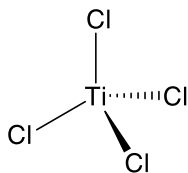


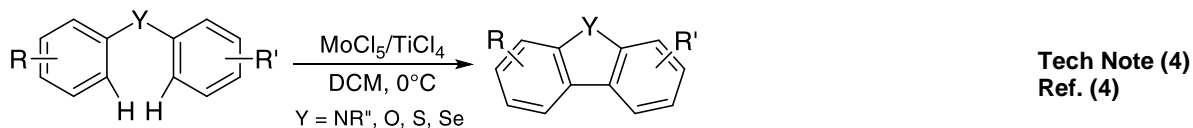
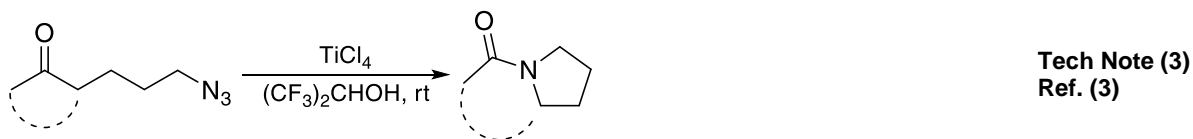
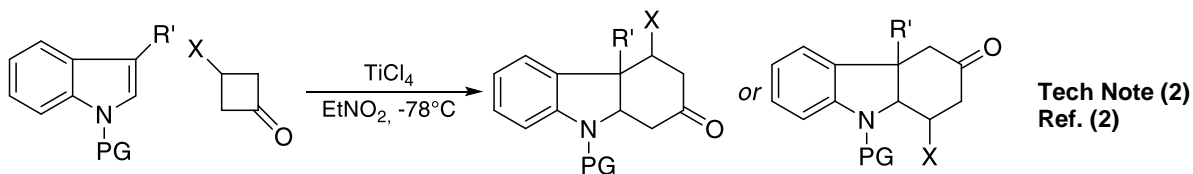
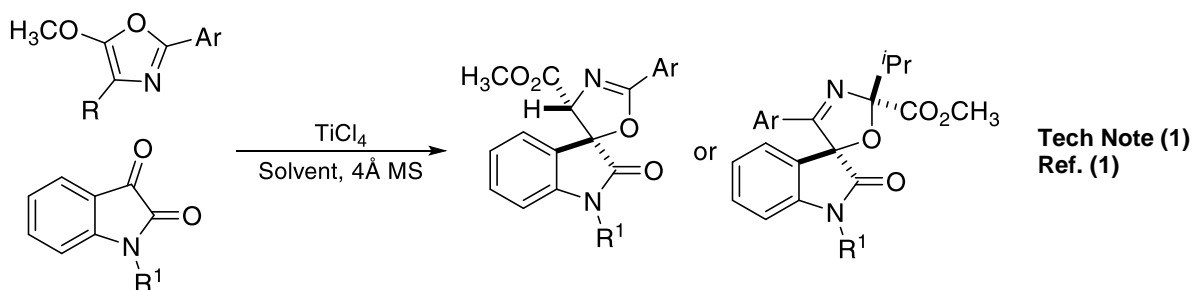
Catalog # 22-1150 Titanium(IV) chloride, 99%

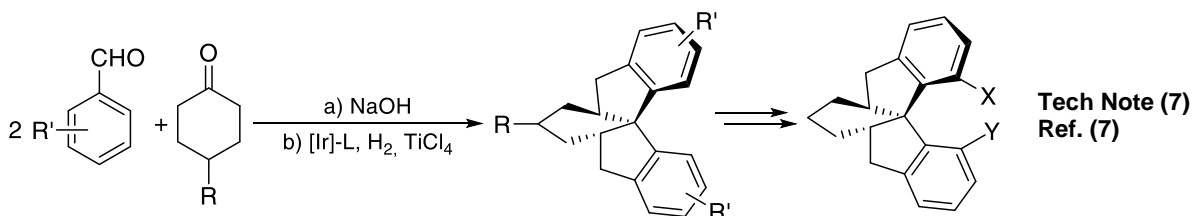
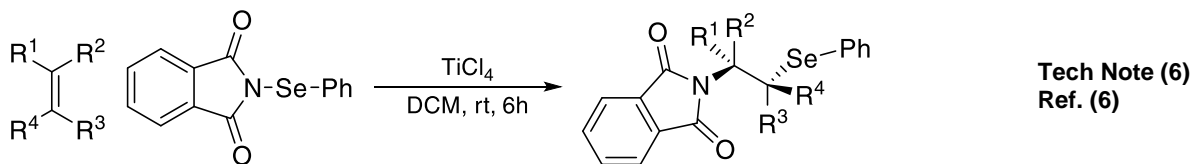
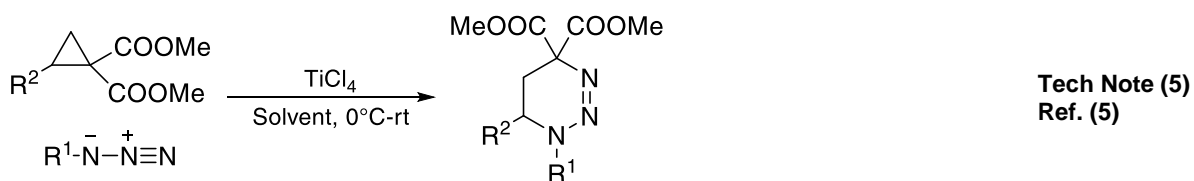


Catalysis Applications

Technical Notes:

1. Catalyst used for stereoselective synthesis of spirooxindole oxazolines.
2. Catalyst for the regioselective inter- and intramolecular formal [4+2] cycloaddition of cyclobutanones with indoles.
3. Catalyst for the intramolecular Schmidt reaction of alkyl azides and ketones.
4. Used in the oxidative coupling reaction $\text{MoCl}_5/\text{TiCl}_4$ catalyzed synthetic access to 9-heterofluorenes.
5. Catalyst for the formal [3+3] cycloaddition of cyclopropane 1,1-diesters with azides.
6. Catalyst used for atomeconomic amidoselenenylation of simple alkenes under mild conditions.
7. Used in the Ir-catalyzed synthesis of chiral cyclohexyl-fused 1,1'-spirobiindanes.





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CVD/ALD Applications

Thermal Behavior:

- Melting point: -25°C
- Boiling point: 136°C
- Vapor pressure: 9 Torr/20°C; 15.75 Torr/20°C; 41 Torr/20°C; 75 Torr/20°C

Technical Notes:

1. ALD precursor thin titanium containing film deposition.

Target Deposit	Deposition Technique	Delivery Temperature	Pressure	Co-reactants	Deposition Temperature	Ref.
Ti	PE-ALD ALD	RT	30-100 mTorr 4.5-7.5 Torr	^{PL} H ₂ TMS-CHD or TMS-DHP	20-200°C	1 2
		RT			180-240°C	
TiO _x	ALD	-	1 Torr	H ₂ O ₂	100°C	3
	ALD	RT	-	H ₂ O	85°C, 135°C	4
	ALD	RT	-	H ₂ O	200°C	5
	PE-ALD	RT	-	^{PL} O ₂ , ^{PL} H ₂ O	30-180°C	6
	ALD	RT	-	O ₃	225-600°C	7

TiN _x	ALD	0°C	-	NH ₃	500°C	8
	PE-ALD	-	-	^P LH ₂ /N ₂	350-400°C	9
	ALD	-	-	N ₂ H ₄	100-300°C	10
TiS _x	ALD	21°C	7.5 Torr	H ₂ S	400°C	11
	ALD	20°C	0.75-2.25 Torr	H ₂ S	150-300°C	12
TiO _{2-x} N _x	ALD	21°C	7.5 Torr	H ₂ O, NH ₃	500°C	13
TiPO _x	ALD	RT	-	(EtO) ₃ PO	200°C	14

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