Total Synthesis of the Hexacyclic Sesterterpenoid Niduterpenoid B via Structural Reorganization Strategy

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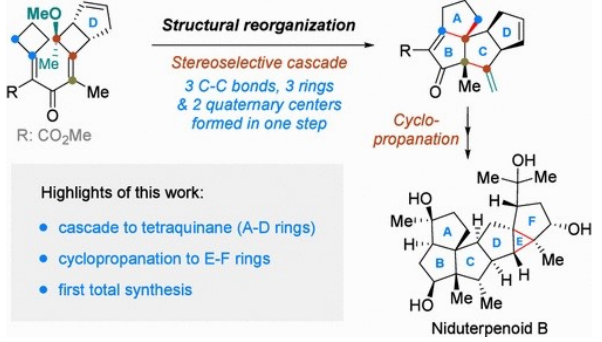
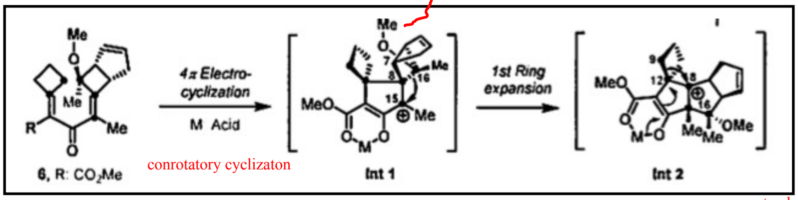
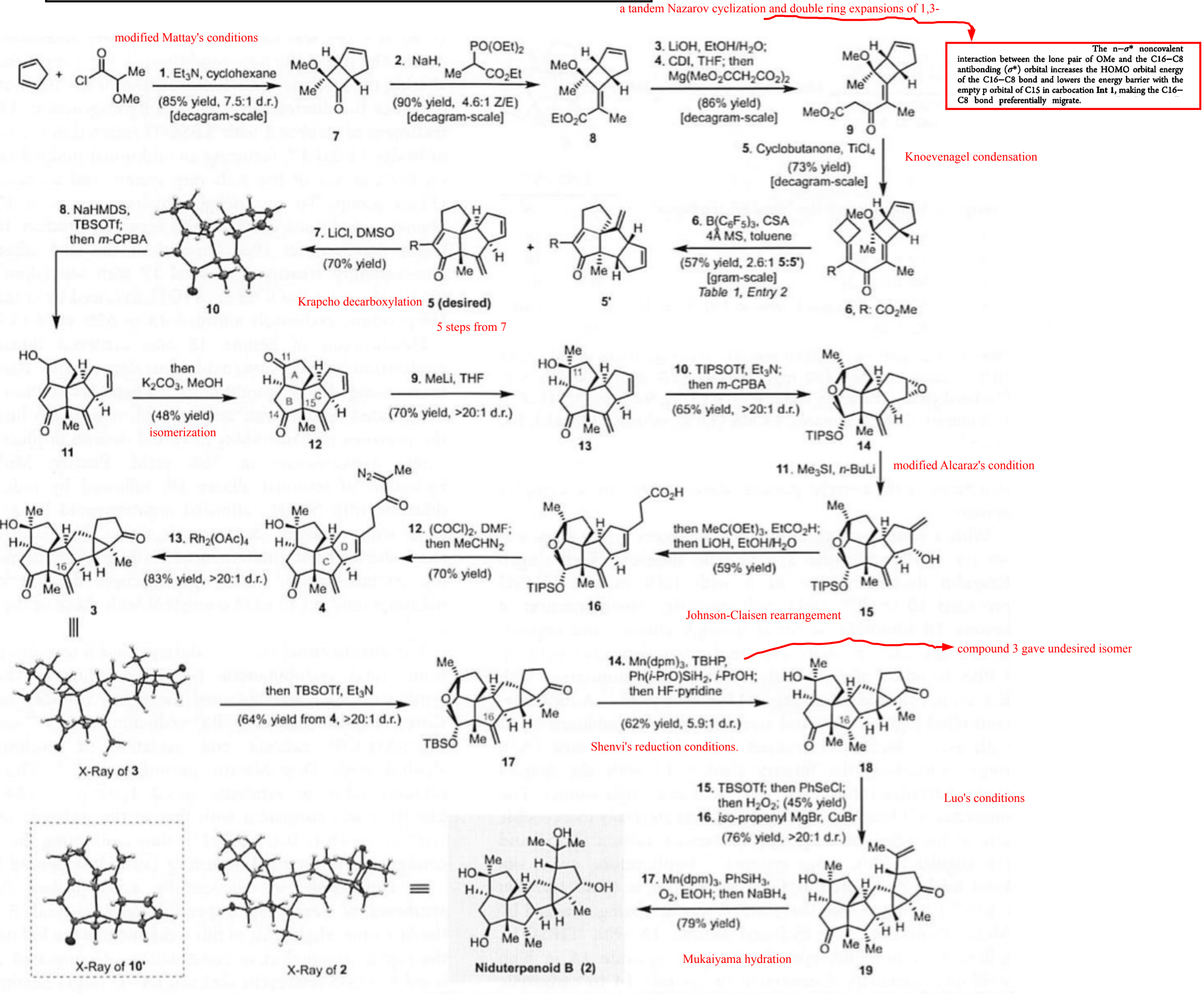
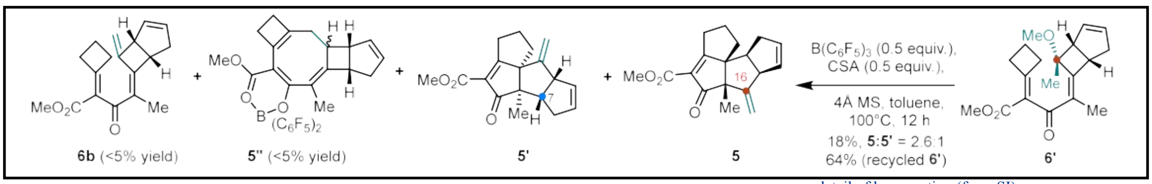




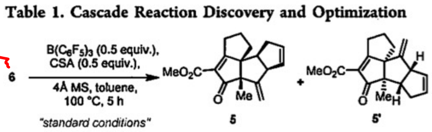




detail of key reaction (from SI)

acid sensitive: systemic optimization of various reaction

Table 1. Cascade Reaction Discovery and Optimization



Entry	Variations from the "standard conditions"[a,d]	Yield (%)[b] 5	5'
1	none	36	14
2[c]	3 g-scale of 6	41	16
3	No $B(C_6F_5)_3$	0	0
4	$B(C_6F_5)_3$ (1 equiv.), toluene, 120 °C, 12 h	8	trace
5	No CSA	10	<5

[a]Reaction conditions: 6 (0.10 mmol), $B(C_6F_5)_3$ (0.05 mmol), CSA (0.05 mmol), 4Å MS (50 mg), toluene (1.0 mL), 100 °C, 5 h. [b]Isolated yields. [c]Reaction conditions: 6 (3.0 g, 9.6 mmol), $B(C_6F_5)_3$ (5.9 mmol), CSA (6.5 mmol), 4Å MS (3.0 g), toluene (100 mL), 100 °C, 5 h.