Synthesis of Anhydroryanodol


1) i-PrMgCl, Cul, I₂, *then* MnO₂
2) 2-lithiofuran, THF, *then* NBS, H₂O
3) TBSOTf, lutidine
4) H₂, ClRh(PPh₃)₃, PhH

Step 2: Please provide the name for this transformation.

5) LiHMDS, 1, THF
6) KHMDS, MeI, THF
7) Bu₃SnCC(CH₂)₂OPMB, Pd(PhCN)₂Cl₂, Ph₃As, THF

Step 4: After which Nobel laureate is the catalyst named?

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[Diagram of chemical structures]
8) Ti(O-i-Pr)$_4$, i-PrMgCl, THF, –78 to –20 °C

Step 8: Please propose a metallocycle intermediate.

9) TMS-imidazole, DCE
10) VO(O-i-Pr)$_3$, t-BuOOH
11) DDQ, CH$_2$Cl$_2$, pH 7 buffer
12) o-NO$_2$C$_6$H$_4$SeCN, PBU$_3$, then H$_2$O$_2$, THF

Hint for Step 9: Only one TMS group is attached.

Step 12: What is the name for this transformation?

Ryanodol
13) TASF, DMF
14) TPAP, NMO
15) NaOH, H₂O, DMSO
16) Hoveyda-Grubbs II, PhMe, 85 °C

After step 15 and 16: a mixture of 2 compounds is obtained

17) TMS-imidazole, 80 °C
18) m-CPBA, DCE
19) Cp₂TiCl₂, Zn, Et₃SiH
20) TASF, DMF
21) CF₃CO₂H, Na₂HPO₄, DCE
22) Li, NH₃, THF, −78 °C

Hint for Step 17: 3 TMS groups are attached.

Hint for Step 20: All TMS groups are removed.