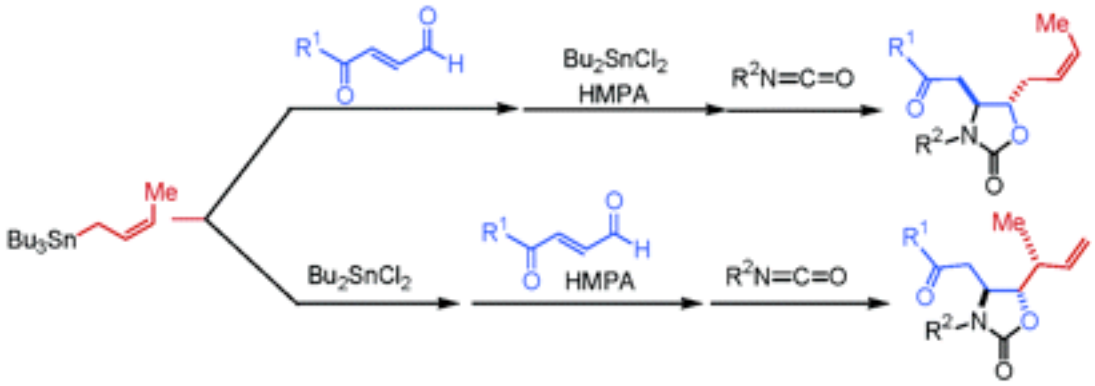
One-Pot Synthesis of Nitrogen Heterocycles Initiated by Regio- and Diastereoselective Carbon-Carbon Bond Formation of Bifunctional Carbonyl Compounds



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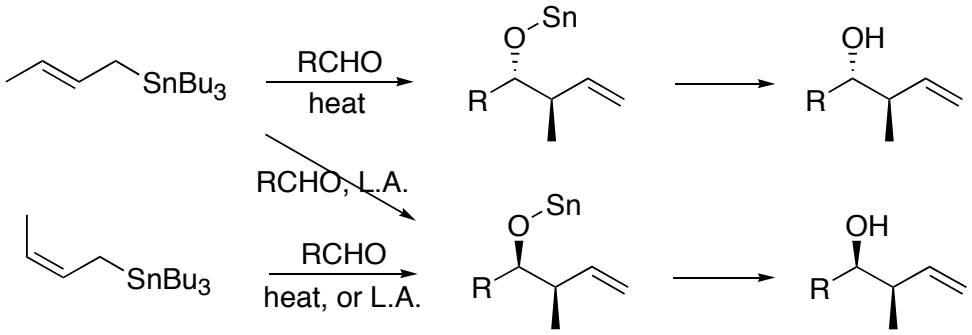
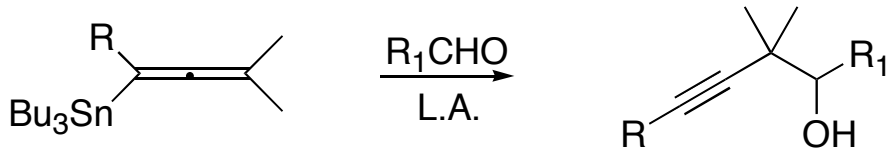
Tin-Oxygen Bond

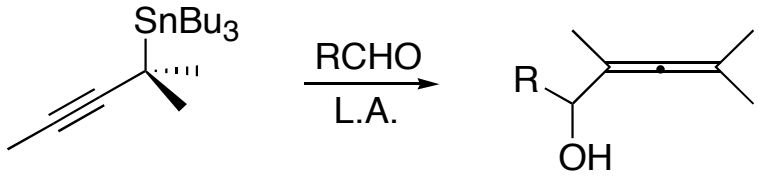
Allylic Stannanes add to Aldehdes:



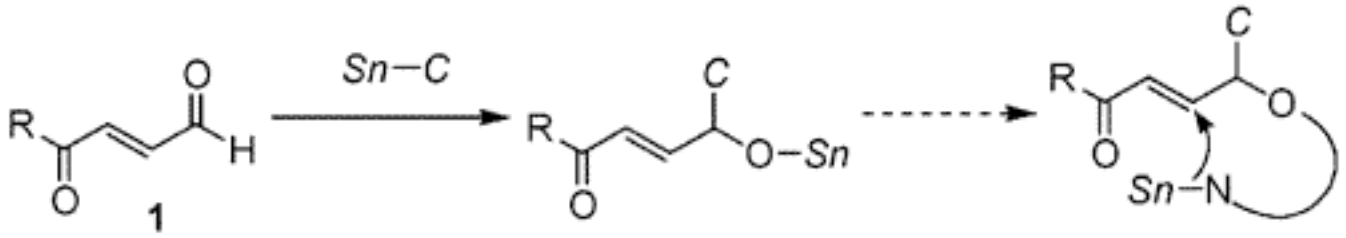
Allenic Stannanes add to Aldehydes:



Propargylic Stannanes add to Aldehydes:



Nucleophilicity of Tin-Oxygen Bond

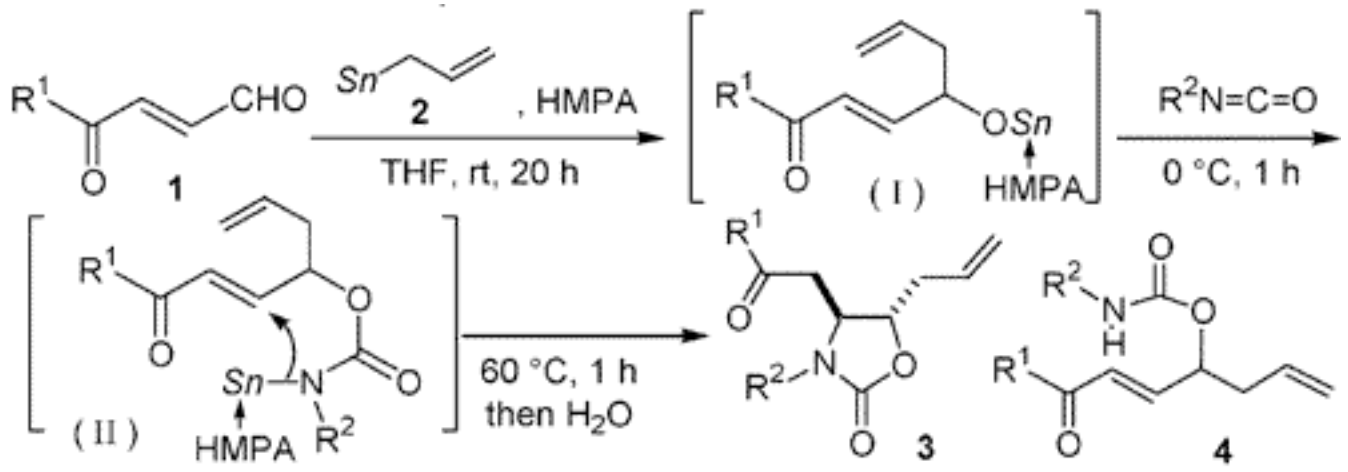


1. L.A. can't be used because the stability of compound 1

2. Tributyltin system does't work without the help of L.A.

3. Allylic chloro-dibutyltin system works well with high chemoselectivity

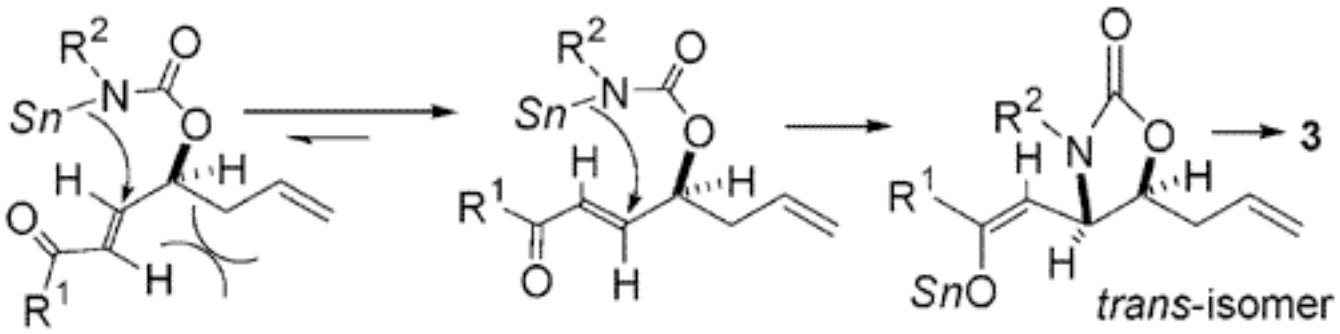
One-Pot Synthesis of 2-Oxazolidinones



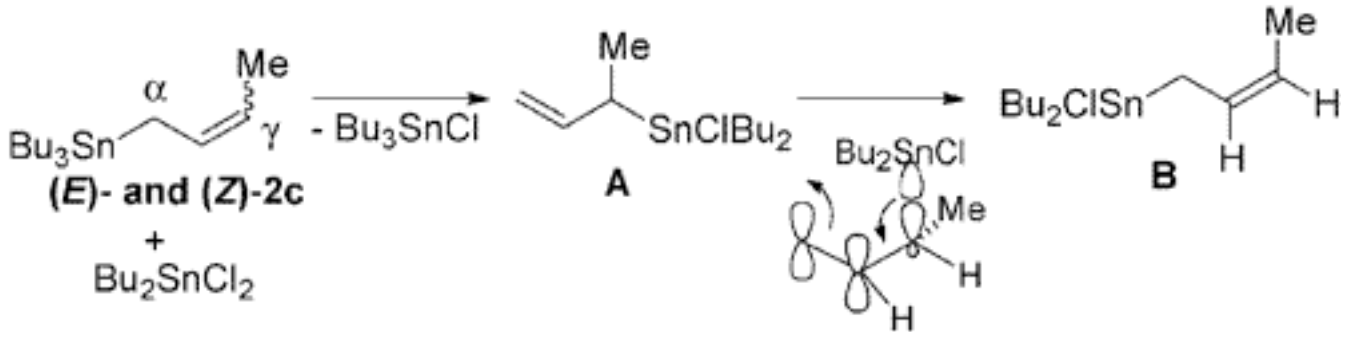
entry	R^1	R^2	Sn (**2**)	Product and yield/ %
1	*n*-C_8H_{17}	Ph	Bu_3Sn (**2a**)	No reaction
2			Bu_2ClSn (**2b**)	**4a** 99%[b]
3			**2b**	**3a** 81% (trans: cis = 91 : 9)
4	*p*-ClC_6H_4 (**1b**)	Ts	**2b**	**3b** 54% (trans: cis = 100 : 1)

[a] **1**, 1mmol; **2**, 1 mmol; HMPA, 1 mmol; R^2NCO, 1mmol; THF, 1mL. [b] Without HMPA

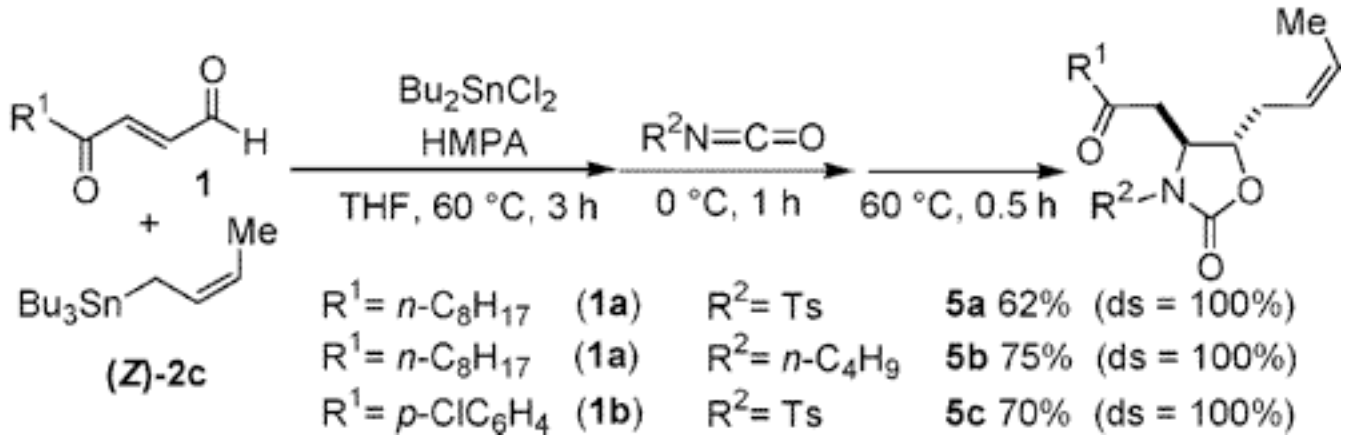
The *trans* Selectivity



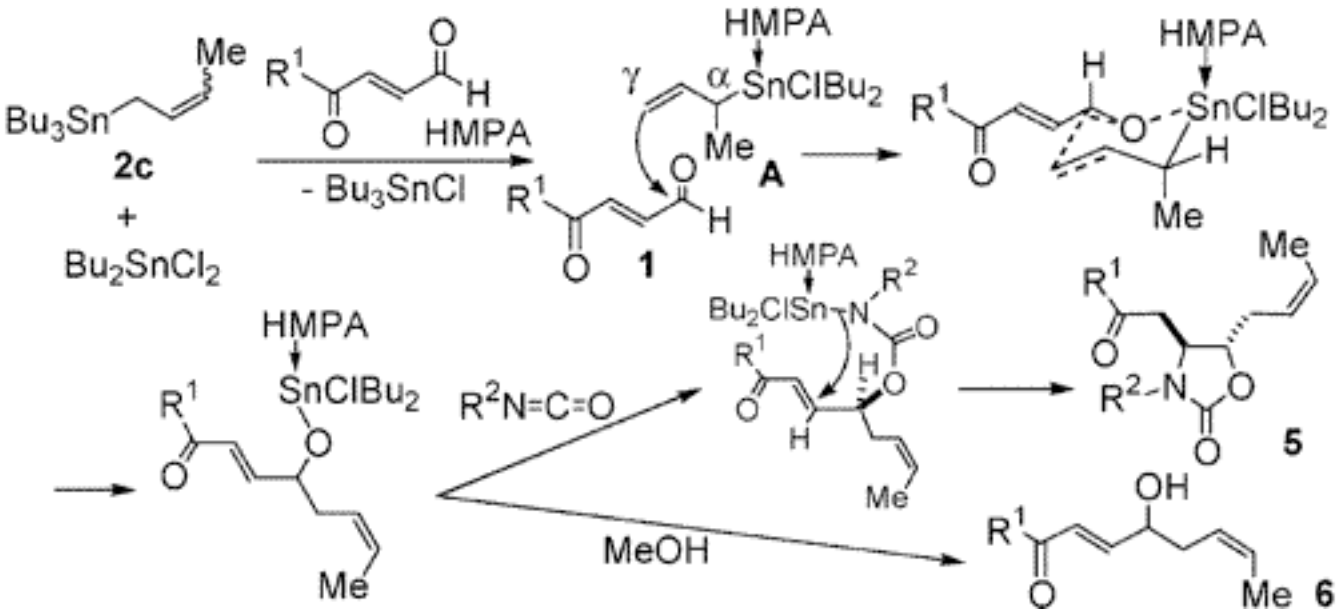
The Application of Crotyltin Reagents



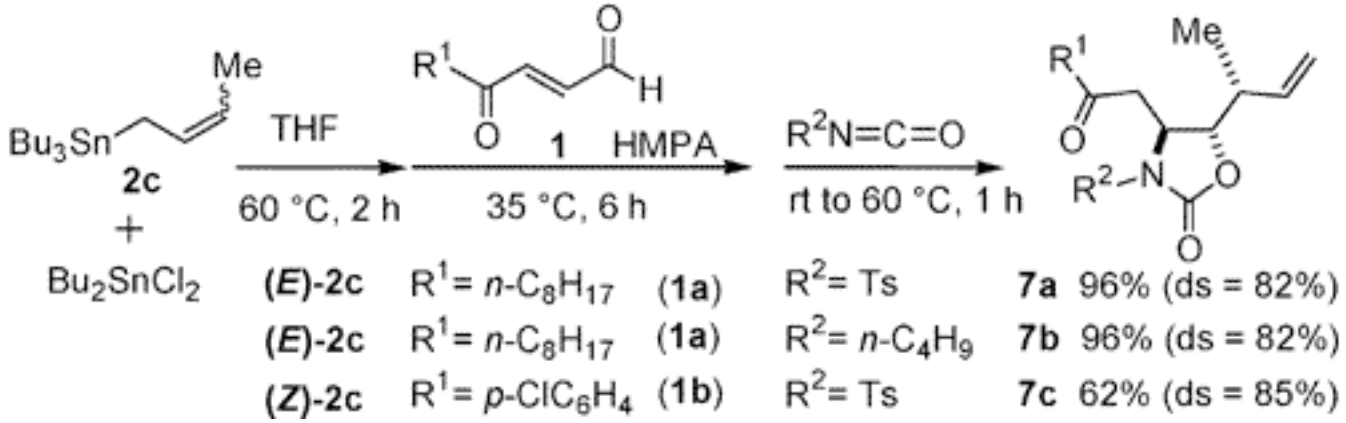
Generated Allylictins A as Nucleophiles

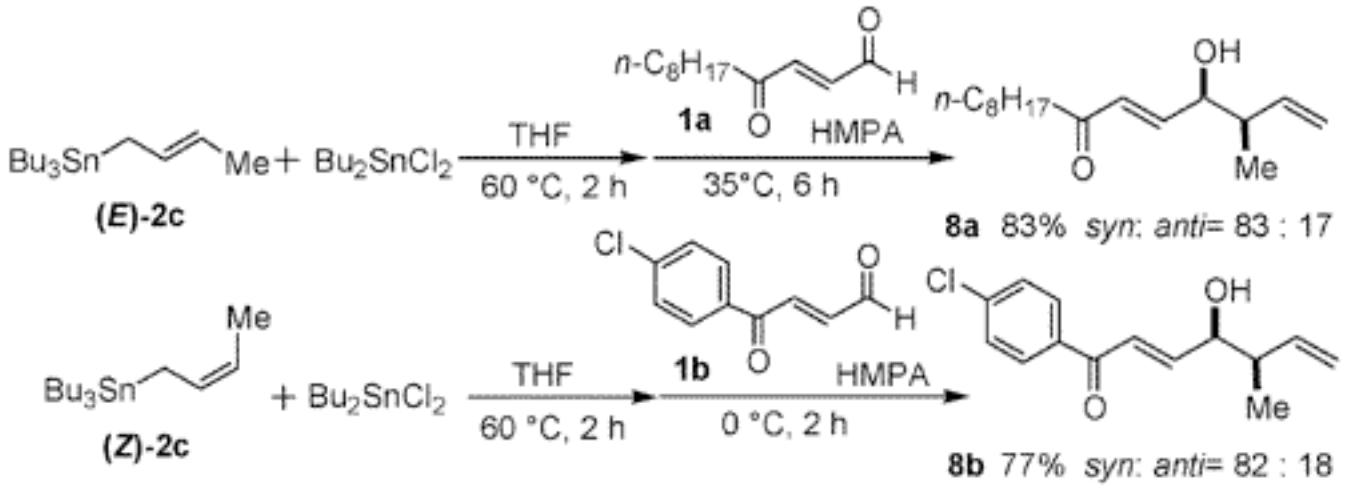


Mechanism of Generated Allylictins A as Nucleophiles

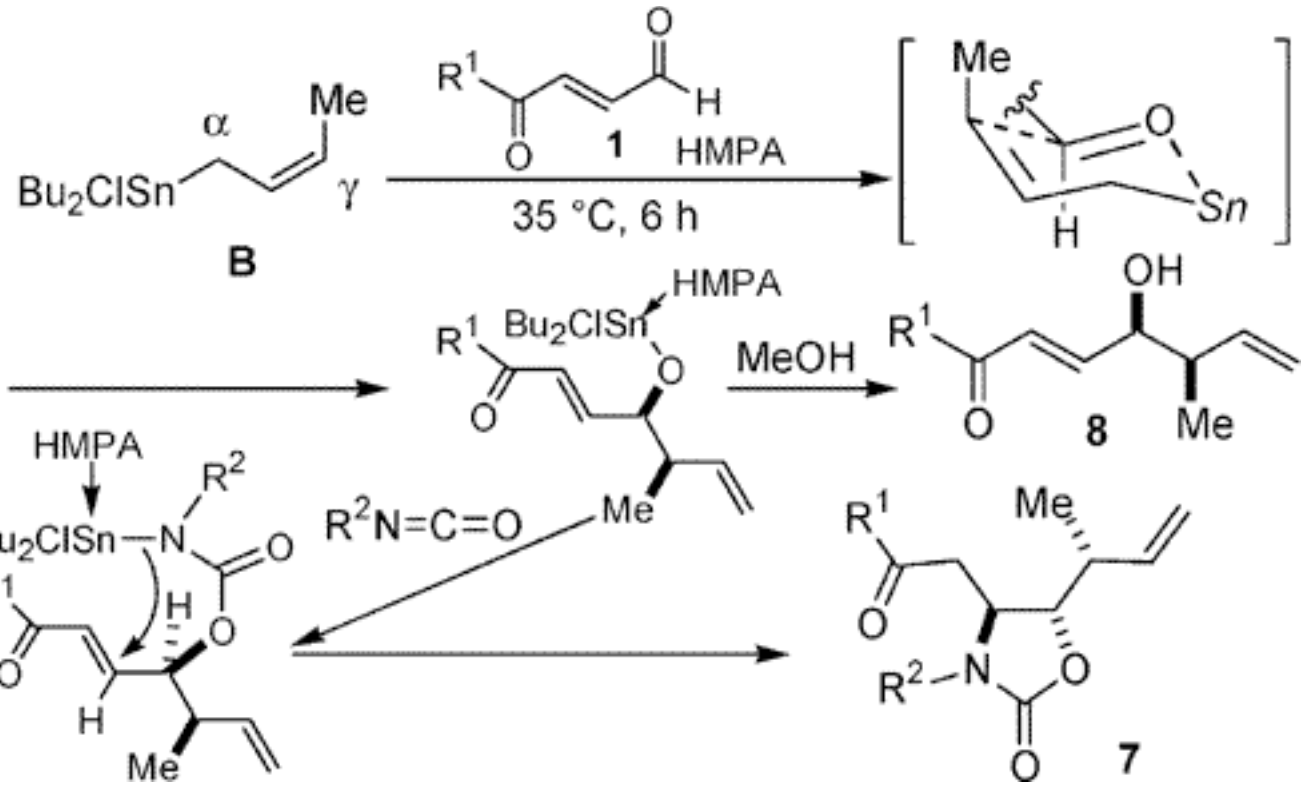


Generated Allylictins B as Nucleophiles

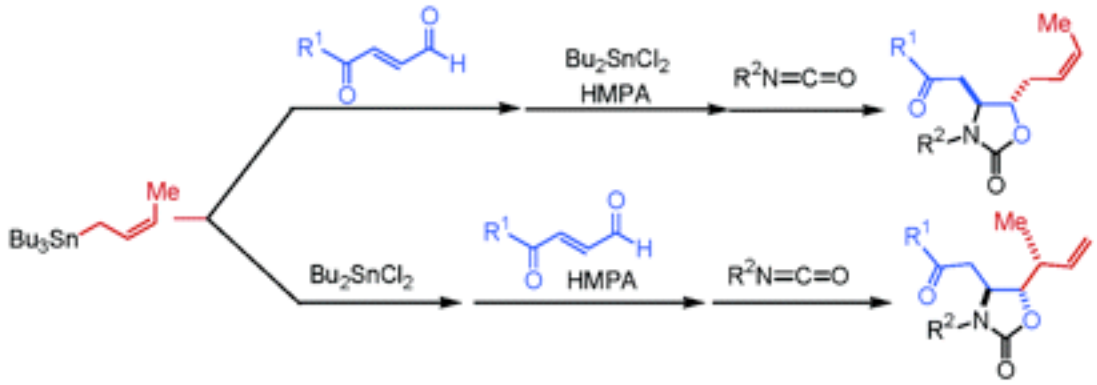




Mechanism of Generated Allylictins B as Nucleophiles



Conclusion



A one-pot synthesis of nitrogen heterocyclic compounds was initiated by chemoselective allylation.

Regio- and diastereoselective carbon-carbon bond formation was established in the side chain of the rings.