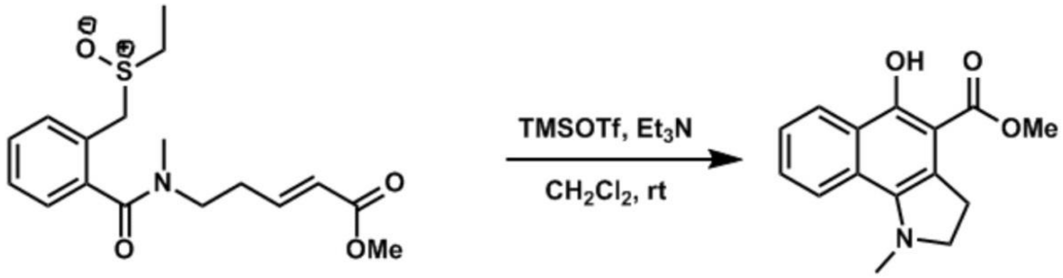
74

Problem (February 11, 2009):



75

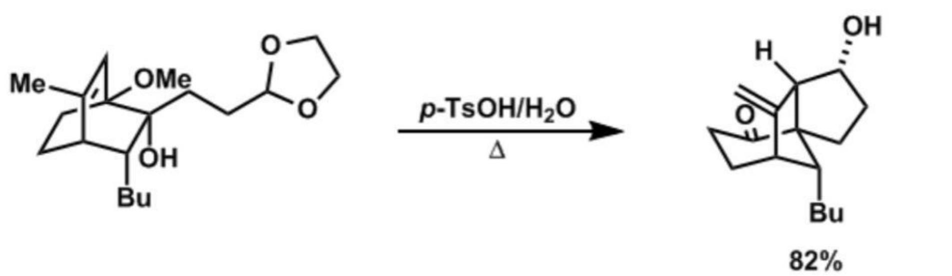
Problem (November 17, 2008):



Reference: Tet. Lett., 1995, 36, 9285

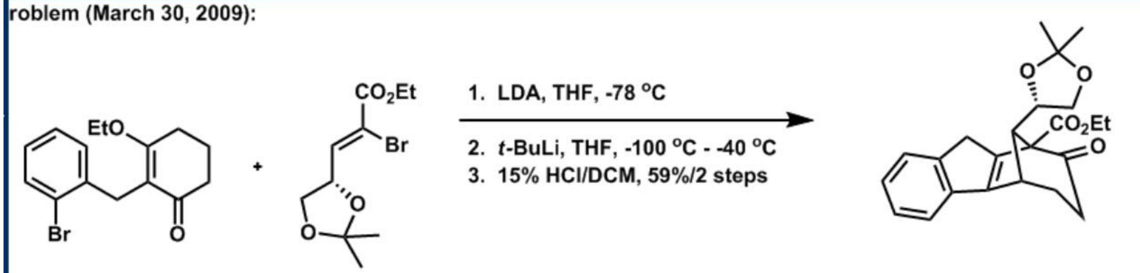
76

Problem (February 25, 2009):



77

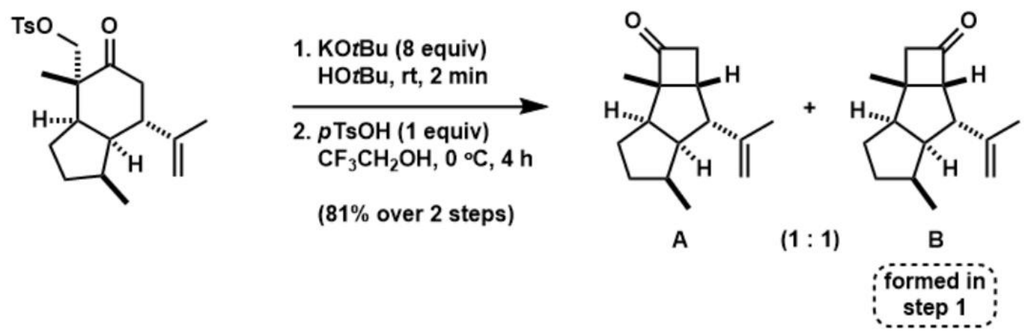
Problem (March 30, 2009):



Gutke, H.-J.; Braun, N. A.; Spitzner, D. *Tetrahedron*, **2004**, *60*, 8137 -

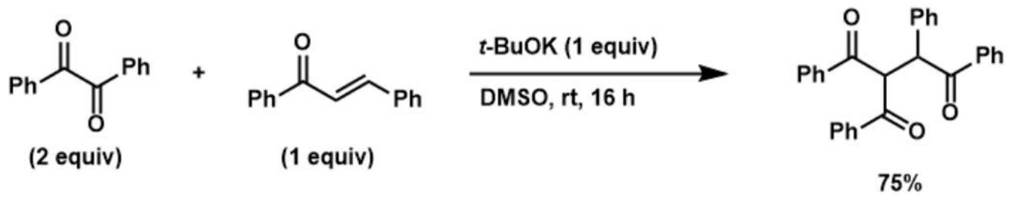
78

Problem (April 25, 2016):



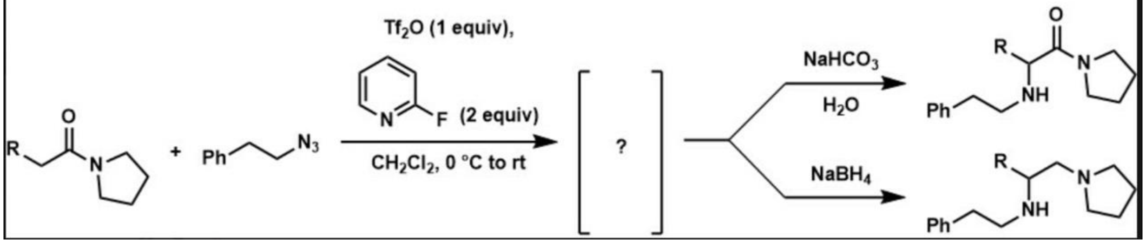
79

Problem (May 9, 2016):



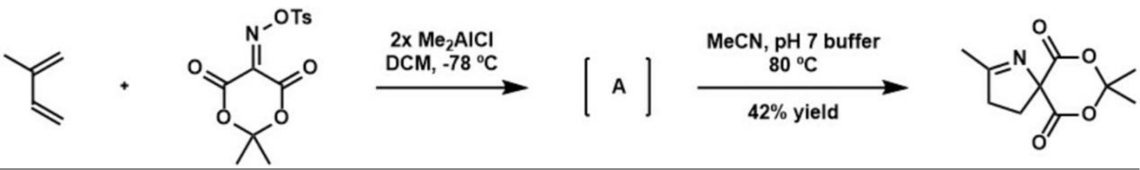
80

Problem (June 29, 2016):



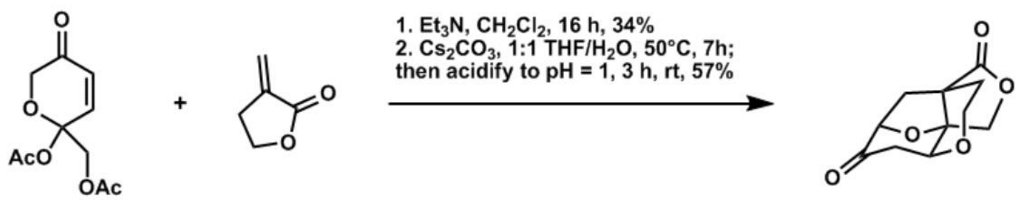
81

Problem (April 14th, 2016)



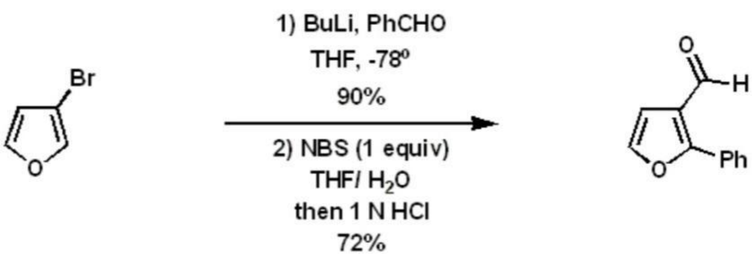
82

Problem (November 10, 2008):



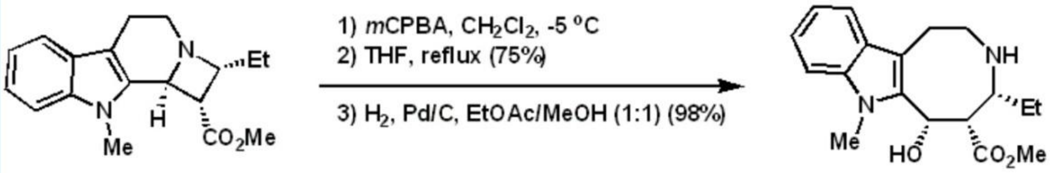
83

Problem (April 21, 2006):



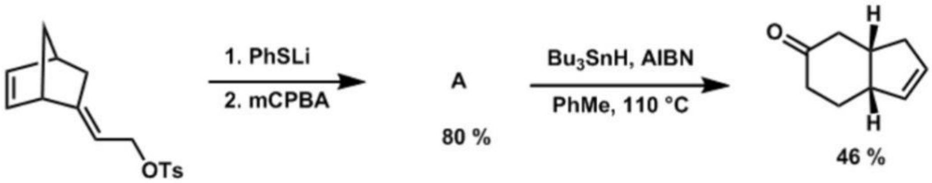
84

Problem (May 5, 2008):



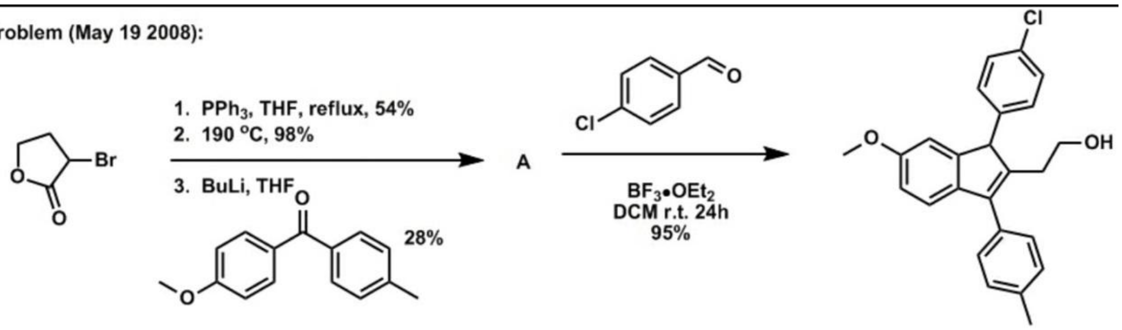
85

Problem (May 12, 2008):



86 下面的反应第二步脱去了二氧化碳并生成了一个张力较大的叶立德

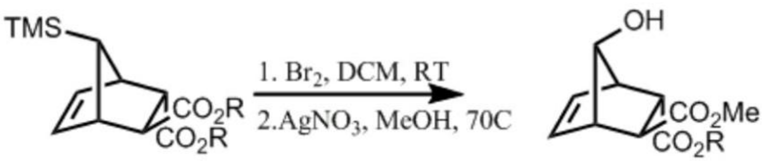
Problem (May 19 2008):



Shi, M.; Xu, B.; Huang, J. *Org. Lett.* **2004**, *6*, 1175.

87

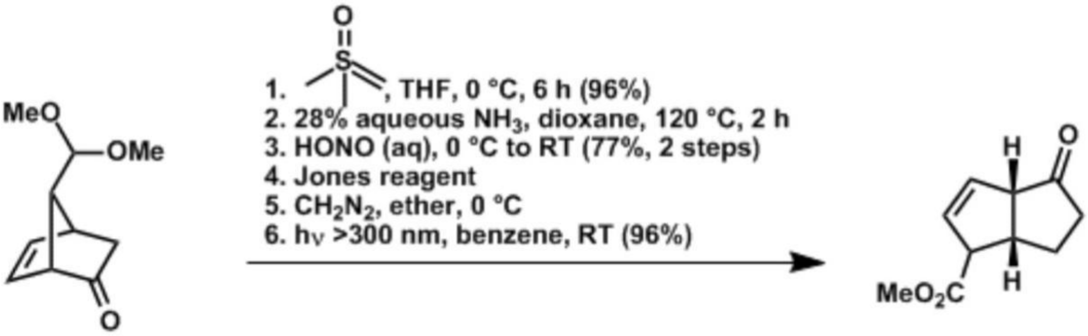
Problem (January 5, 2009):



R= menthyl

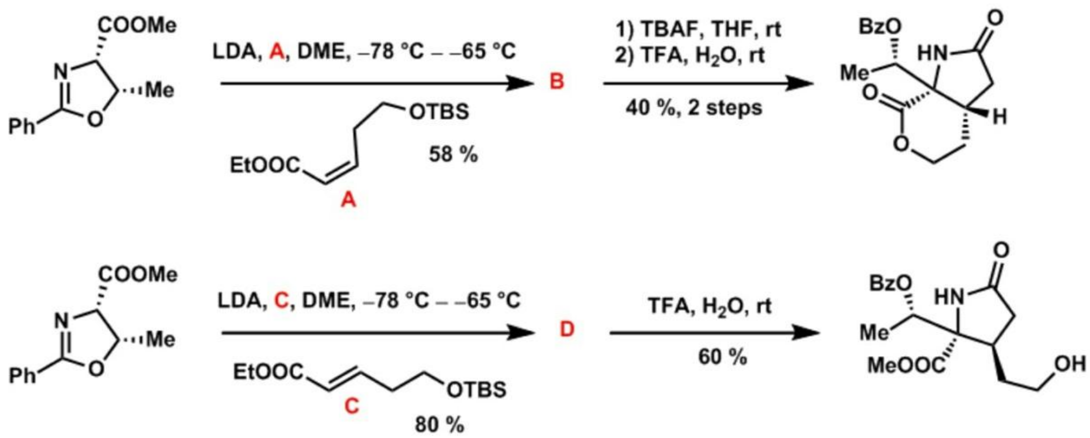
88

Problem (October 27, 2008):



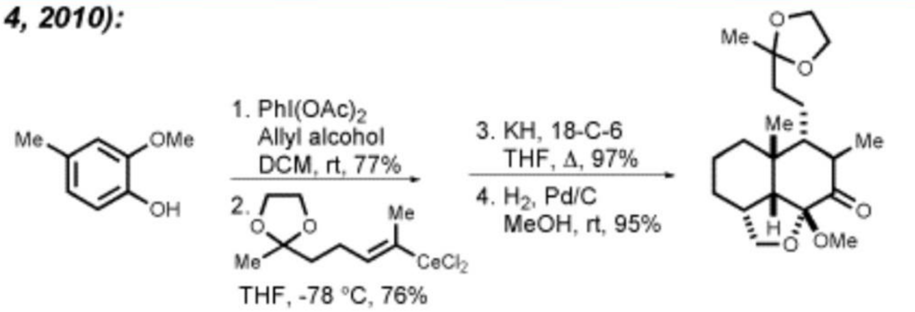
89

Problem (September 29, 2008): Overman *et. al. J. Am. Chem. Soc.* 2007, *129*, 11987-12002.



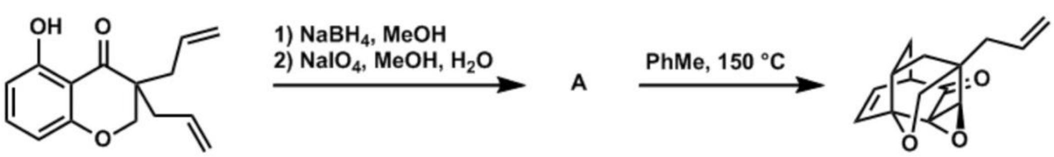
90

Problem (Jan. 4, 2010):



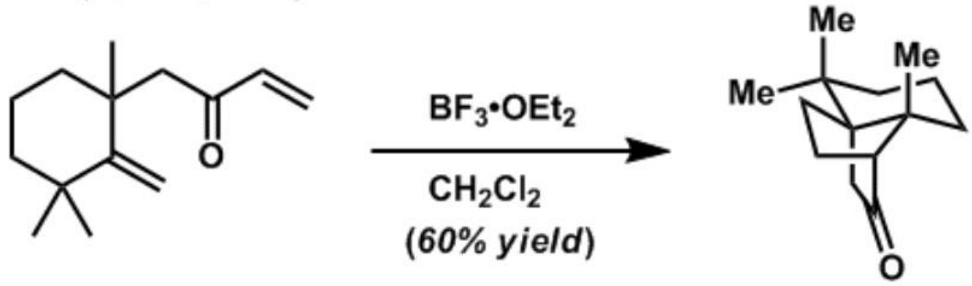
91

Problem (April 21, 2009):



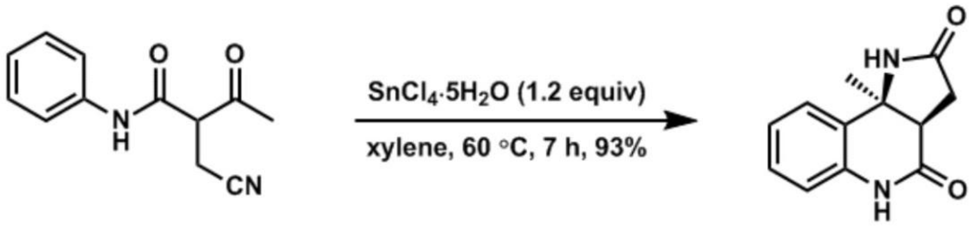
92

Problem (April 7, 2009):



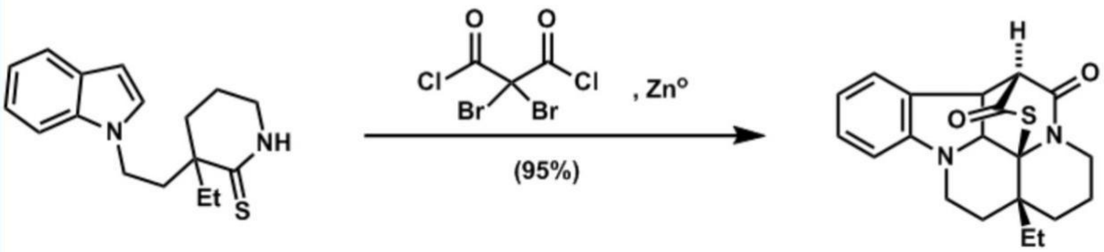
93

Problem (September 3, 2008):



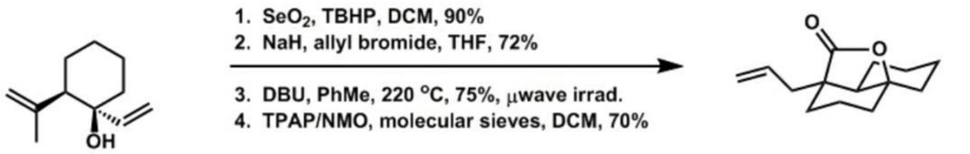
94

Problem (August 13, 2008):



95

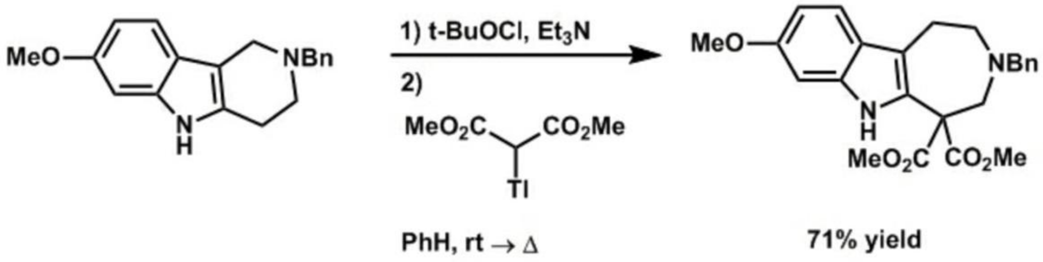
Problem (August 25, 2008):



Denissova, I.; Barriault, L. *Org. Lett.* **2002**, *4,* 1371.

96

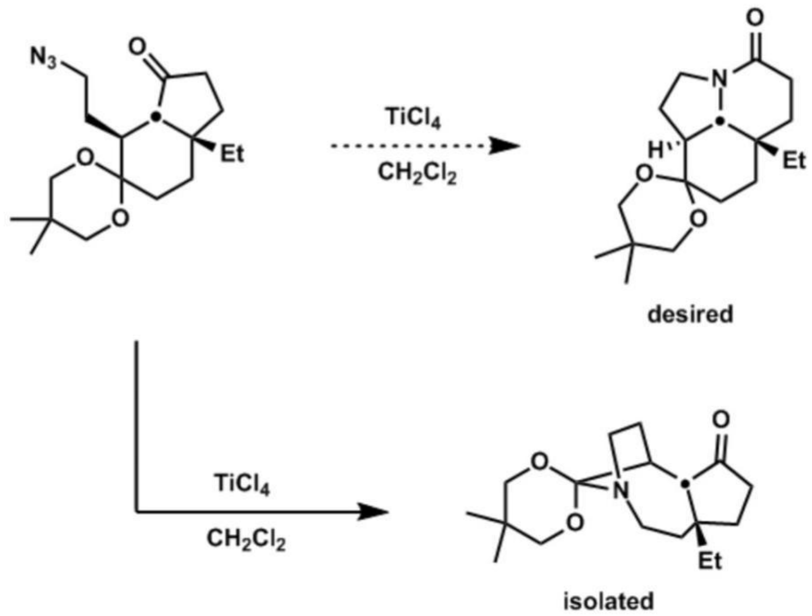
Problem (July 28, 2008):



Reference: J. Org. Chem. 44, 1979, 1371

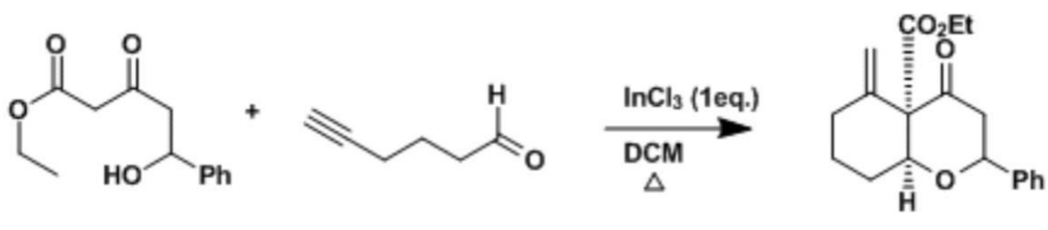
97

Problem (July 14, 2008): **Provide a mechanism for both the desired and isolated products**



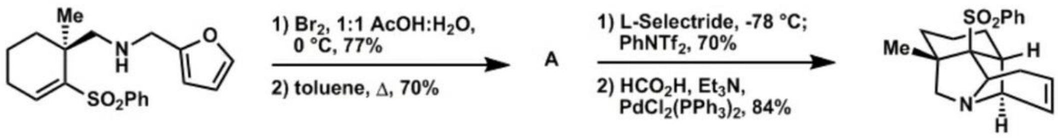
98

Problem (June 9 2008)



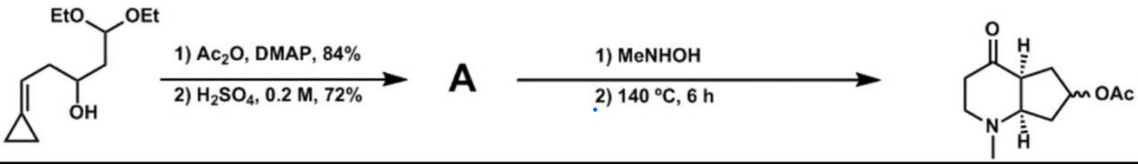
99

Problem (June 30, 2008):



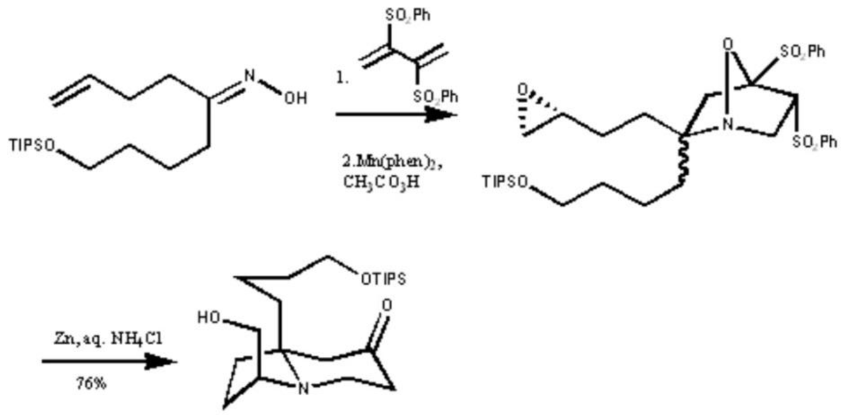
100

Problem (Jun 16, 2008):



101

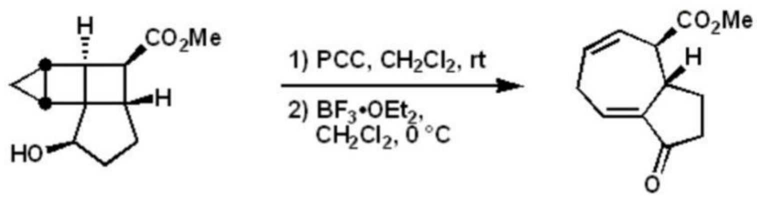
Problem (April 16, 2008):



102

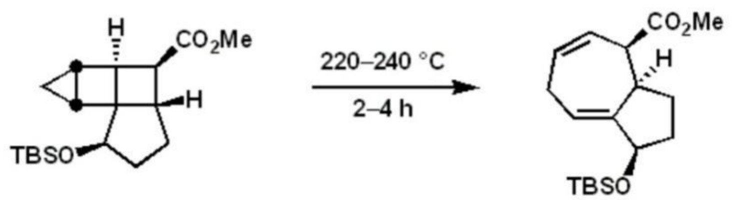
Problem (March 10, 2008):

(1)



(60%)

(2)

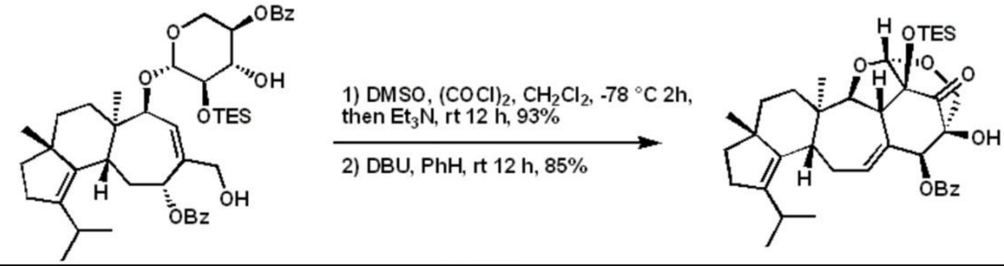


(64%)

Provide mehcanisms that account for the observed stereochemical outcomes.

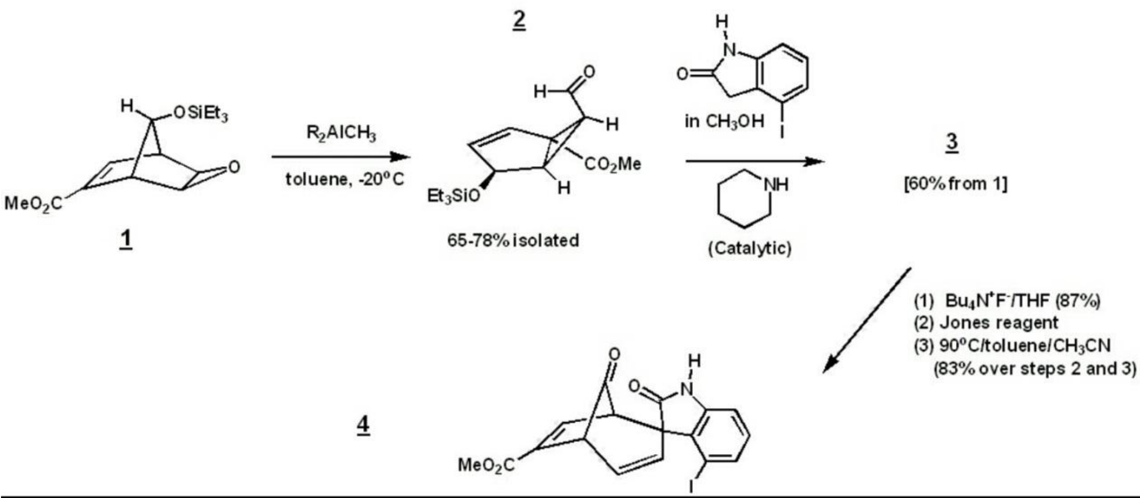
103

Problem (April 2, 2008):



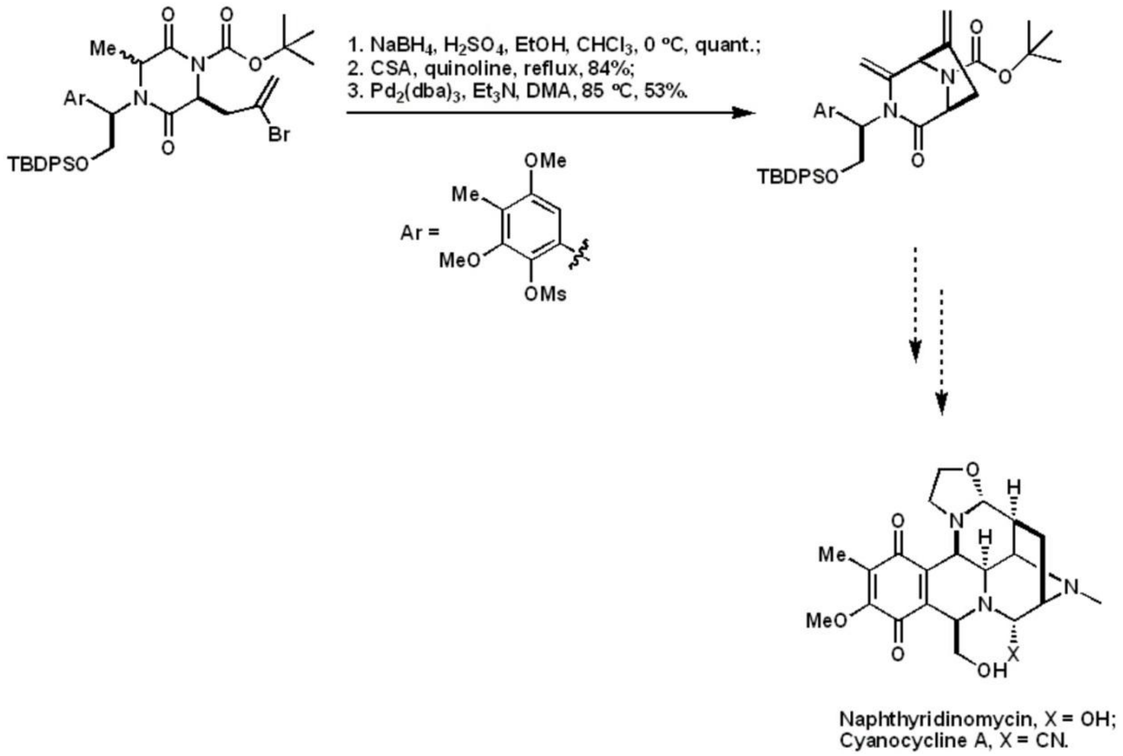
104

Problem (March 24, 2008):



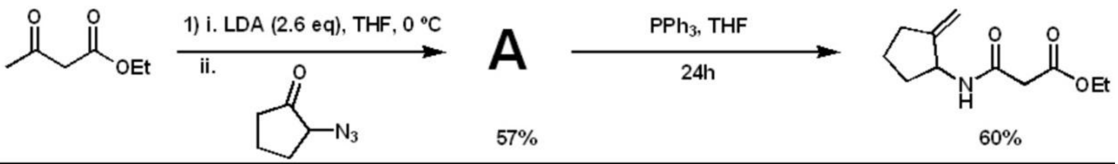
105

Problem (March 3, 2008): Fukuyama *Org. Lett.*, *2004*, *6*, 3095.



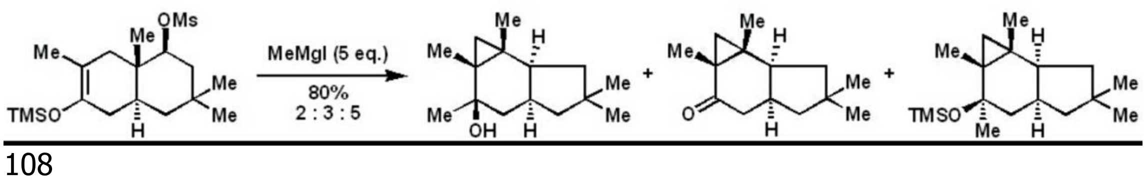
106

Problem (February 25, 2008):



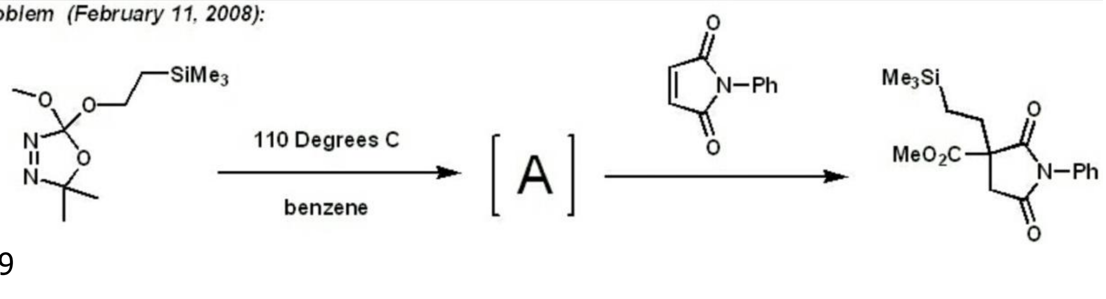
107

Problem (February 18, 2008):



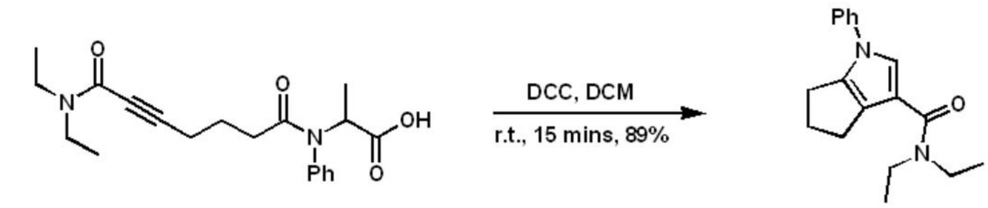
108

Problem (February 11, 2008):



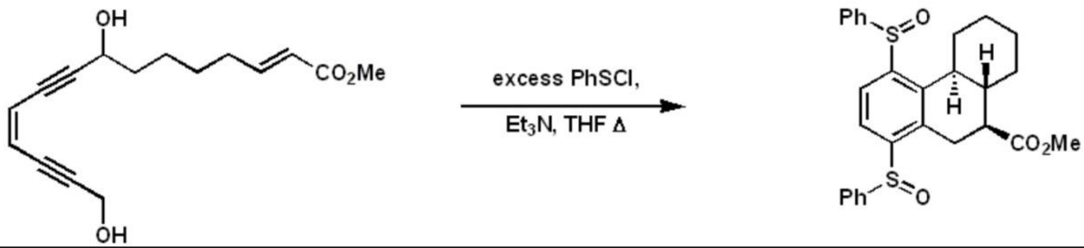
109

Problem (January 28, 2008):



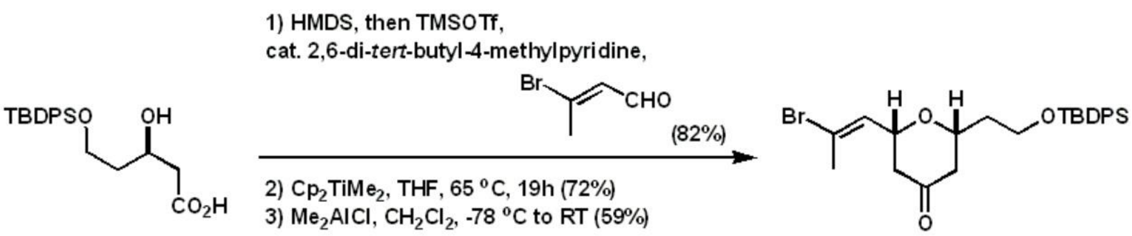
110

Problem (January 21, 2008):



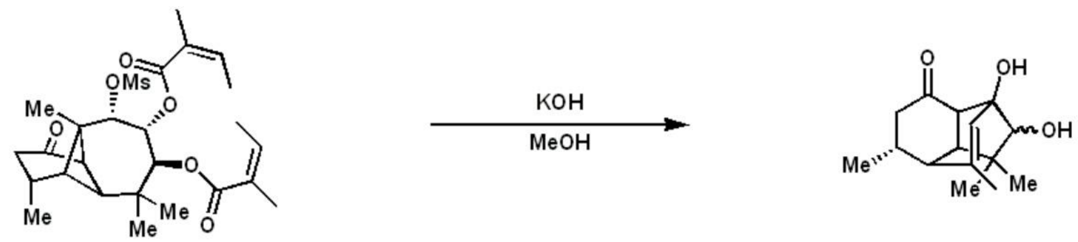
111

Problem (January 14, 2008):



112

Problem (December 10, 2007):

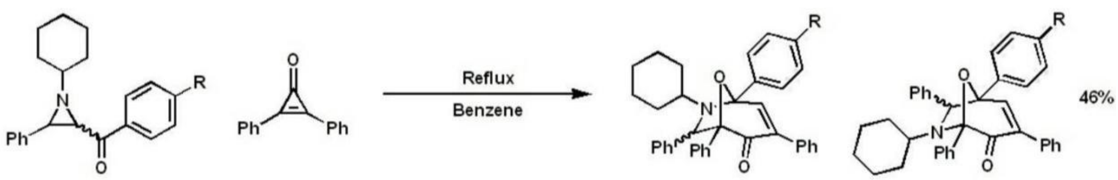


Rastevione Mesylate

Arteagane

113

Solution #2 (December 10, 2007):



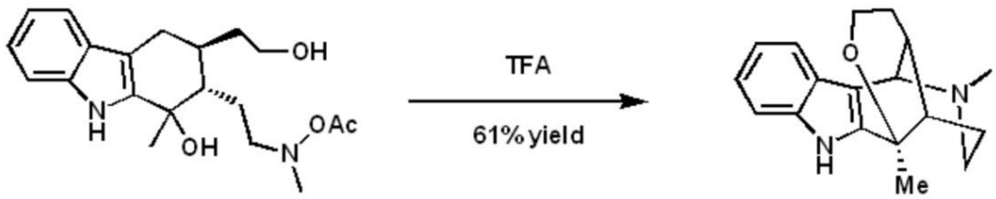
两种产物都是由一含氮中间产物和一不含氮中间产物通过1，3偶极环加成得到的

114　　提示 vinyl lithium 是乙烯基锂

Problem (November 26, 2007):

115

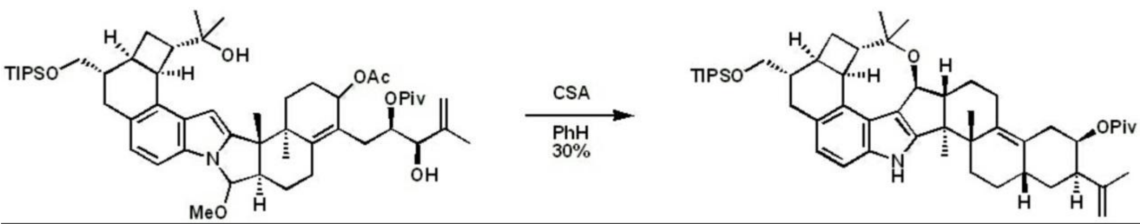
Problem (November 19, 2007):



Reference: JACS, 2004, 126, 3534

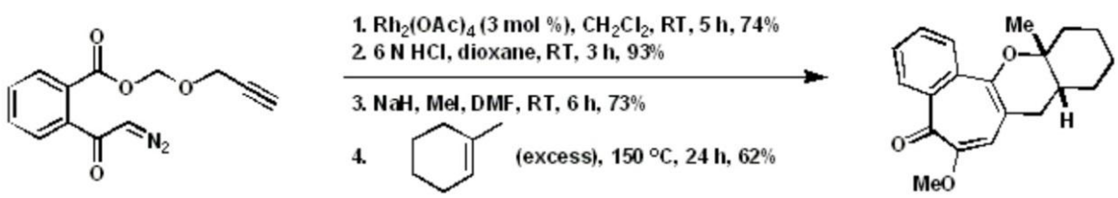
116

Problem (November 5, 2007):



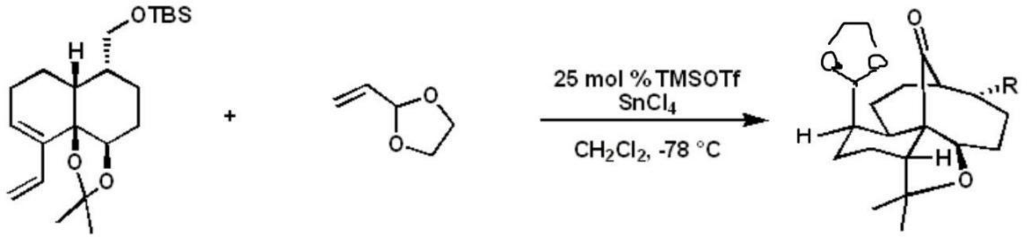
117

Problem (October 22, 2007):



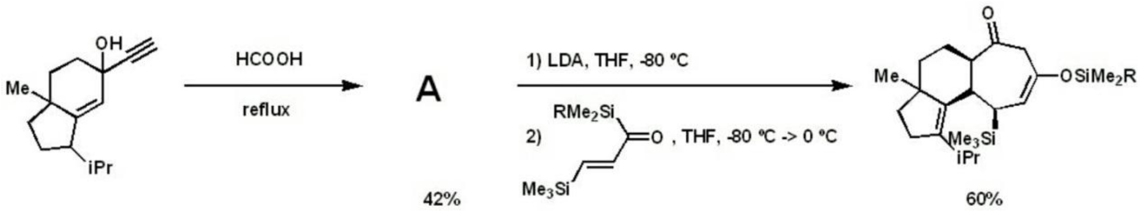
118

Problem (September 17, 2007):



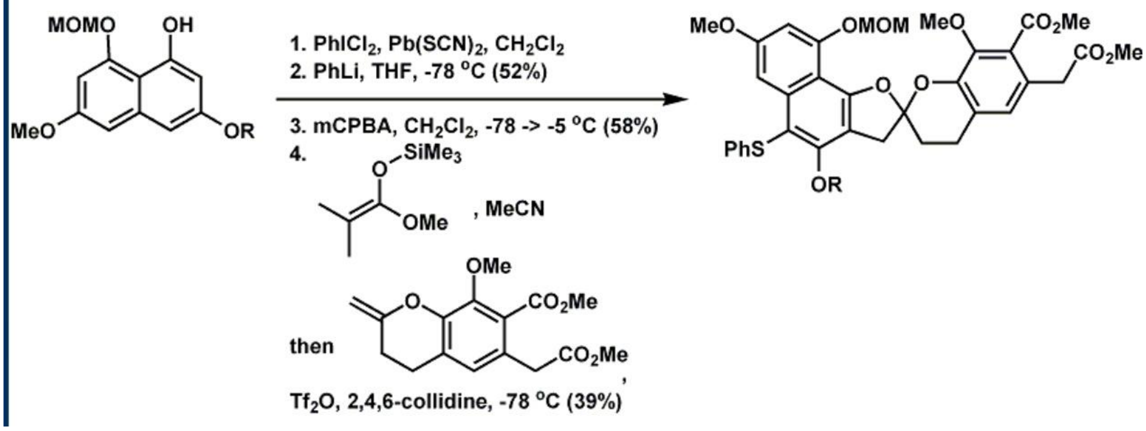
119

Problem (Oct 1, 2007):



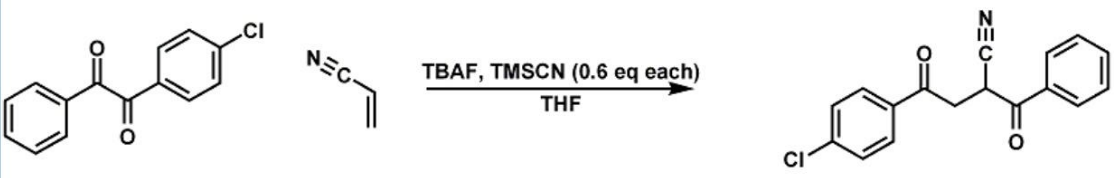
120

Problem (August 27, 2007):



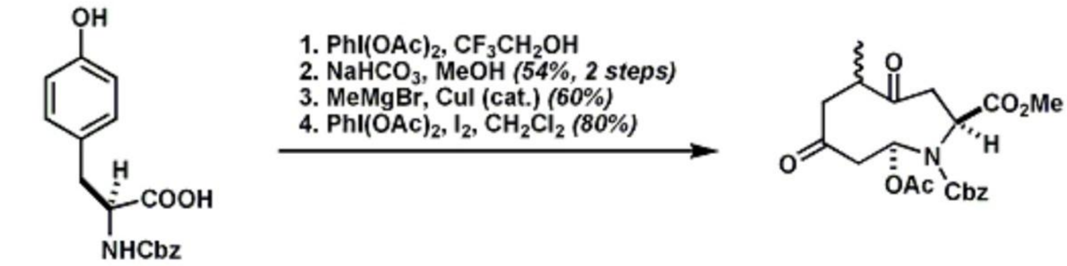
121

Problem (June 18, 2007):



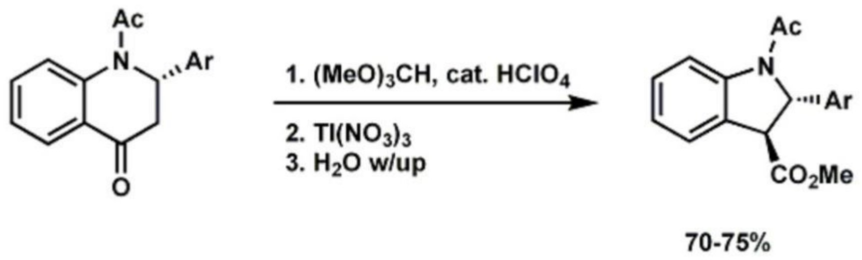
122

Problem (June 11, 2007):



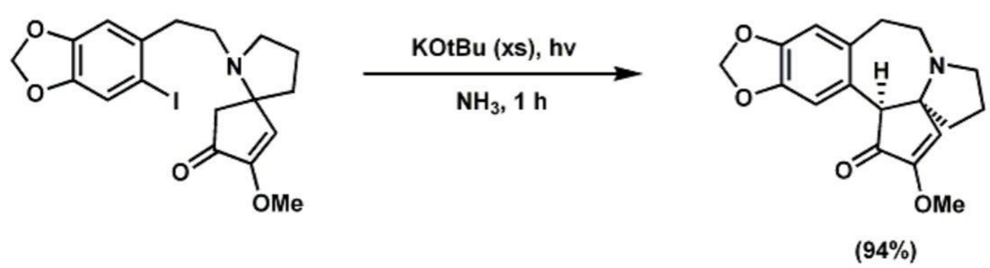
123

Problem (April 23, 2007):



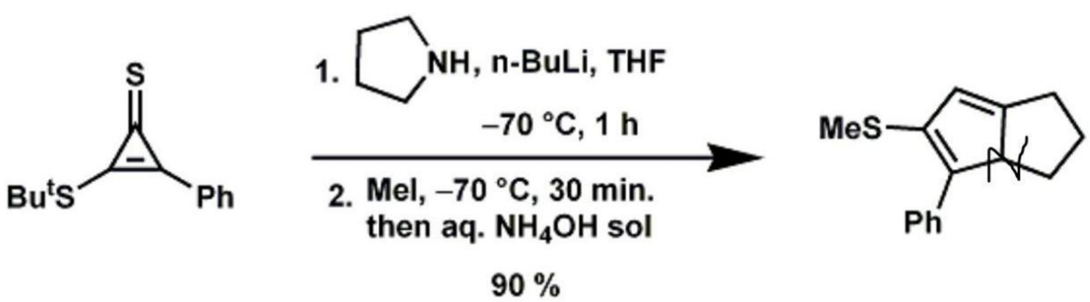
124

Problem (April 15, 2007):



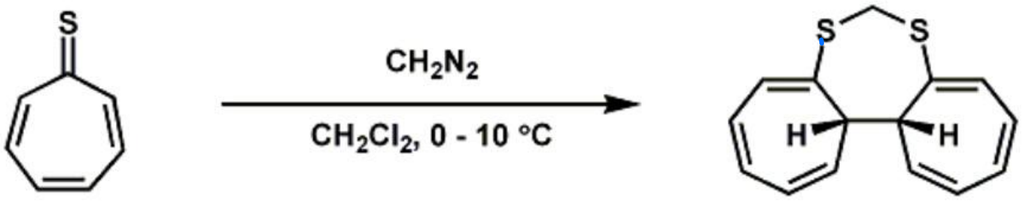
125

Problem (April 09, 2007):



126

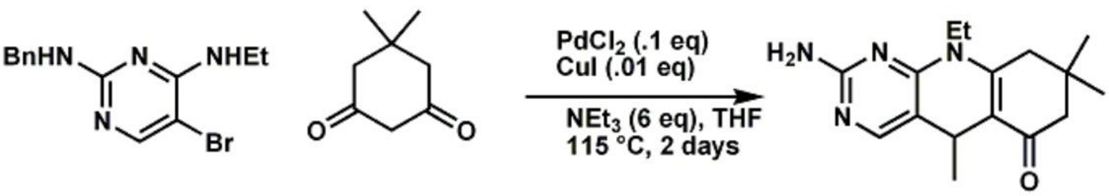
Problem (April 2, 2007):



Experimental observation: Mechanism proceeds through an isolable intermediate of molecular formula $C_{15}H_{14}S_2$, which has 5 peaks in the ^{13}C NMR spectrum.

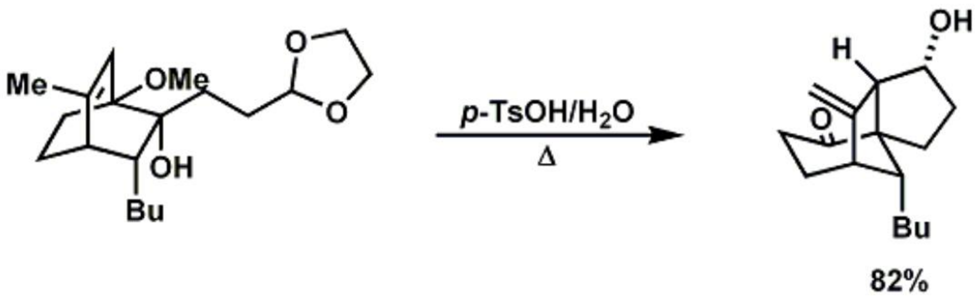
127

Problem (May 18, 2007):



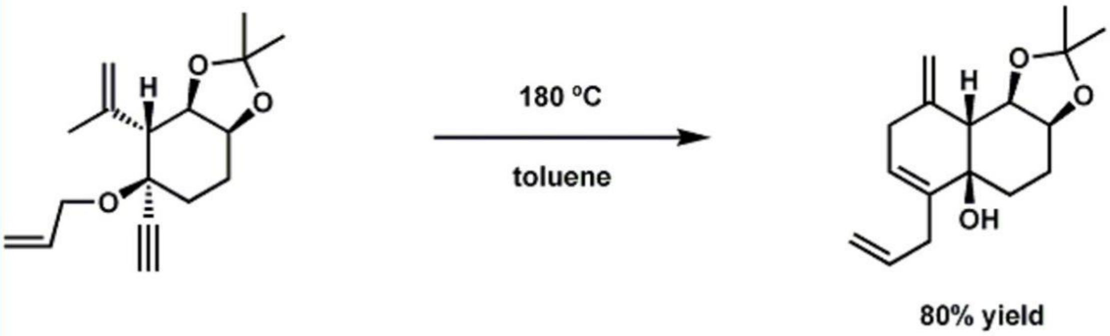
128

Problem (March 12, 2007):

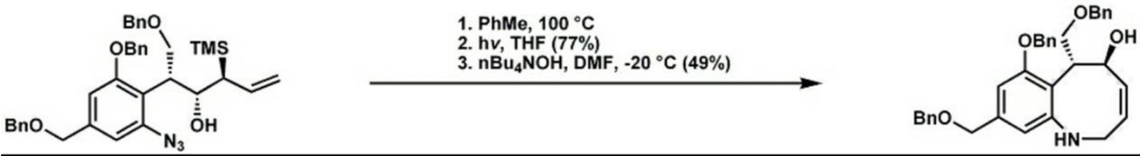


129

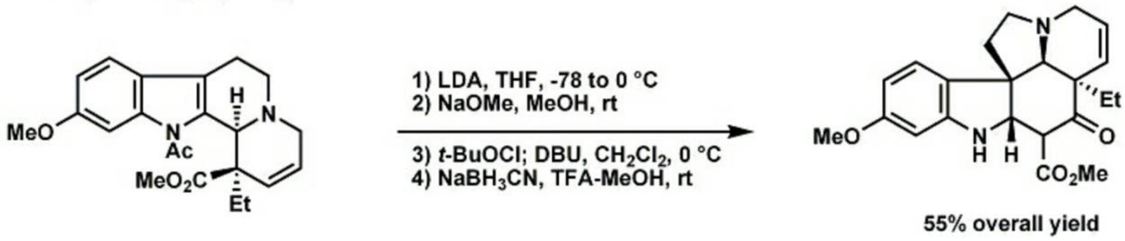
Problem (January 29, 2007):



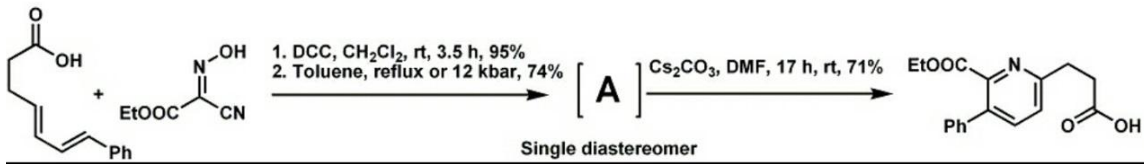
130
Problem (March 5, 2007):



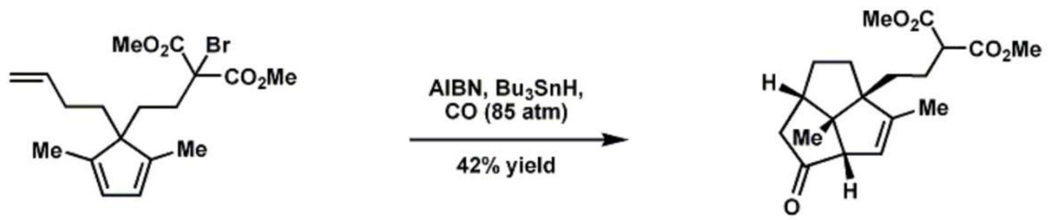
131
Problem (February 12, 2007):



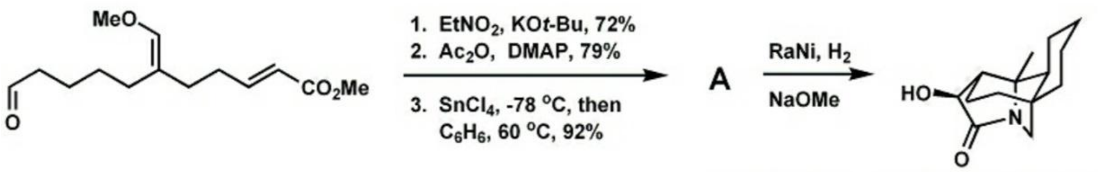
132
Problem (February 5, 2007):



133
Problem (December 11, 2006):

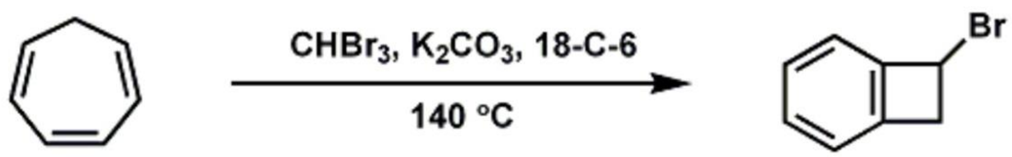


134
Solution (November 27, 2006):



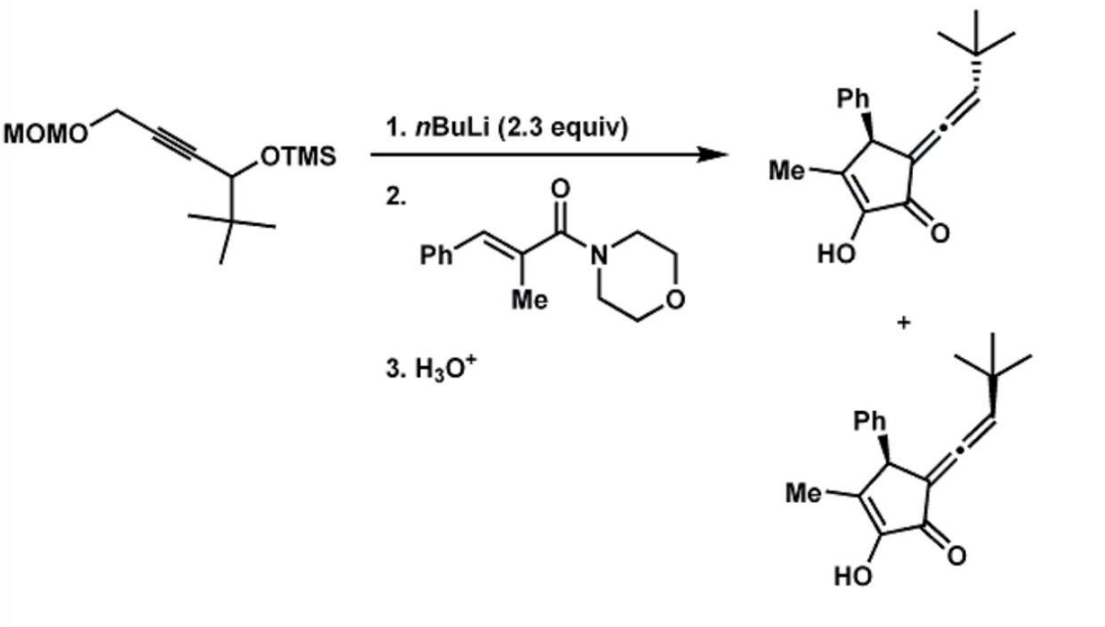
Denmark et.al., *J. Org. Chem.* **2006**, *71*, 593.

135
Problem (October 30, 2006):



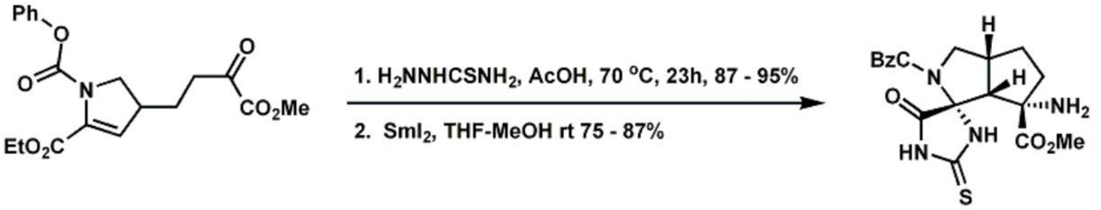
136

Problem (August 21, 2006):



4:1 dr, 74 % yield

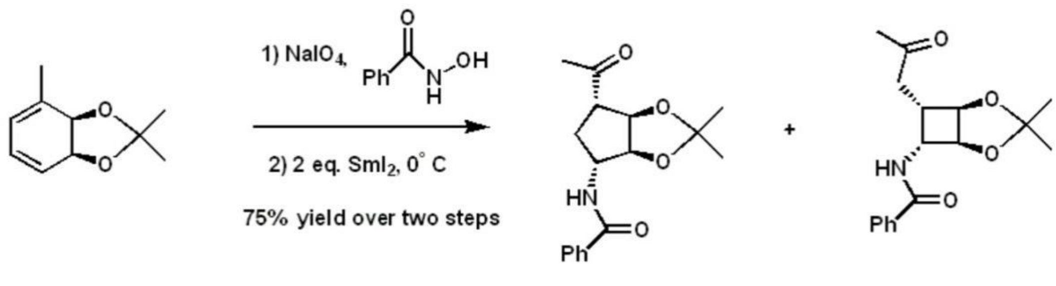
Problem (August 14, 2006):



Overman et. al. *J. Am. Chem. Soc.* **1997,** *119,* 7159

137

Problem (June 26, 2006):

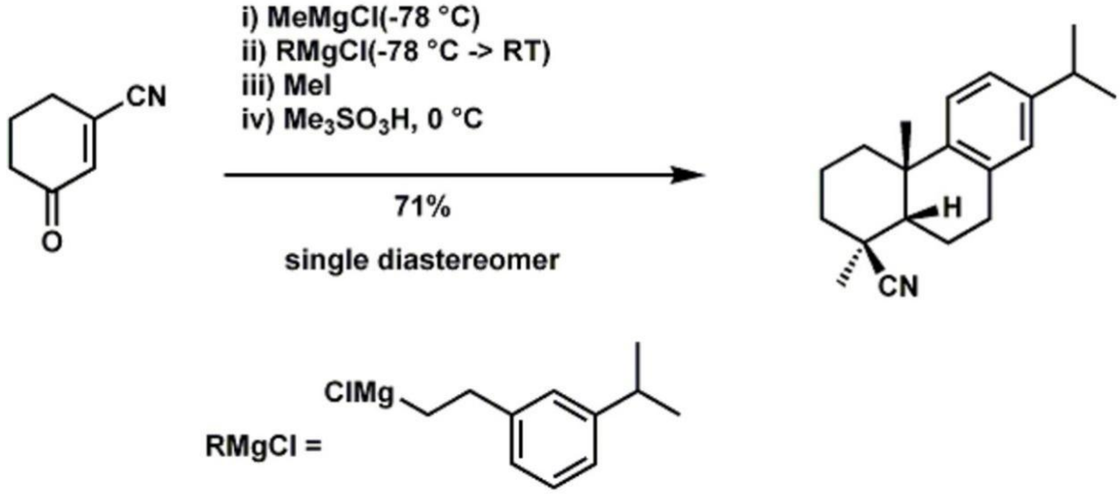


4 : 1

Reference: Org. Lett. 2, 1457

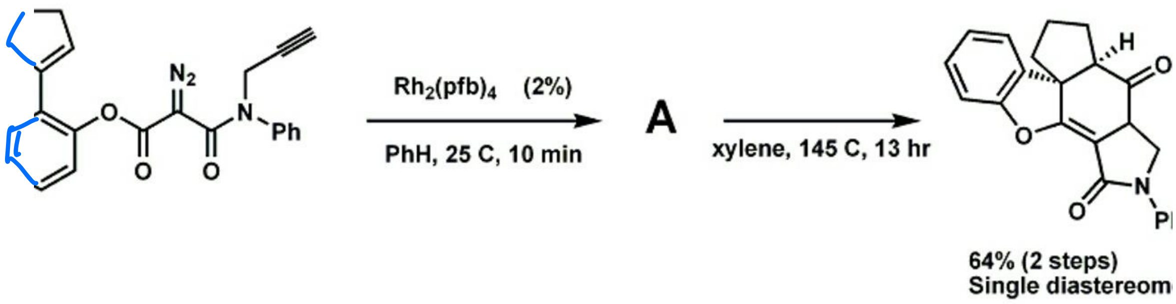
138

Problem (March 27, 2006):



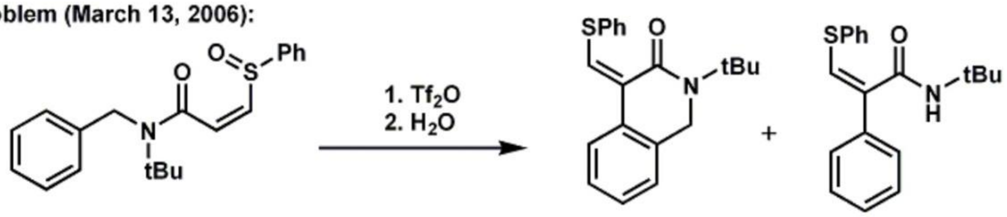
139

blem (April 17, 2006):



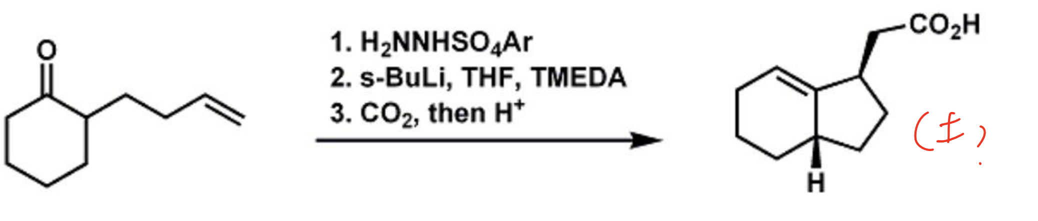
140

Problem (March 13, 2006):



141

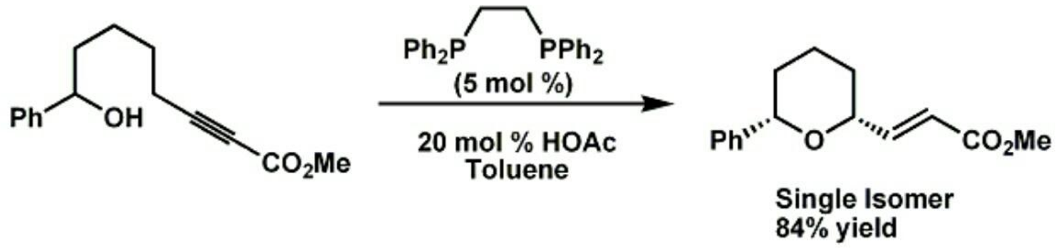
Problem (March 6, 2006):



Rationalize Stereochemistry

142

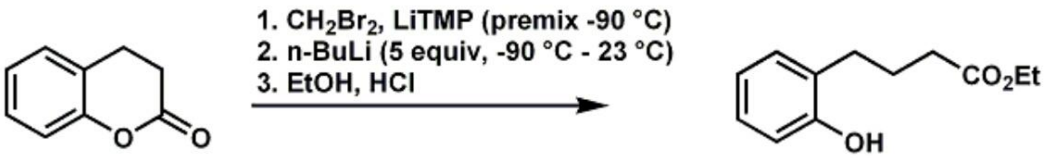
Problem (March 20, 2006):



Rationalize diastereoselectivity

143

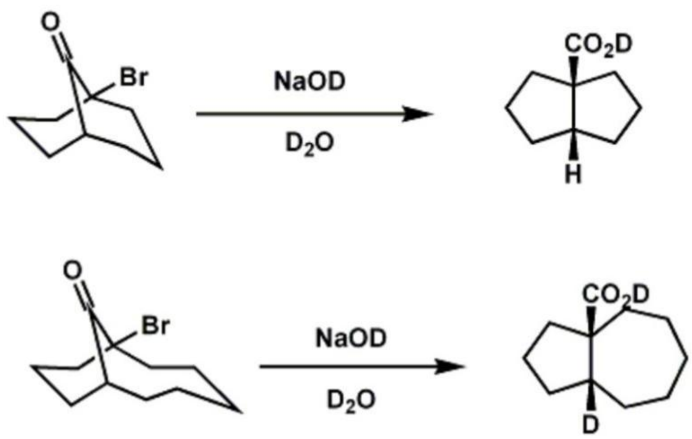
Problem (February 20, 2006):



144

Problem (January 23, 2006):

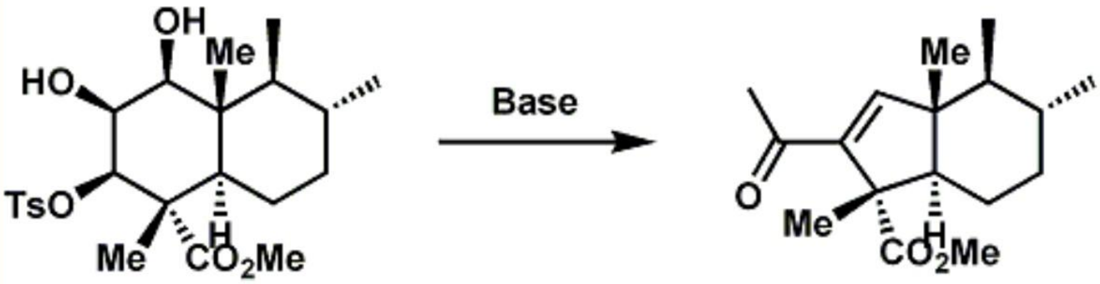
Explain the presence or absence of deuterium in the products of the following reactions



145

Problem 2 (January 16, 2006):

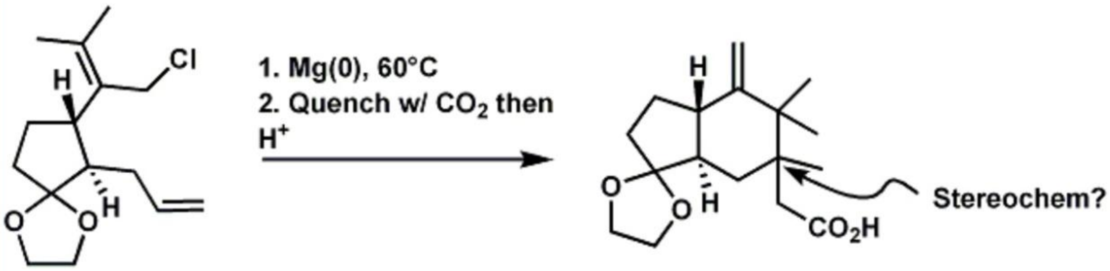
Provide a mechanism for the following transformation



146

Problem (January 16, 2006):

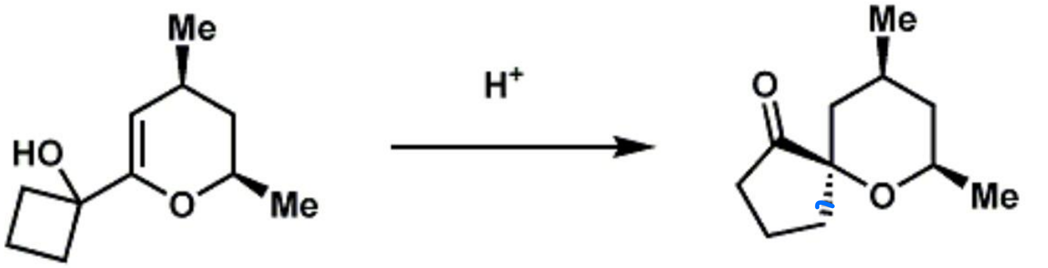
Provide a mechanism and stereochemical rationale



147

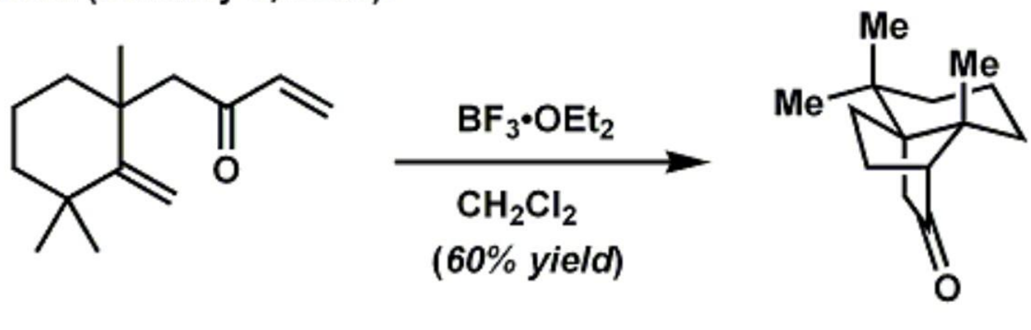
Problem II (January 9, 2006):

Rationalize Stereochemistry in the following reaction



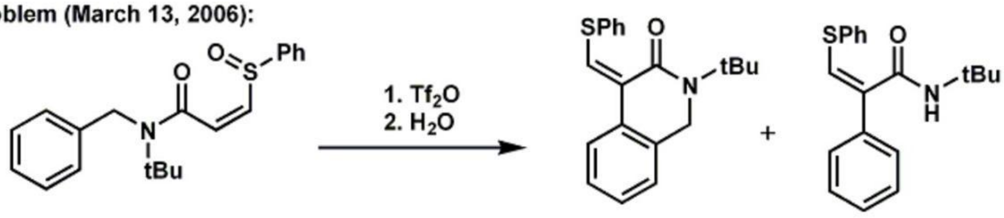
148

Problem (January 9, 2006):



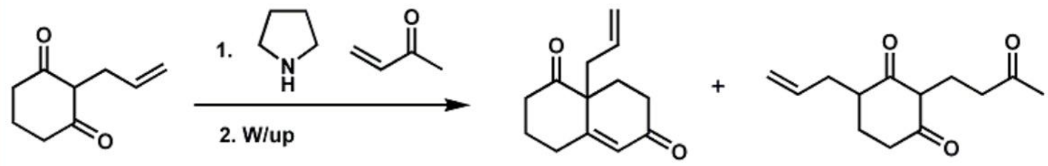
149

Problem (March 13, 2006):



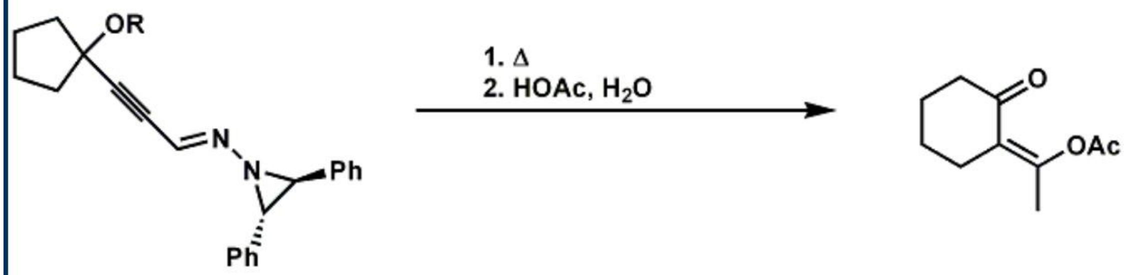
150

Problem (October 31, 2005):



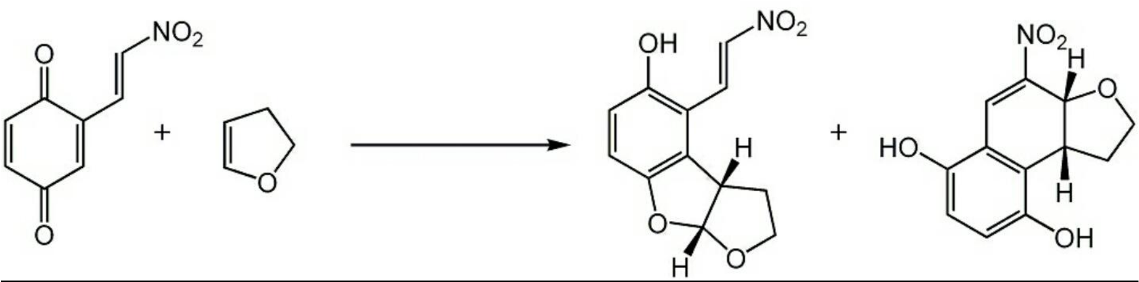
151

Problem (September 26, 2005):



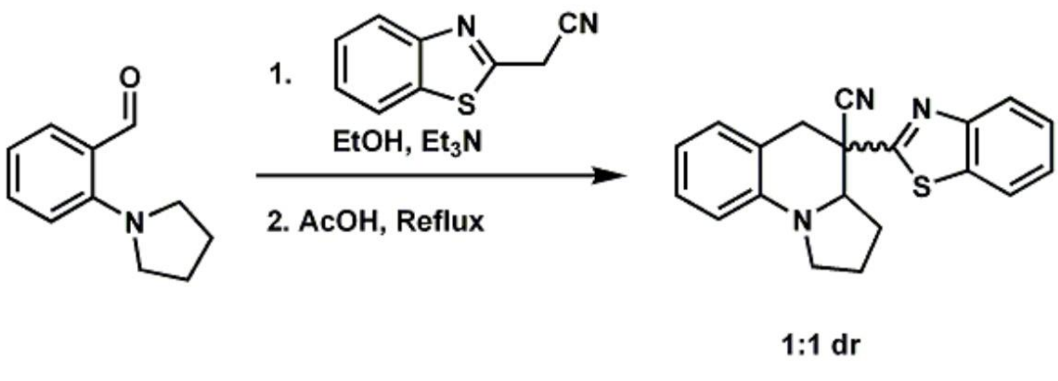
152

Problem (October 4, 2005):



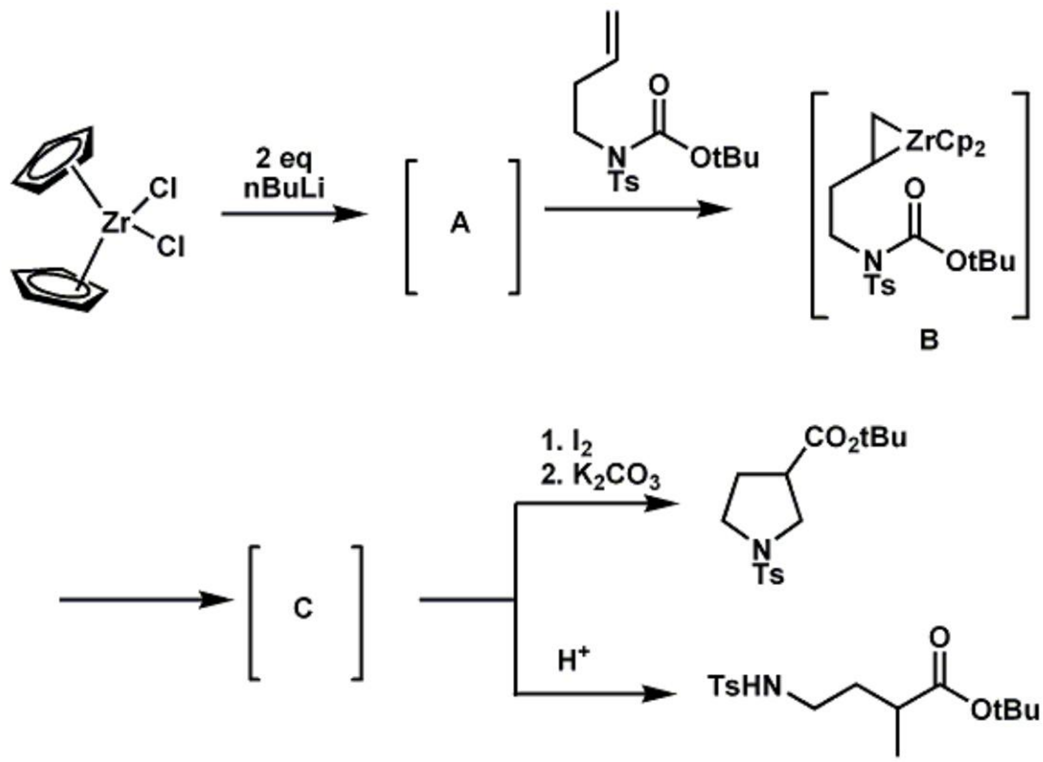
153

Problem 1 (August 29, 2005):



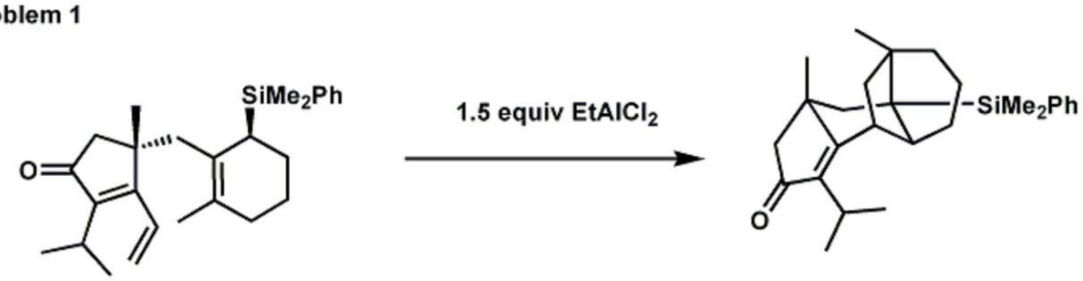
154

Problem (August 15, 2005):

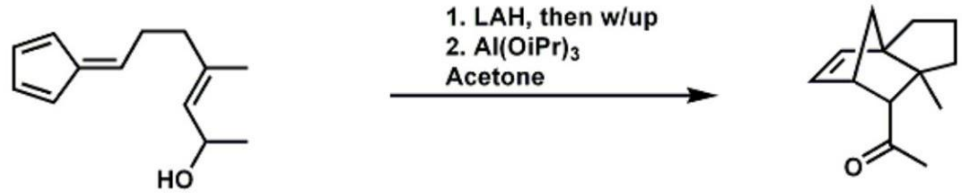


July 25, 2005:

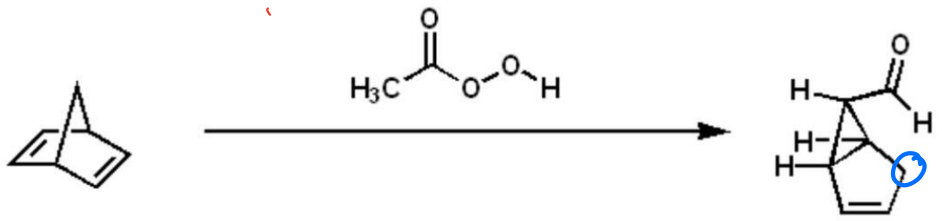
Problem 1



Problem 2

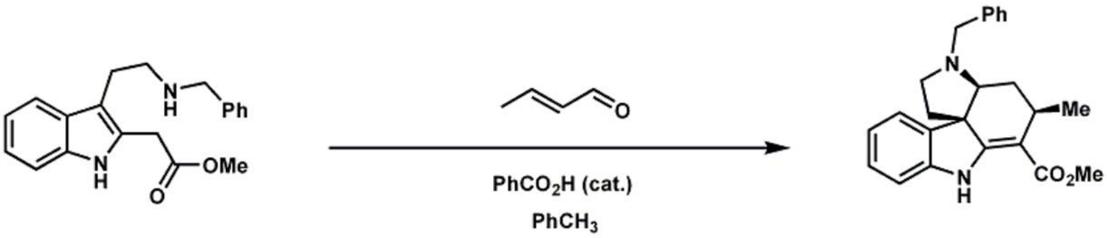


Problem (June 20, 2005):



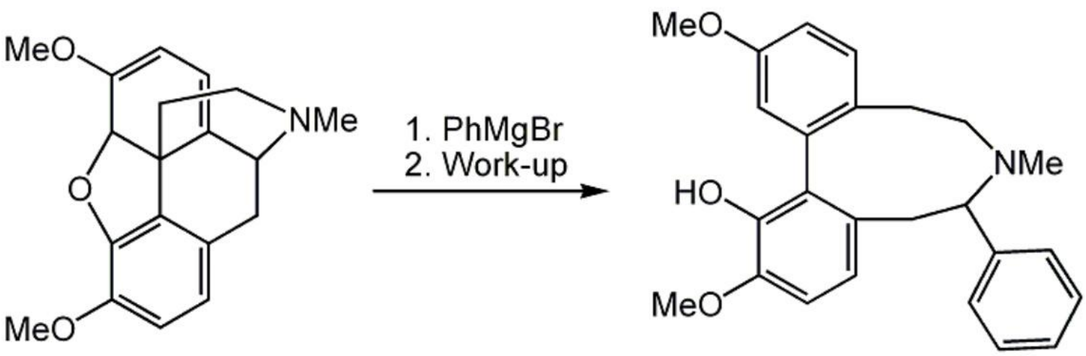
157

Problem (June 13, 2005):



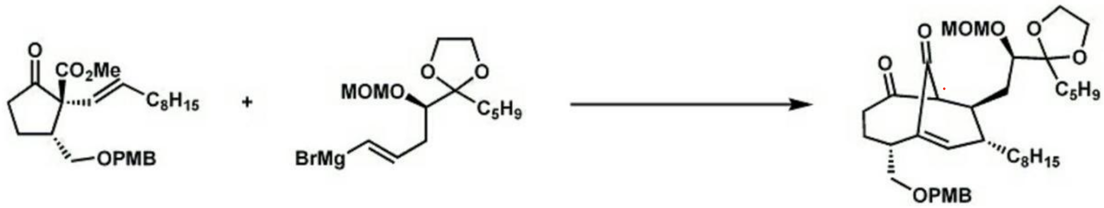
158

Problem (September 5, 2005):



159

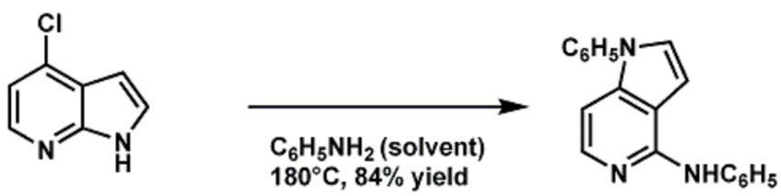
Problem (July 11, 2005):



JACS 2000 7424

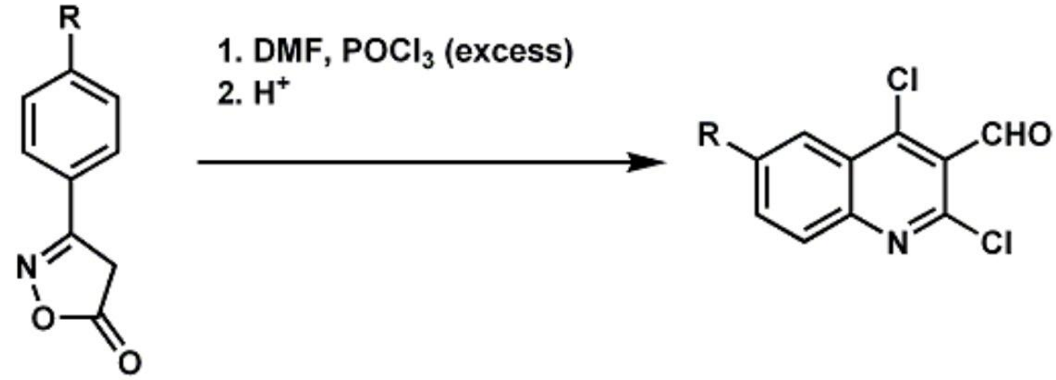
160

Problem (June 6, 2005):



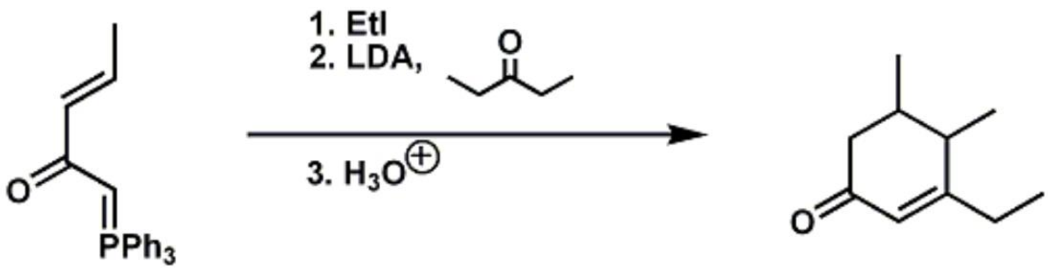
161

Problem (May 23, 2005):



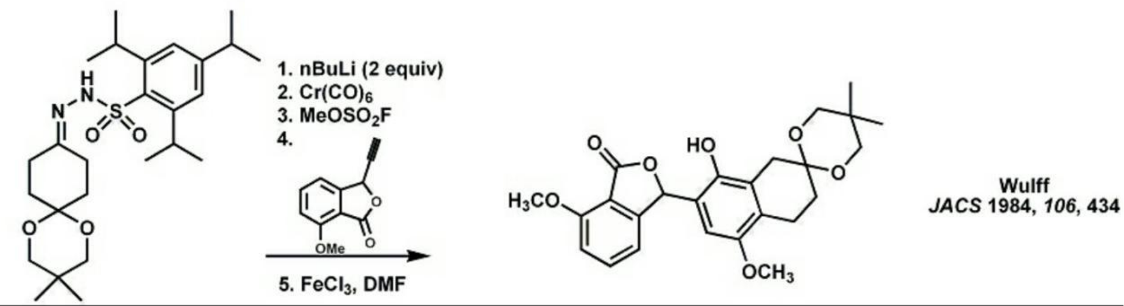
162

Problem 2 (May 16, 2005):



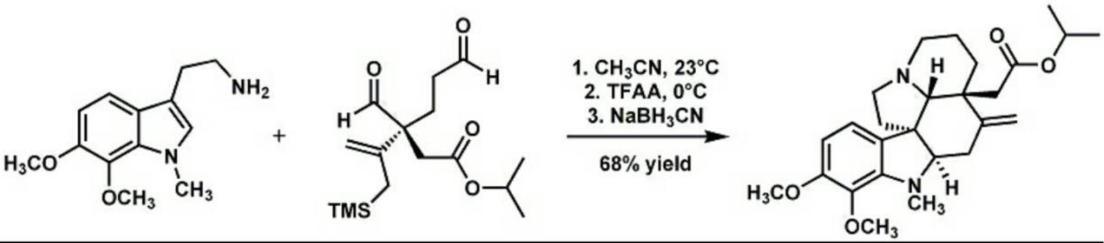
163

Problem (April 25, 2005):



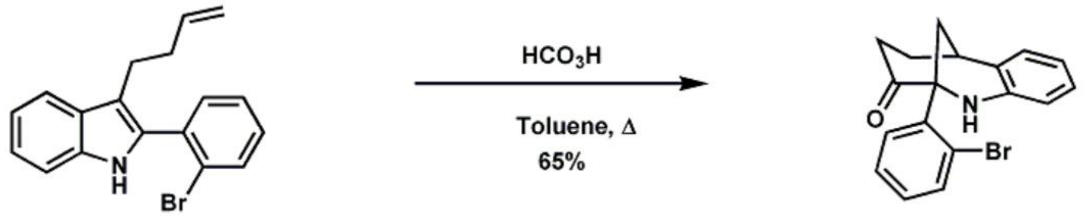
164

Problem



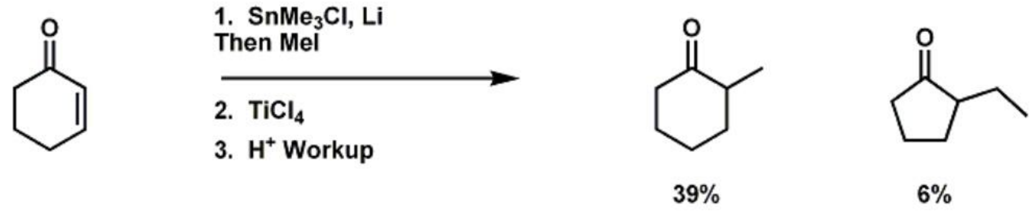
165

Problem #2 (April 18, 2005):



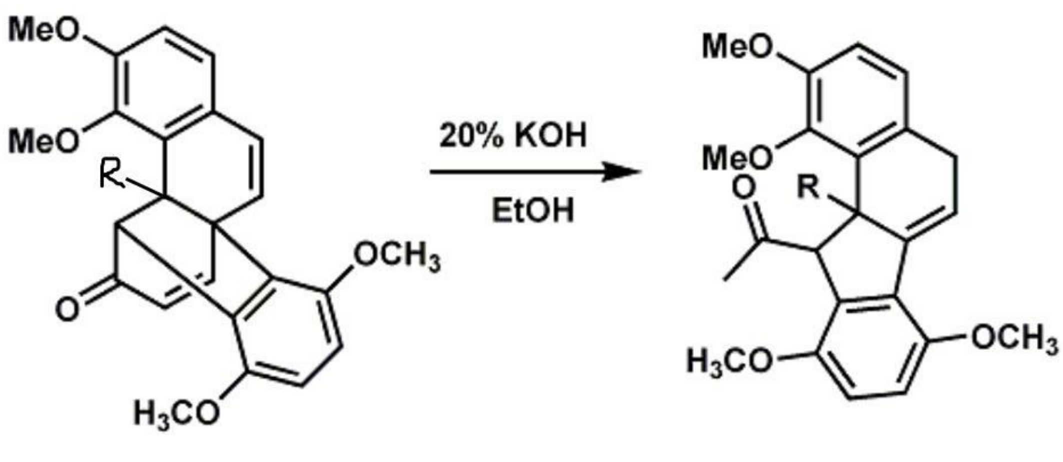
166

Problem 1 (April 18, 2005):



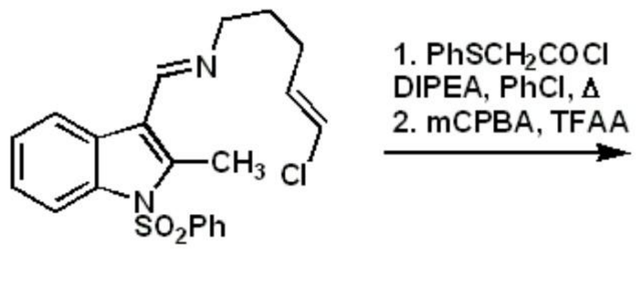
167

Problem



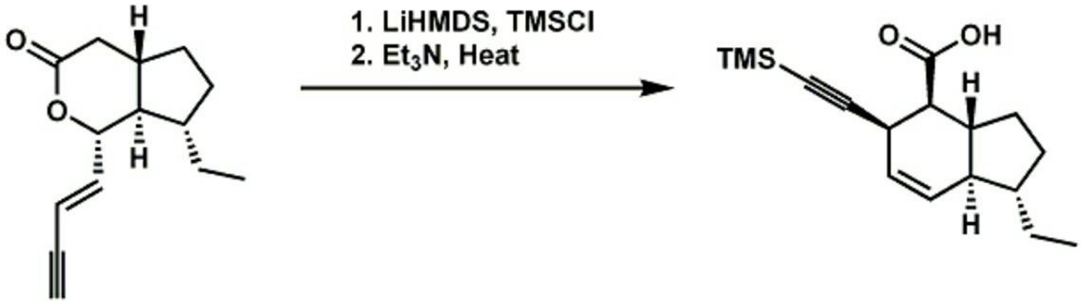
168

Problem (March 28, 2005)



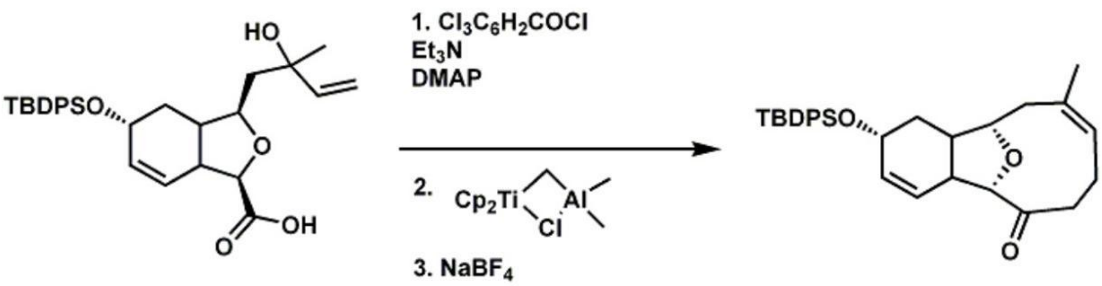
169

Problem #2 (February 21, 2005):



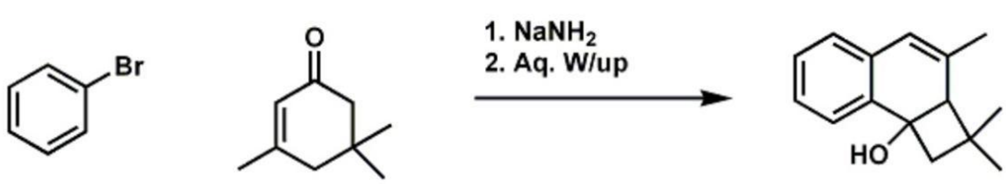
170

Problem



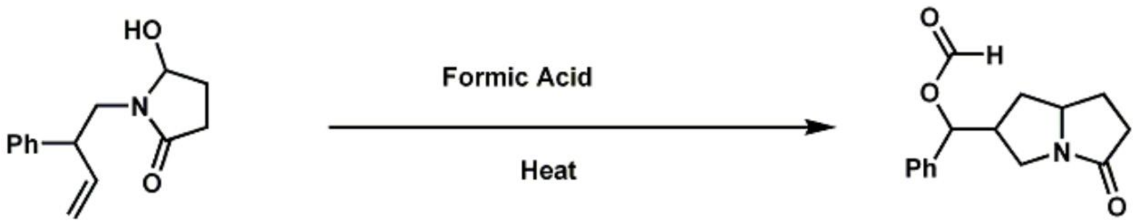
171

Problem (November 29, 2004):

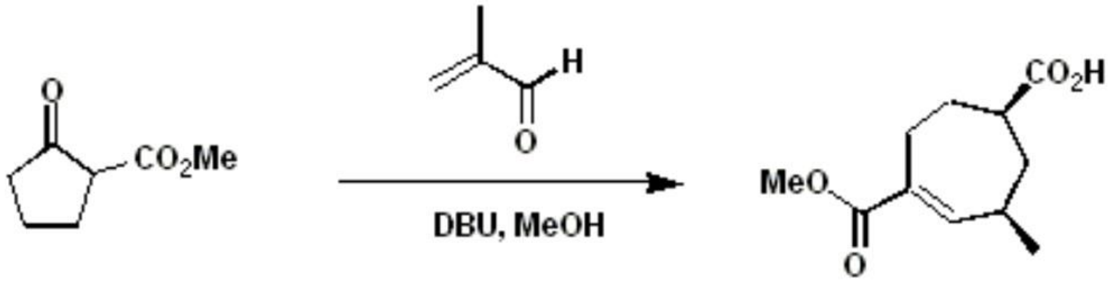


172

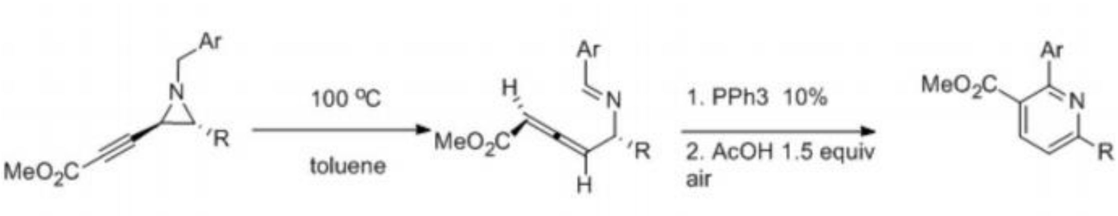
Problem (November 22, 2004):



173

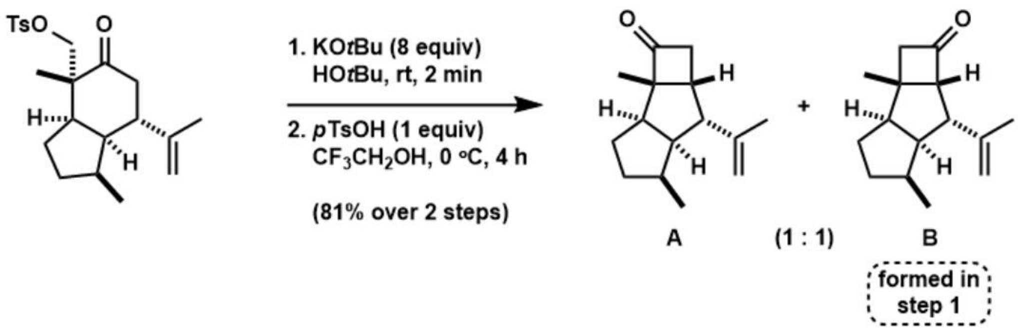


174



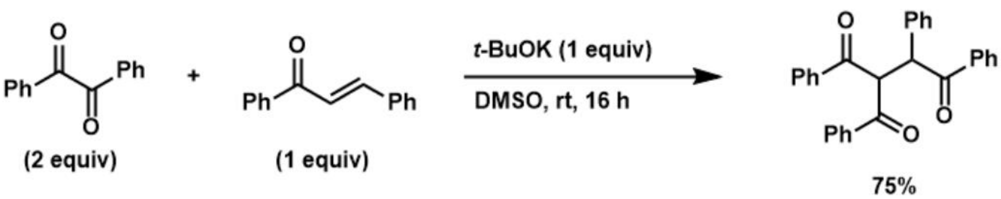
175

Problem (April 25, 2016):



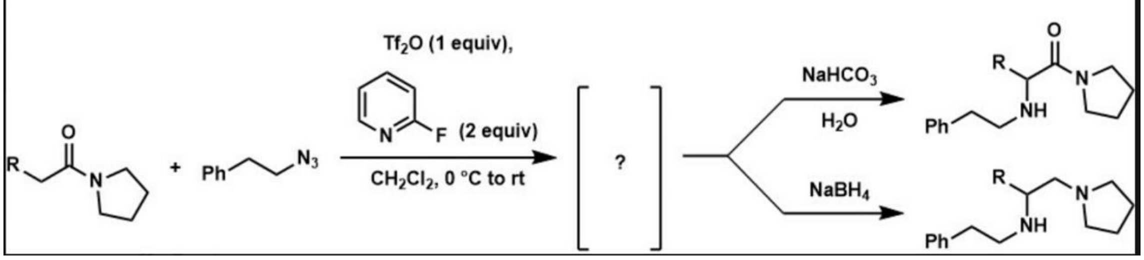
176

Problem (May 9, 2016):



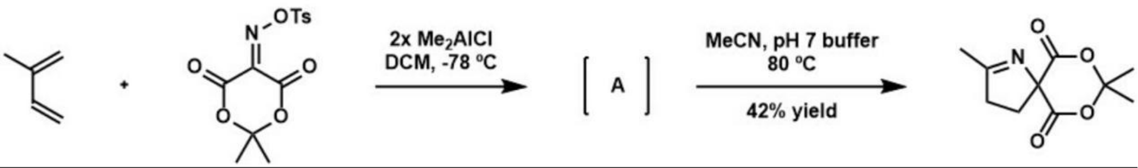
177

Problem (June 29, 2016):

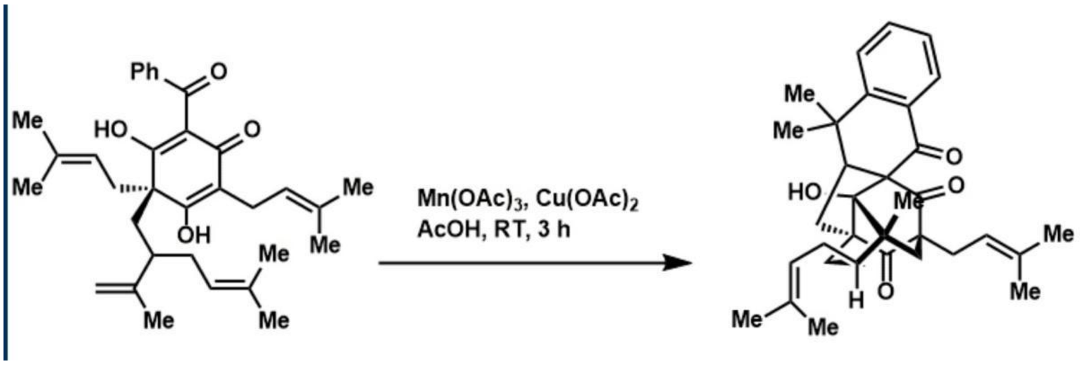


178

Problem (April 14th, 2016)

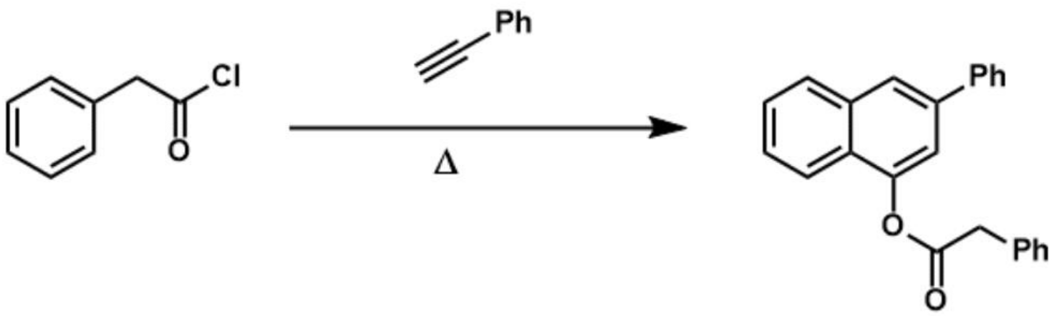


179



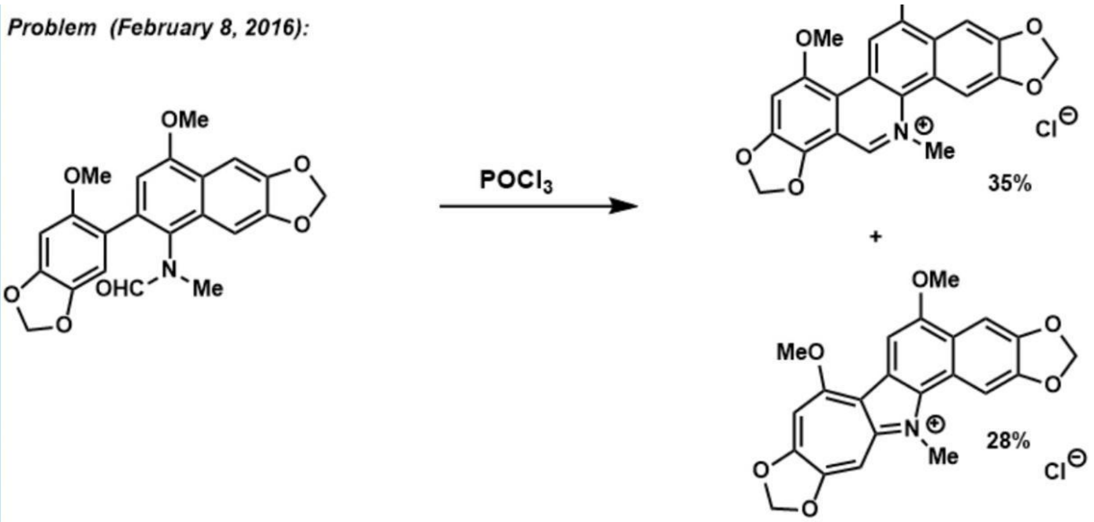
180

Problem (February 22, 2016):



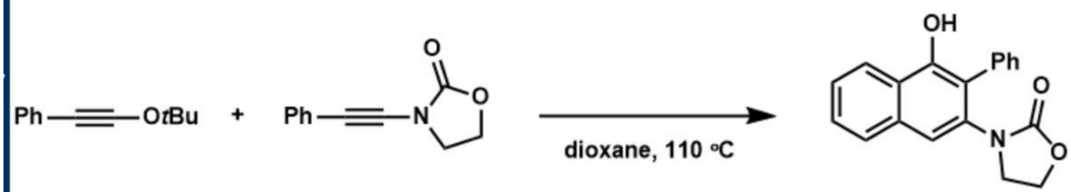
181

Problem (February 8, 2016):

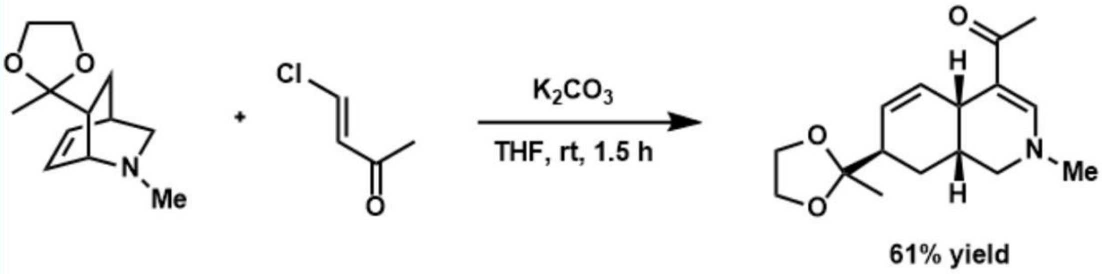


182

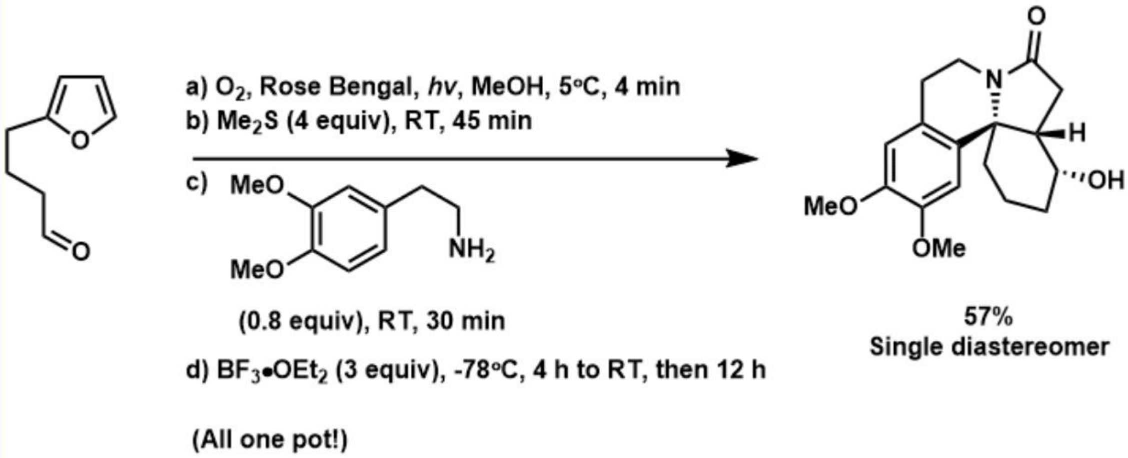
Problem (January 7, 2016):



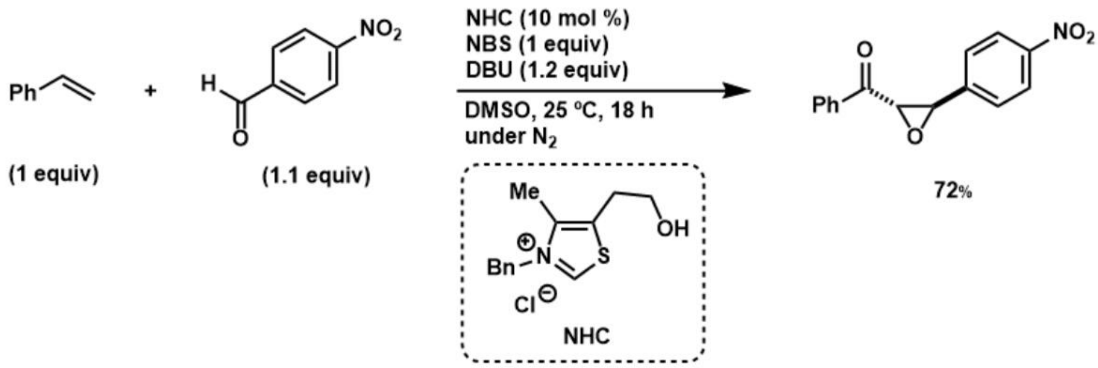
183



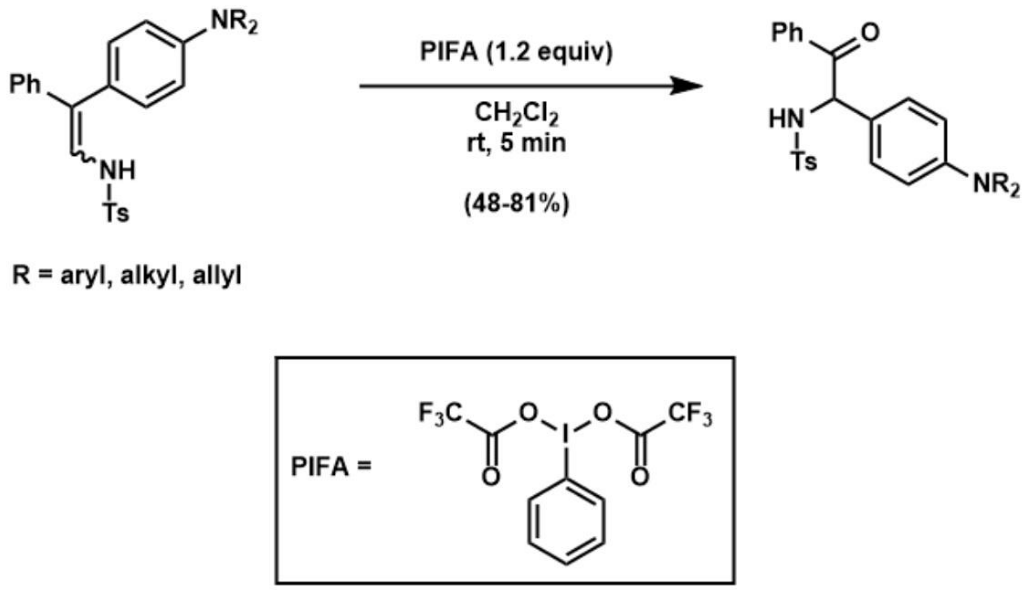
184



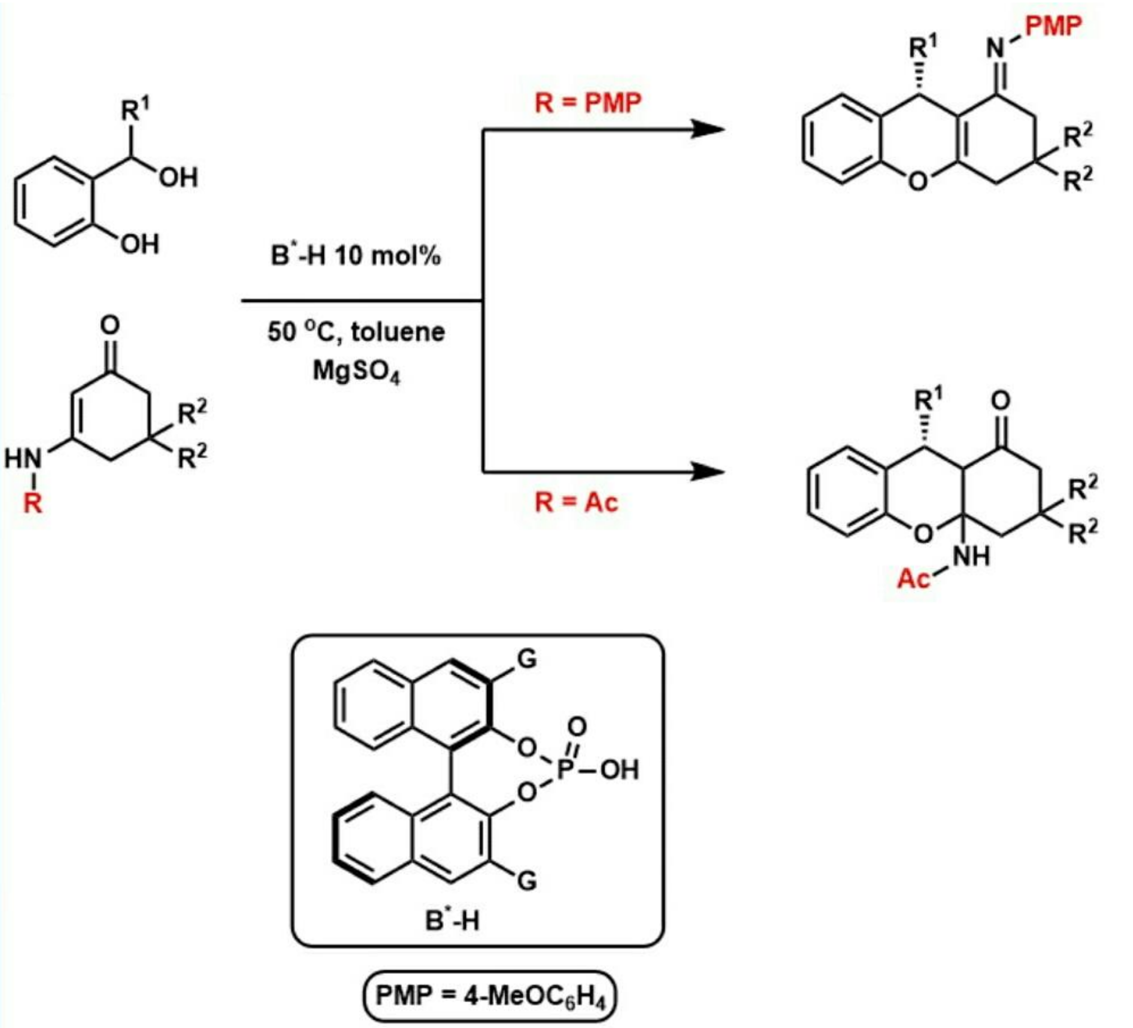
185



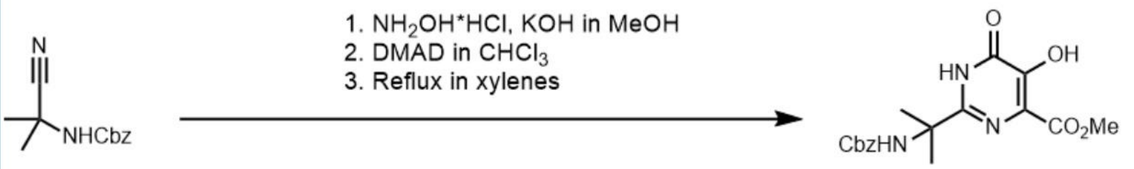
Ph
(1 equiv)
NO2
(1.1 equiv)
NHC (10 mol %)
NBS (1 equiv)
DBU (1.2 equiv)
DMSO, 25 °C, 18 h
under N2
Me
OH
Bn
Cl
NHC
Ph
O
NO2
72%



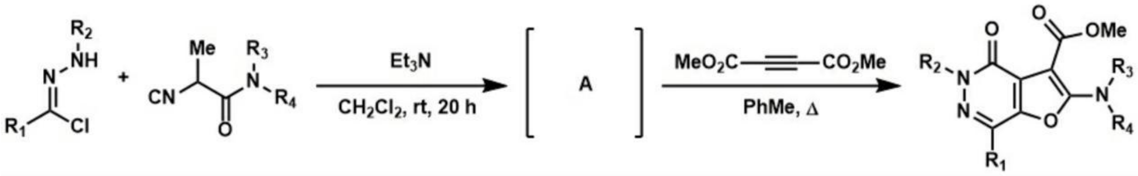
NR2
Ph
NH
Ts
R = aryl, alkyl, allyl
PIFA (1.2 equiv)
CH2Cl2
rt, 5 min
(48-81%)
Ph
O
HN
Ts
NR2
PIFA =
F3C
CF3



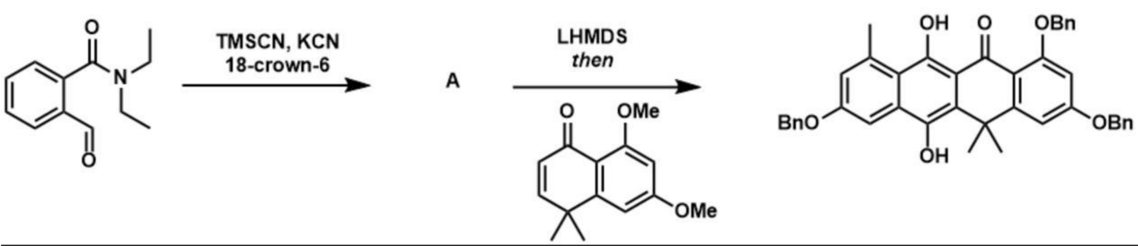
188



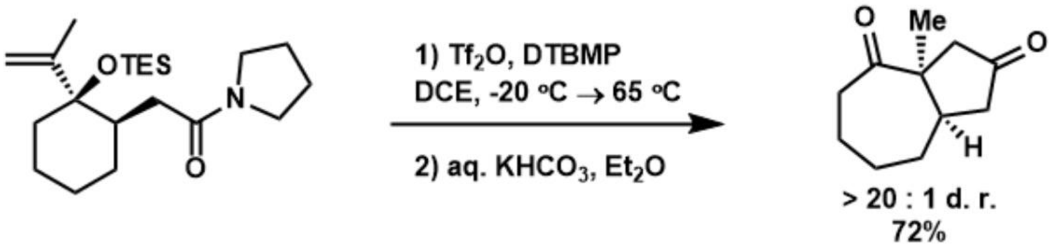
189



190

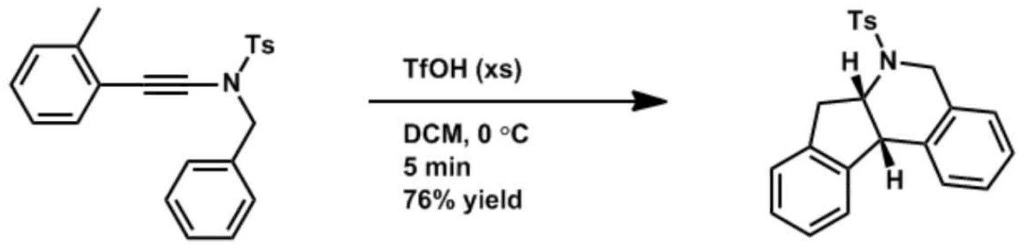


191



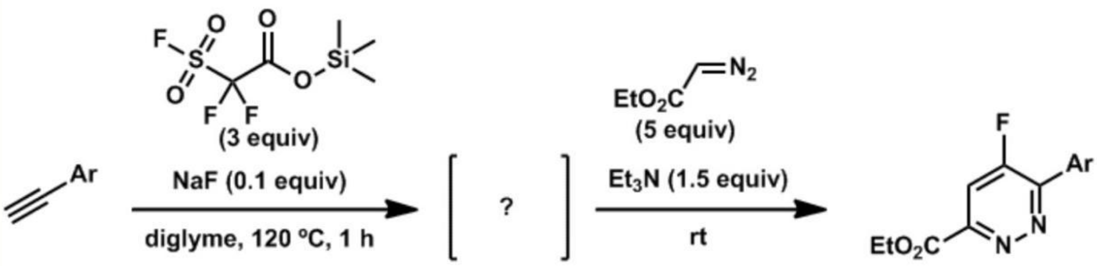
192

193



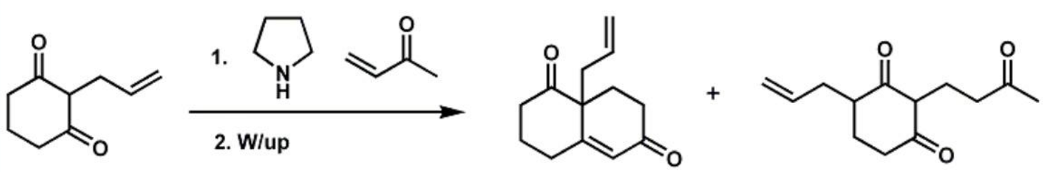
194

Problem (July 13th, 2015):



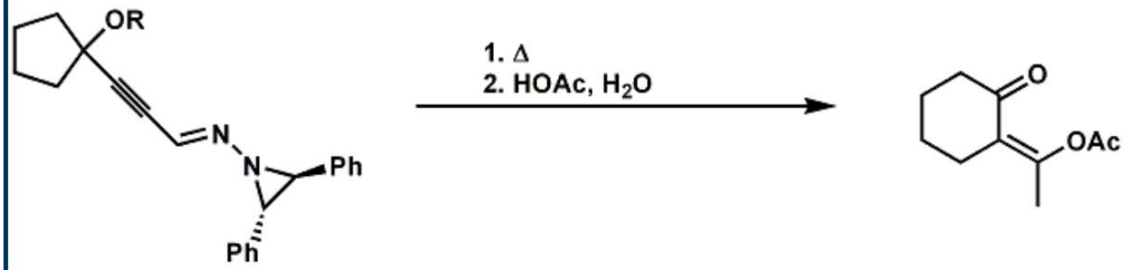
195

Problem (October 31, 2005):



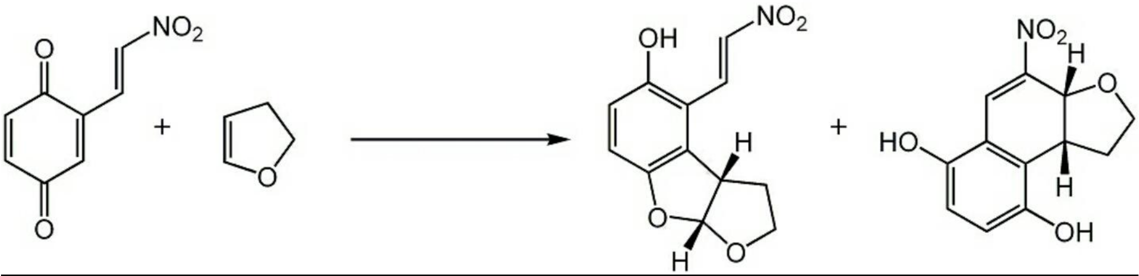
196

Problem (September 26, 2005):



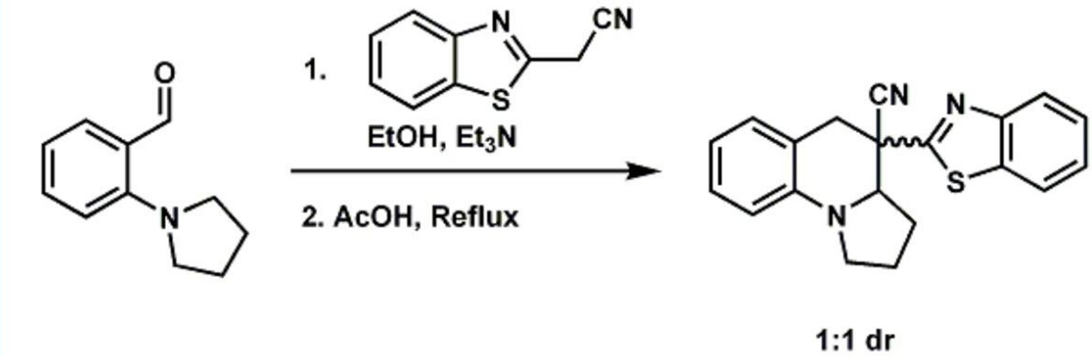
197

Problem (October 4, 2005):



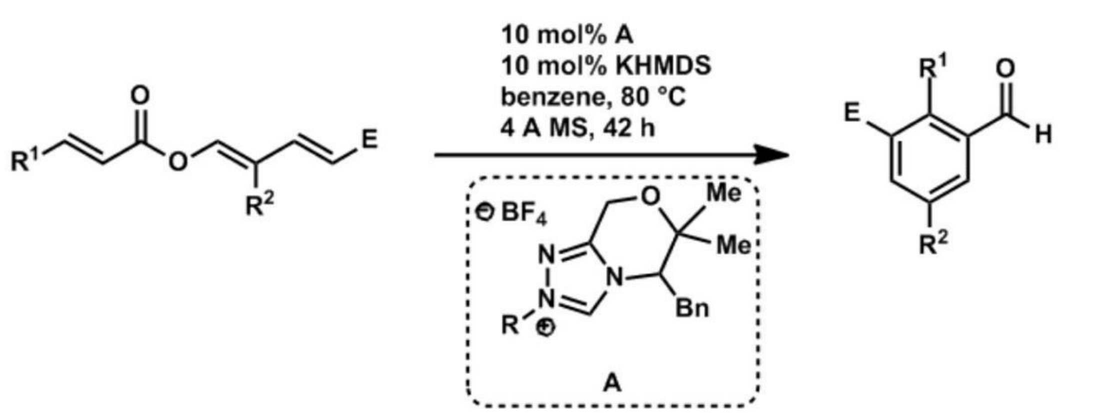
198

Problem 1 (August 29, 2005):

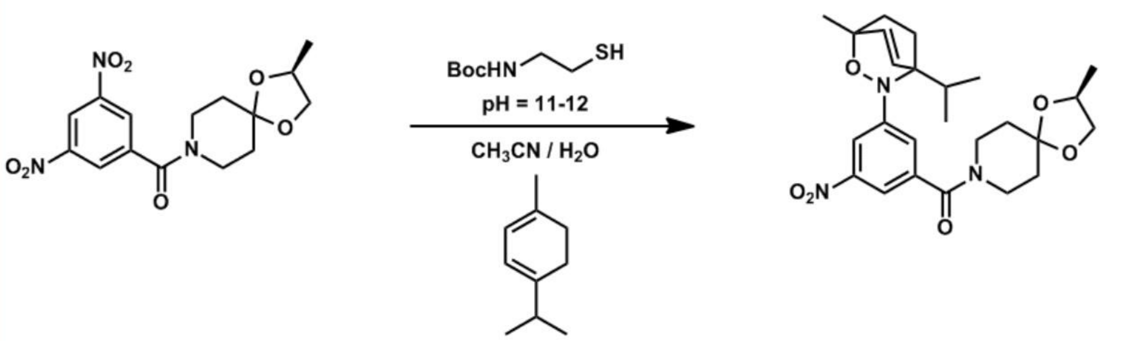


199

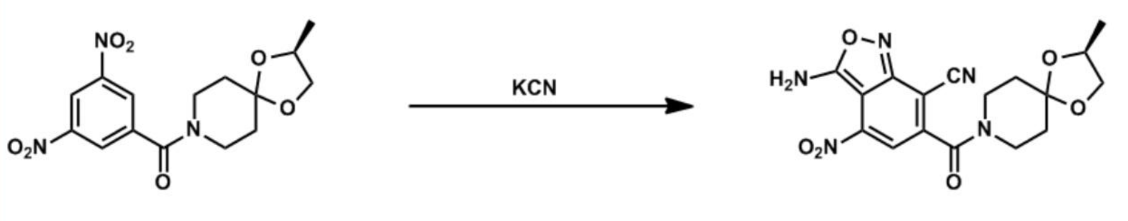
Problem (June 15, 2015):



200



Hint:



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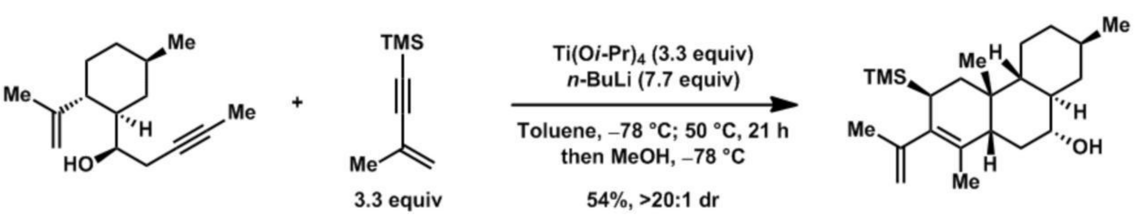
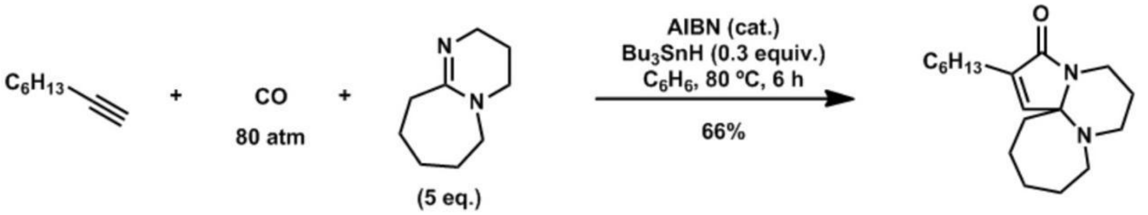
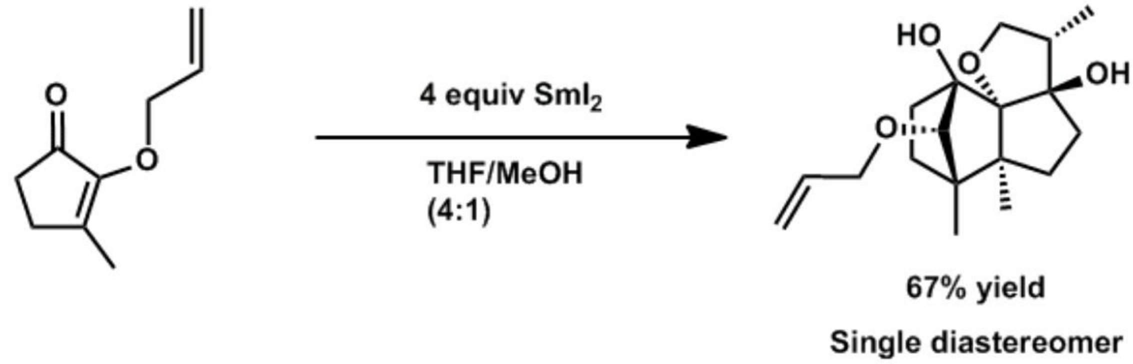
Propose a mechanism



202

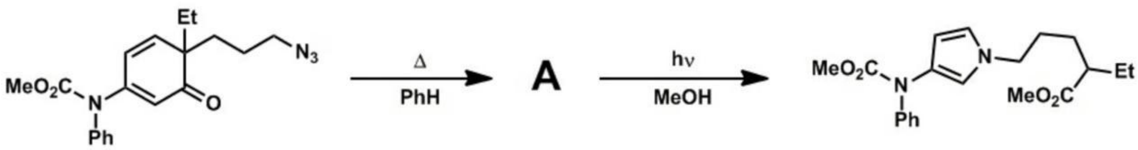


203

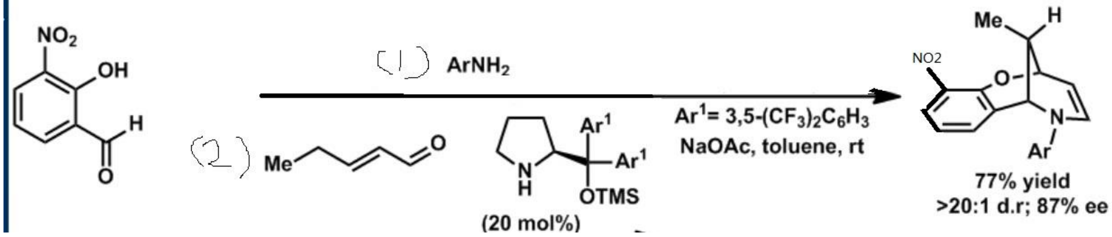


204

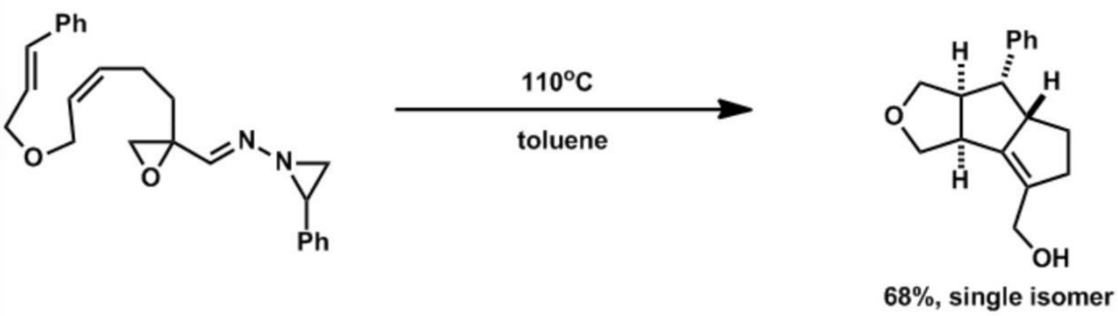
Problem (November 17, 2014):



205



206



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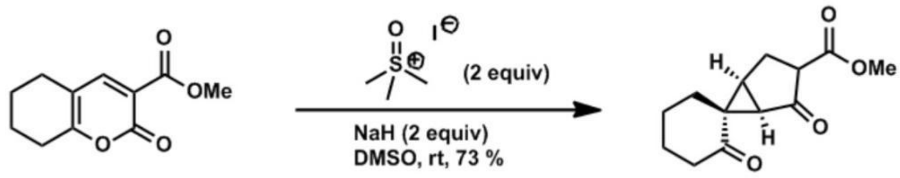
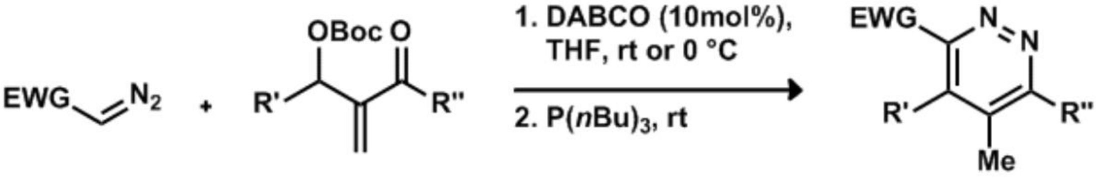
May 5, 2014 - Problem



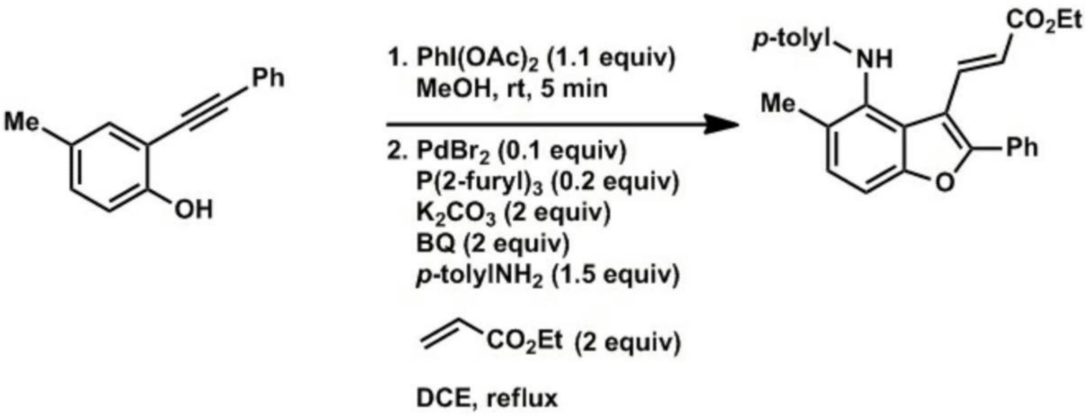
209

Problem (April 28, 2014):



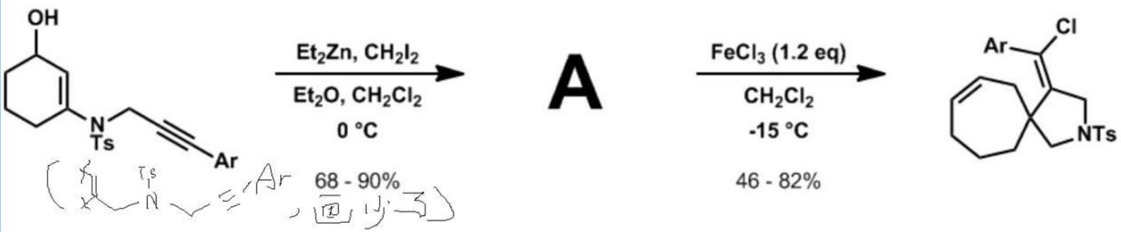
210

Problem (June 2, 2014):



211

Problem (April 14, 2014)



Solution (September 15, 2014): *Org. Lett.* **2014,** *16,* 4504-4507