METHOD of the week

Vaska's Complex

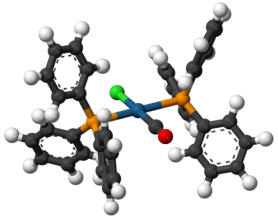
The SARLAH Group

Discovery – Lauri Vaska, 1961

CARBONYL AND HYDRIDO-CARBONYL COMPLEXES OF IRIDIUM BY REACTION WITH ALCOHOLS. HYDRIDO COMPLEXES BY REACTION WITH ACID

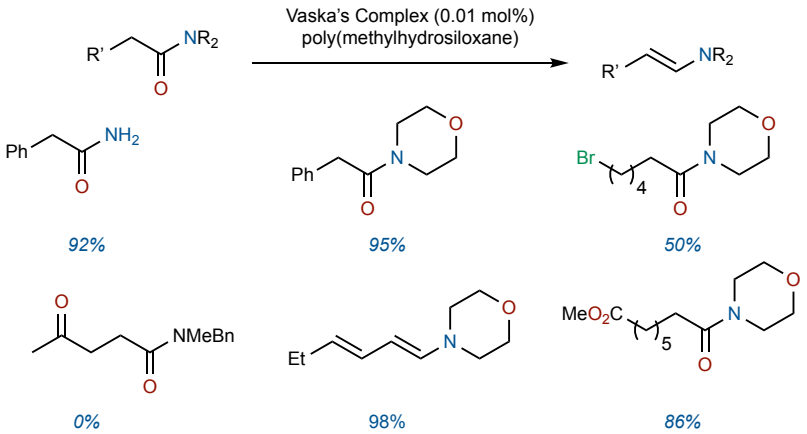
Sir:

JACS, 1961, **83**, 2784 https://doi.org/10.1021/ja01473a054

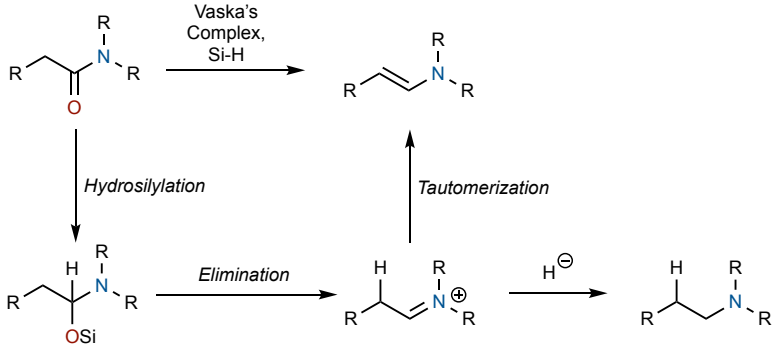


Initial publication describes the synthesis and isolation of the complex alongside its spectroscopic properties

Amide Reduction – Nagashima, 2009



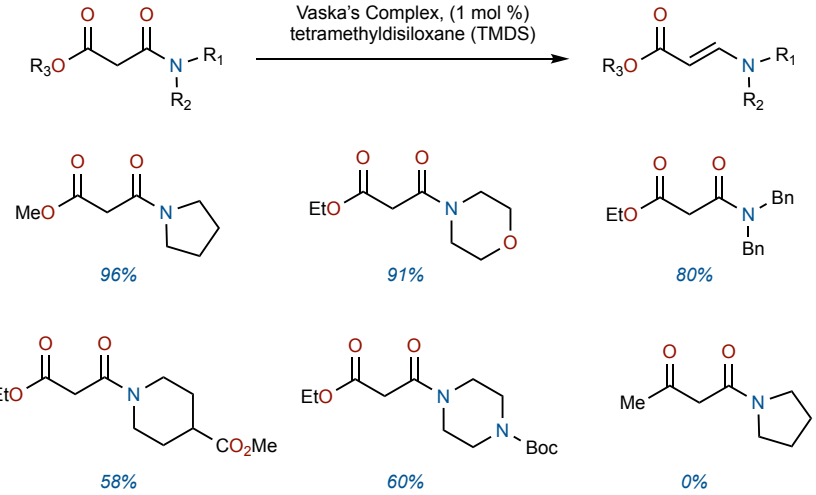
Proposed Mechanism



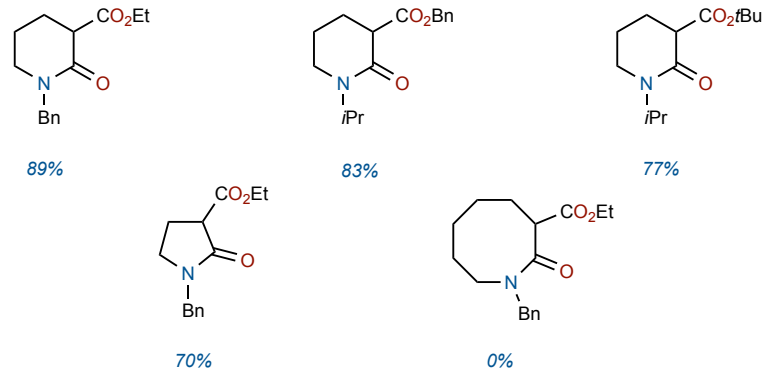
Lewis basicity of tertiary amides gives rise to chemoselectivity!
Trace amine formation can be detected in some cases.

Chem. Commun., 2009, 1574 https://doi.org/10.1039/B821317H

Amido Ester Reduction – Huang, 2019



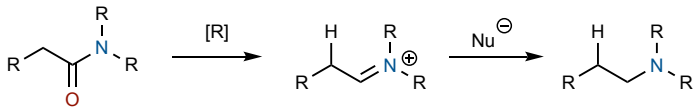
Cyclic Amide Reduction



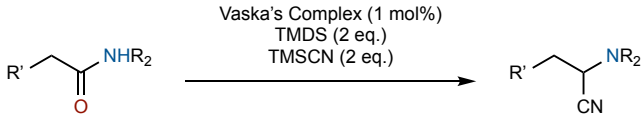
Tetrahedron, 2019, **75**, 1624, https://doi.org/10.1016/j.tet.2018.12.024

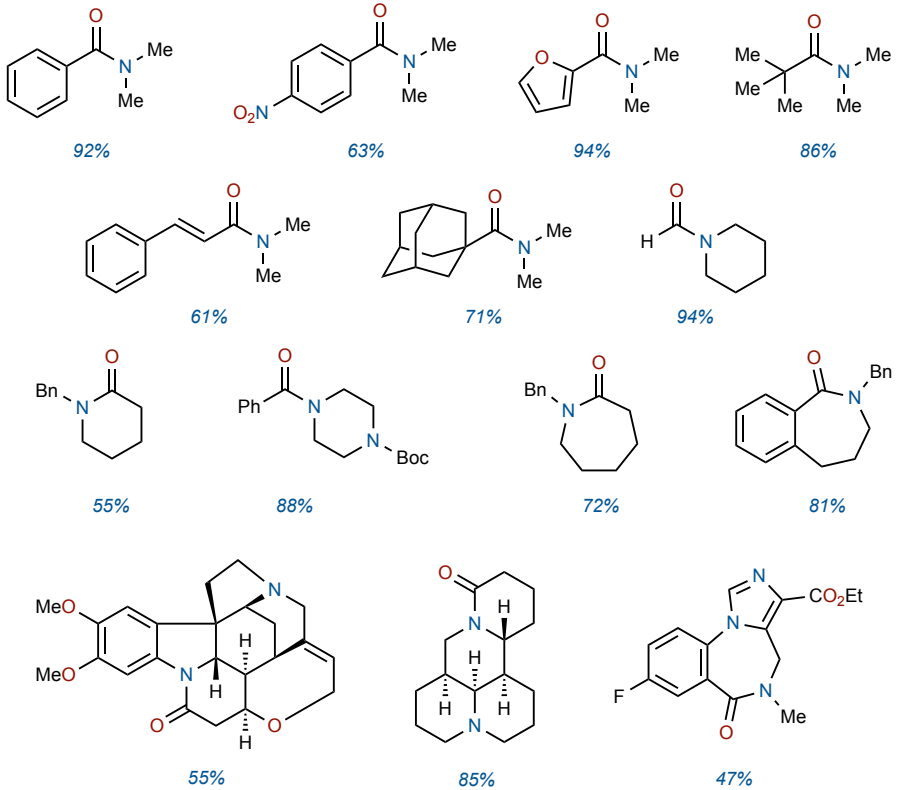
Vaska's Complex

Interrupted Amide Reduction



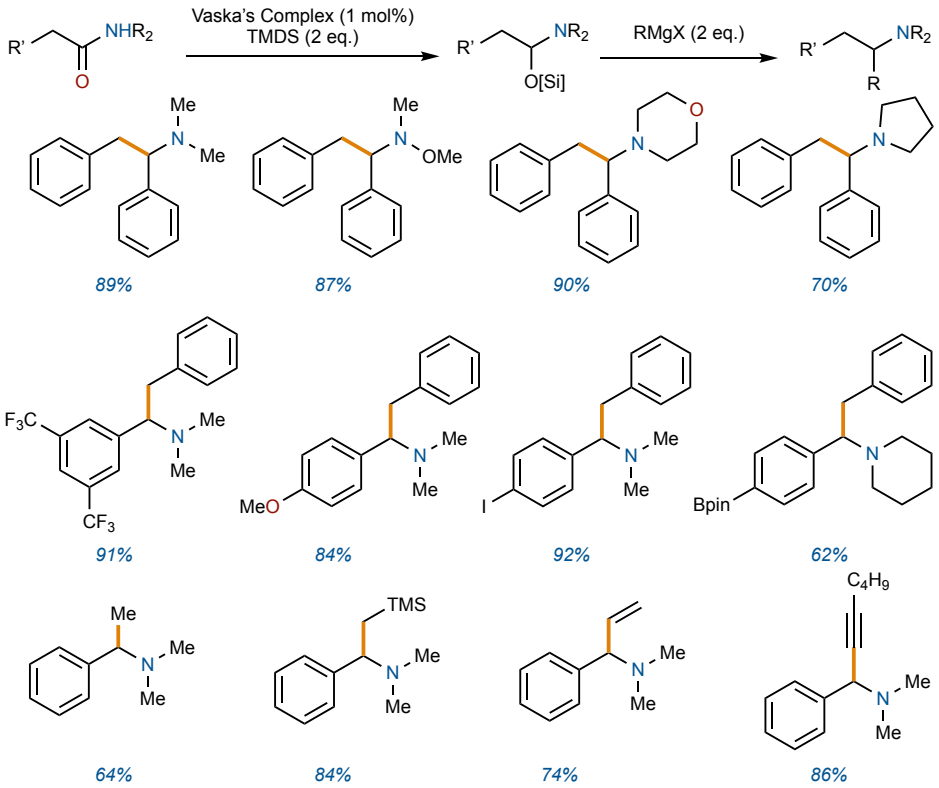
Cyanation – Dixon, 2017





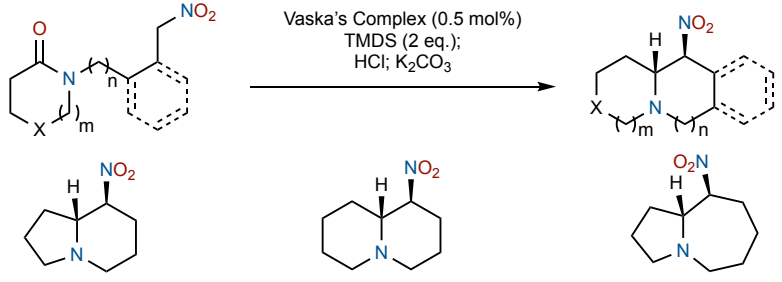
ACIE, 2017, **56**, 3655 https://doi.org/10.1002/anie.201612367

Grignard Addition – Dixon, 2017



Chem. Sci., 2017, **8**, 7492 https://doi.org/10.1039/C7SC03613B

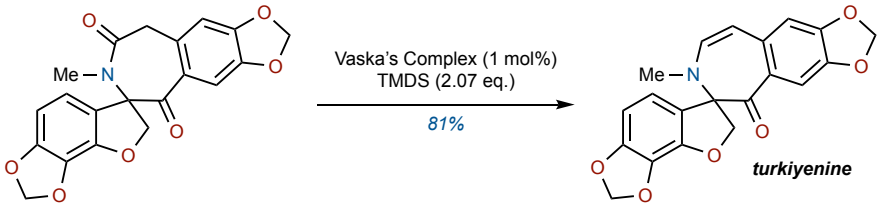
Nitro-Mannich – Dixon, 2015



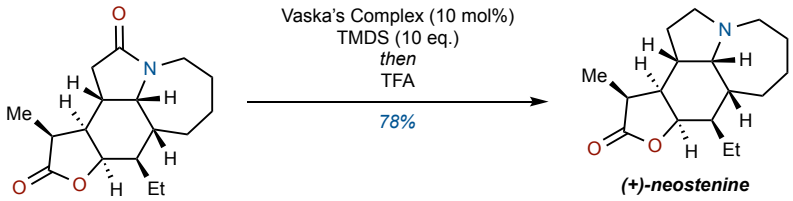
Chem. - Eur. J. 2015, **21**, 111 https://doi.org/10.1002/chem.201405256

Vaska's Complex

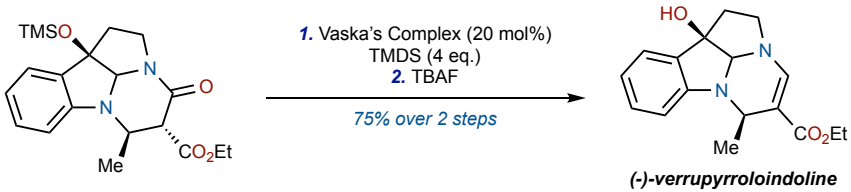
Applications In Total Synthesis!



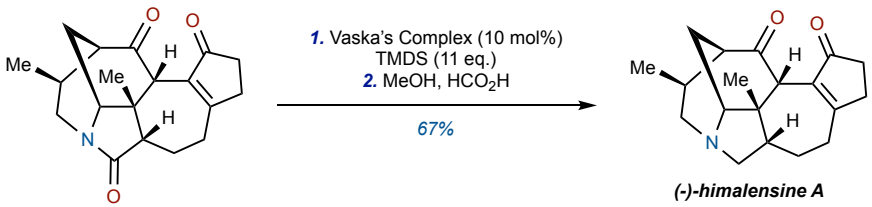
Eur. J. Org. Chem. 2016, **2016**, 270 https://doi.org/10.1002/ejoc.201501365



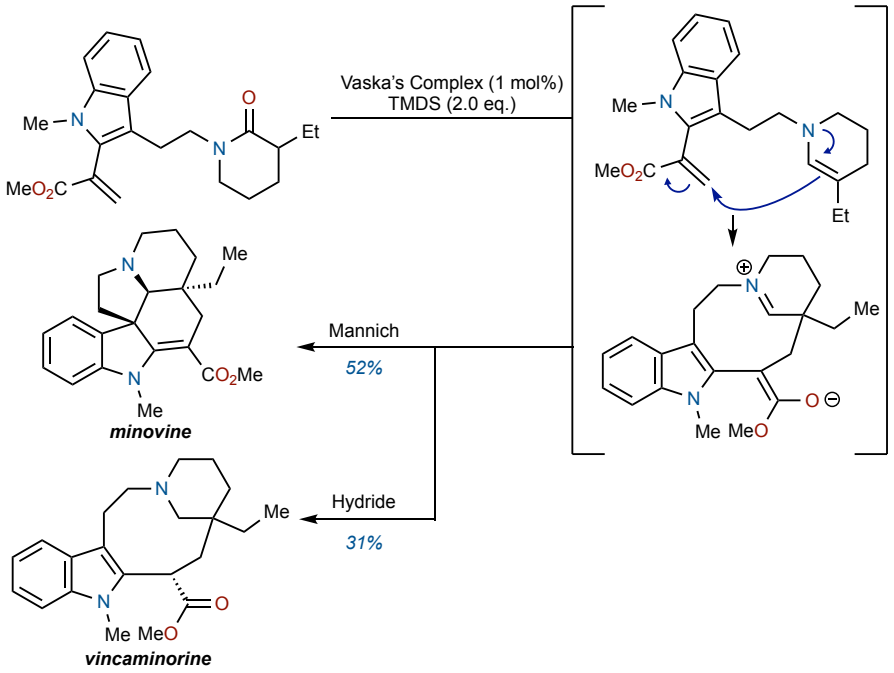
Chem. - Eur. J. 2016, **22**, 3300 https://doi.org/10.1002/chem.201600058



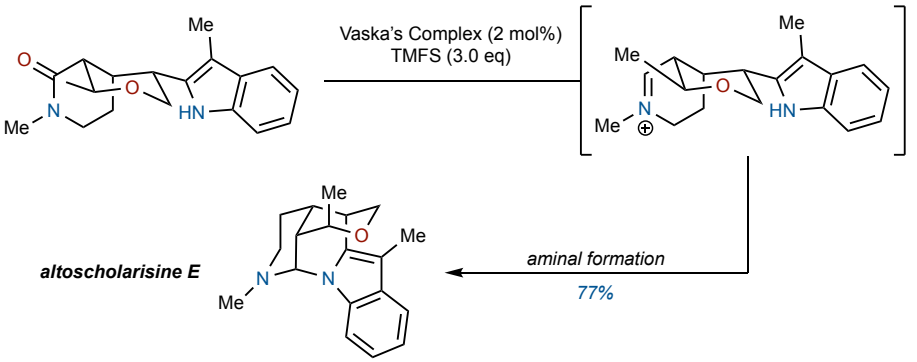
Org. Lett. 2018, **20**, 4200 https://doi.org/10.1021/acs.orglett.8b01579



JACS, 2017, **139**, 17755 https://doi.org/10.1021/jacs.7b10956



ACIE 2016, **55**, 13436 https://doi.org/10.1002/anie.201605503



Org. Lett. 2020, **22**, 786 https://doi.org/10.1021/acs.orglett.9b04093

A nice perspective: : *ACS Catal.* 2020, **10**, 8880 https://doi.org/10.1021/acscatal.0c02377