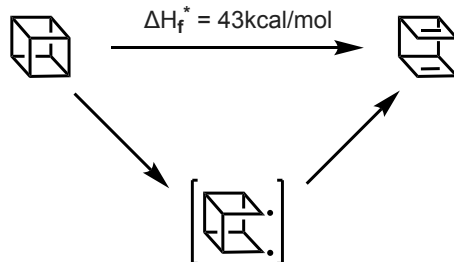
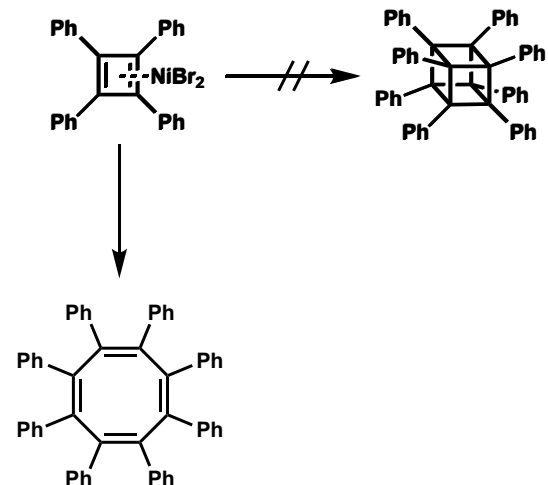




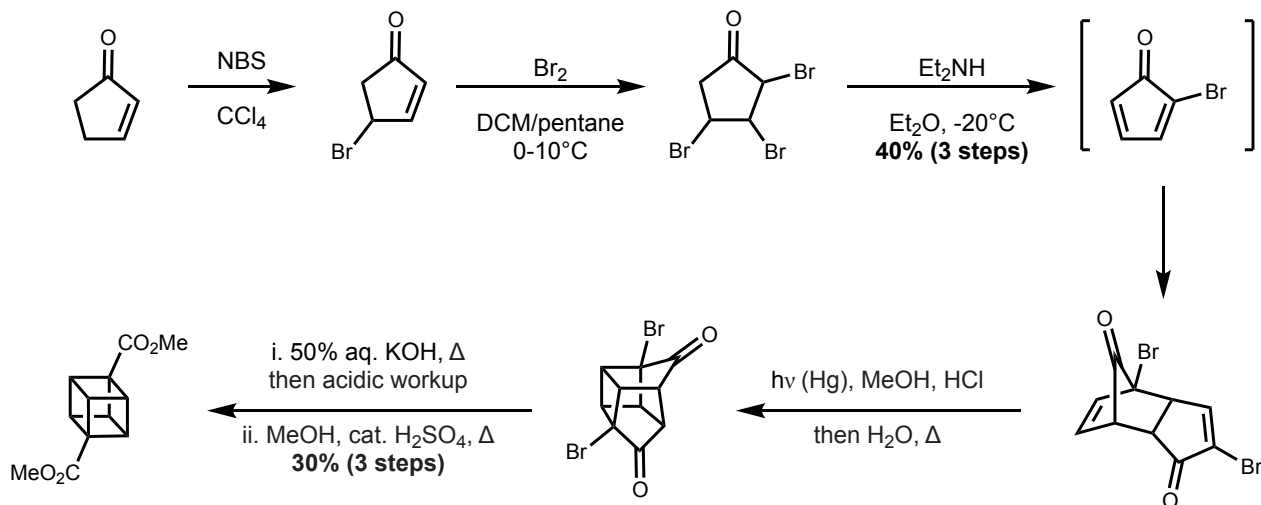
Melting Point: 133.5°C
 Boiling Point: 161.6°C
 Density: 1.29 g/cm³
 Heat of Formation: 144 kcal/mol
 Strain Energy: 161.5 kcal/mol
 Decomposition: >220°C



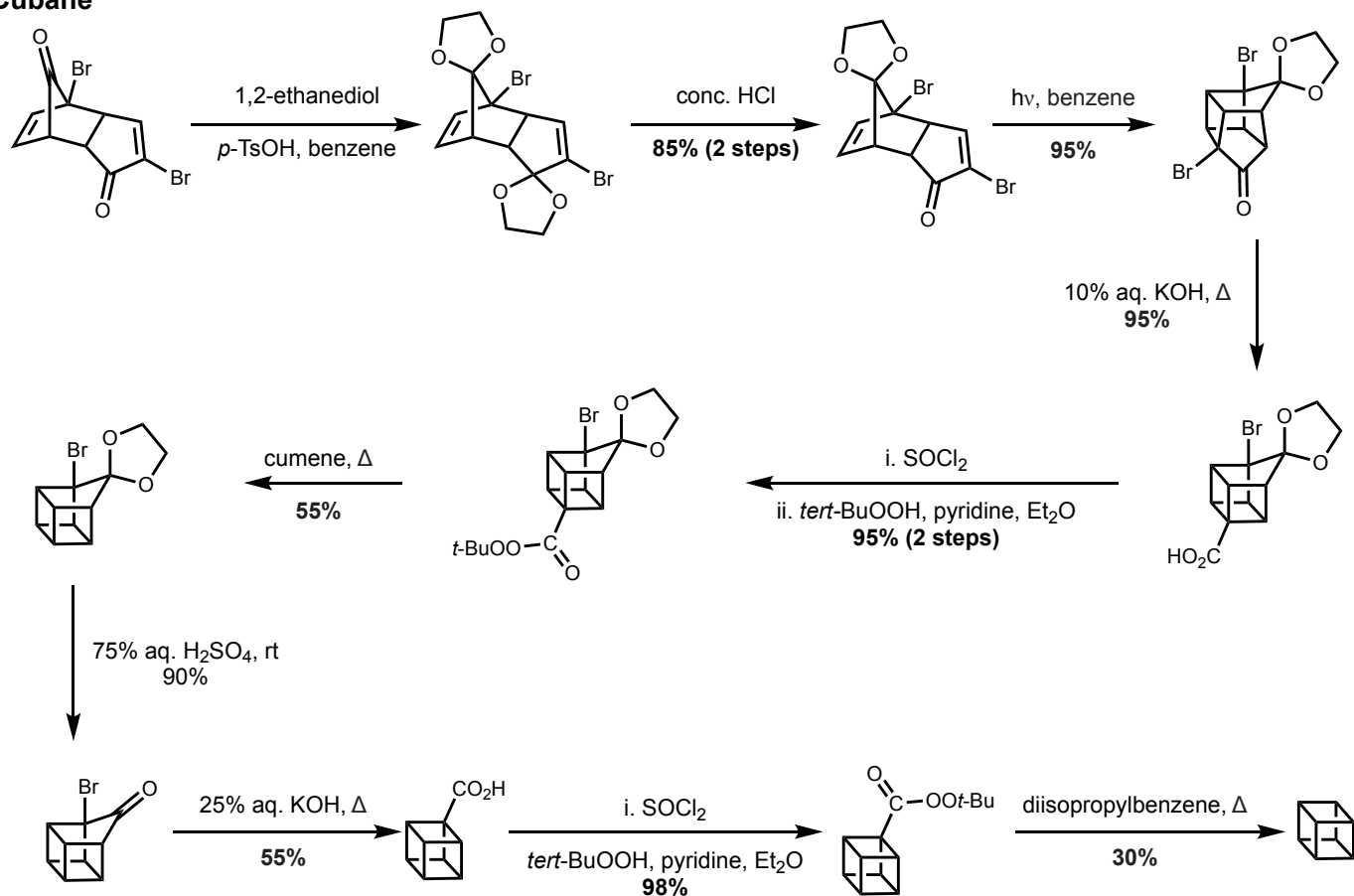
Freedman's reported octaphenylcubane synthesis



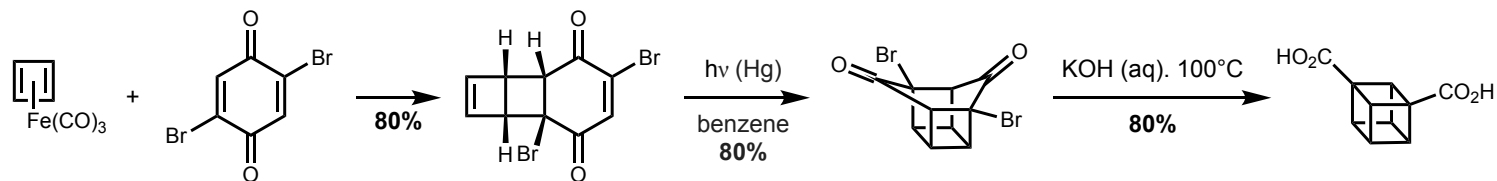
Eaton and Cole's Dimethyl 1,4-Cubanedicarboxylate Synthesis



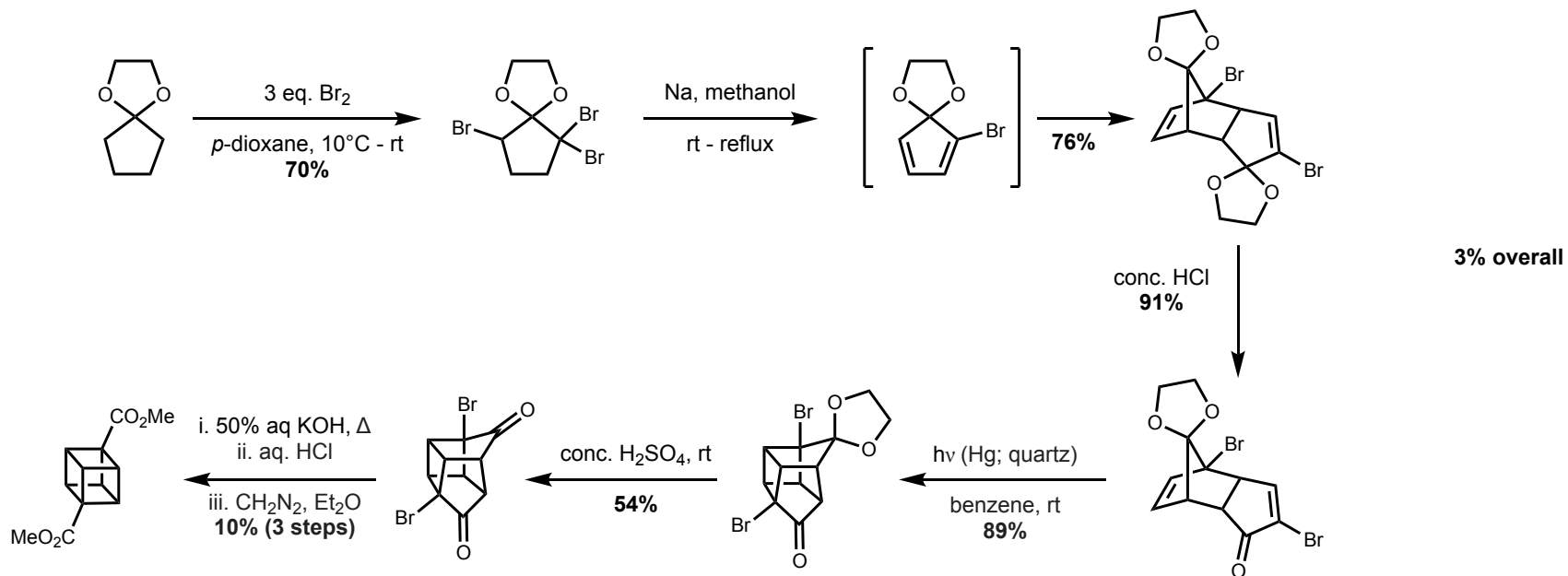
Synthesis of Cubane



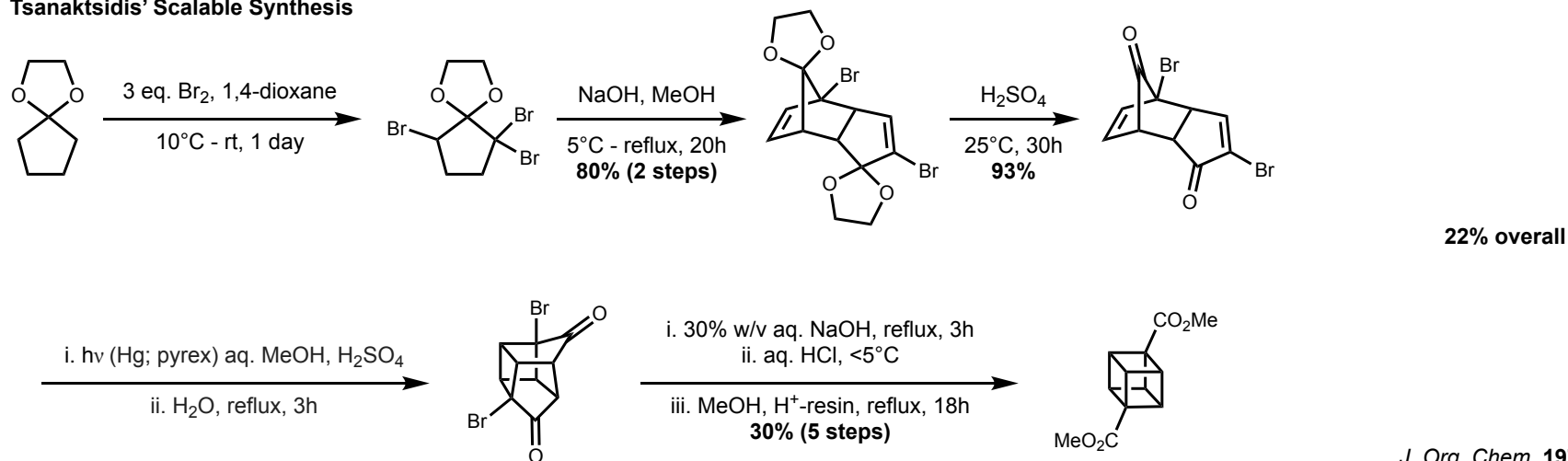
Alternate synthesis of cubane ring system

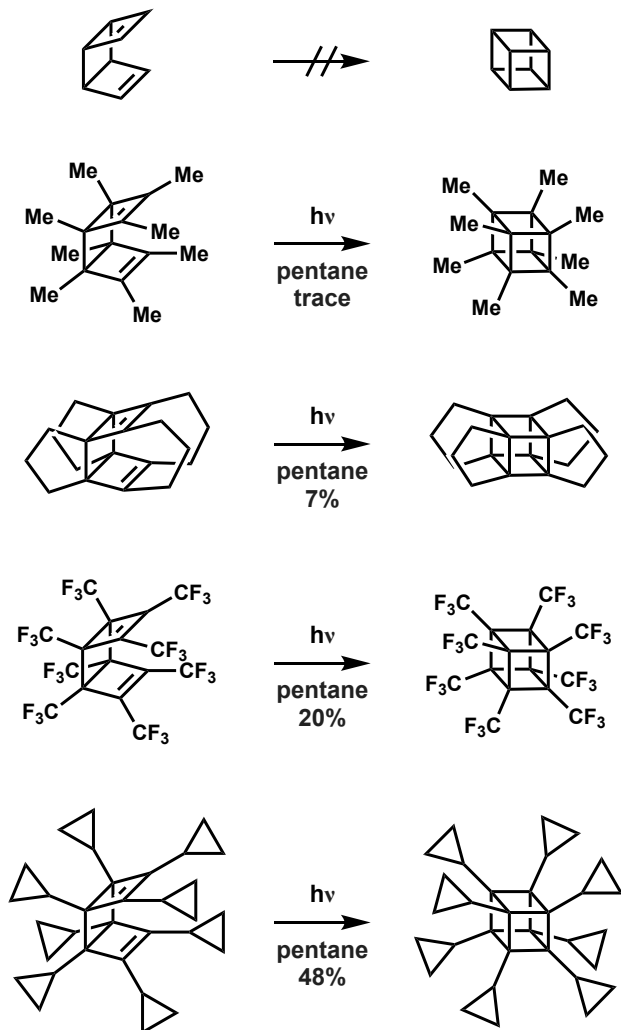


Chapman's Synthesis of the Diester



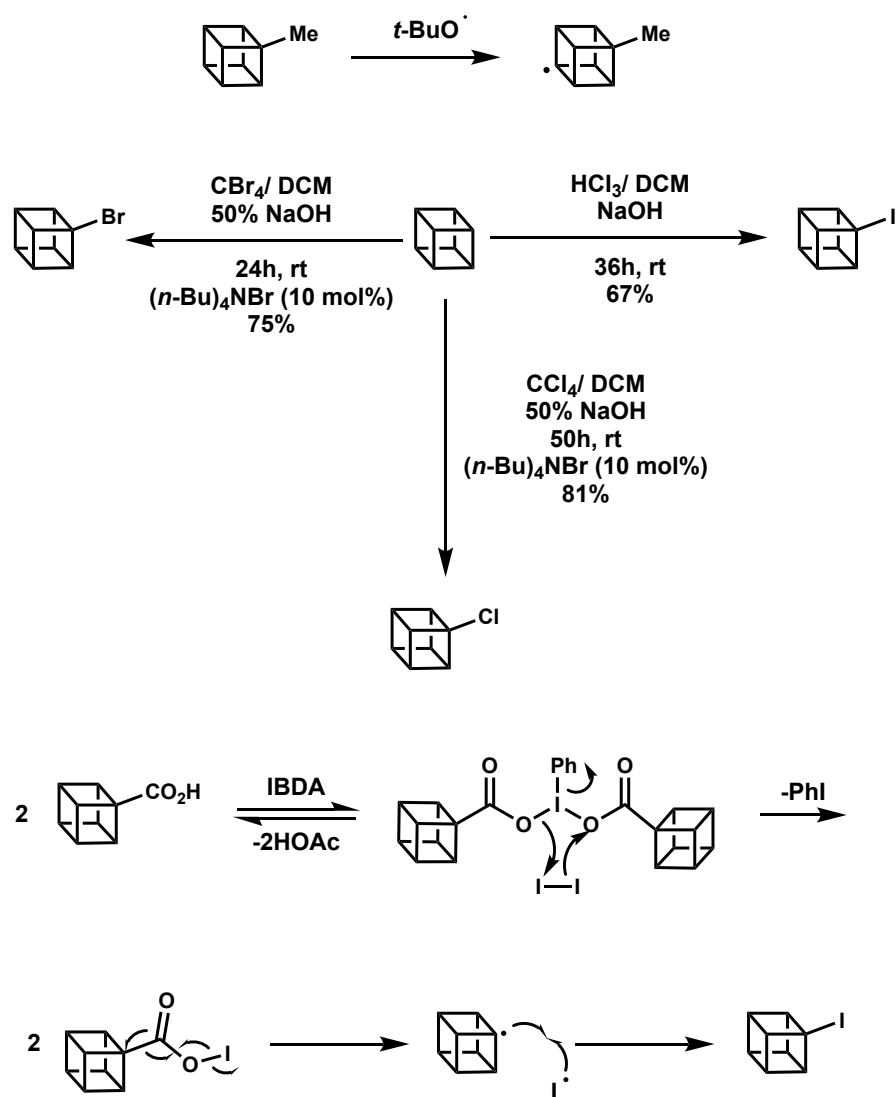
Tsanaktsidis' Scalable Synthesis



Synthesis of cubane ring form *syn*-tricyclooctadiene

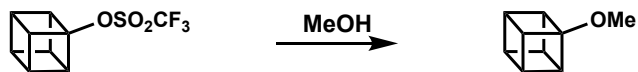
Tetrahedron Lett. **1994**, 35, 4969
Angew. Chem. **1988**, 100, 851
J. Am. Chem. Soc. **1976**, 98, 4311
Angew. Chem., Int. Ed. **2007**, 46, 4574

Cubyl Radicals



J. Am. Chem. Soc. **1992**, 114, 10730
J. Am. Chem. Soc. **2001**, 123, 1842
J. Am. Chem. Soc. **1988**, 110, 7230

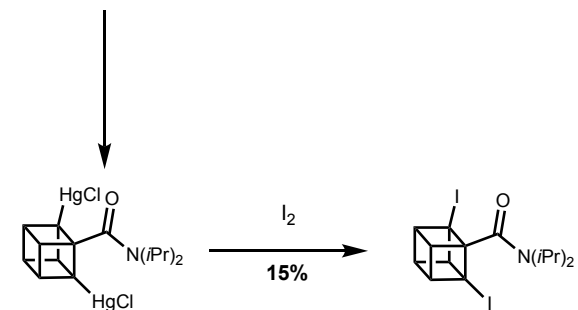
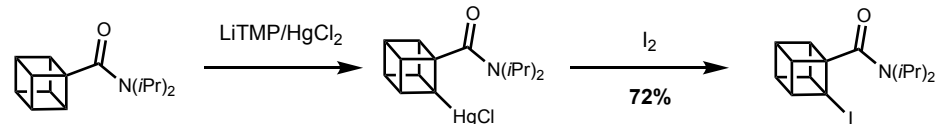
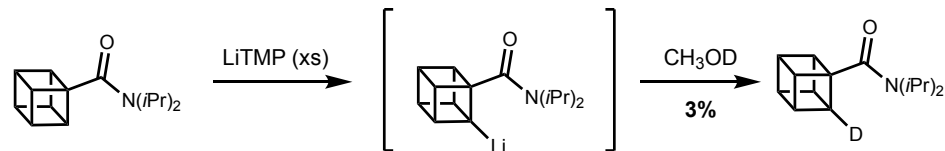
Cubyl Cation


Experimental and Calculated Solvolysis Rates of Tertiary Tosylates in Acetic Acid at 70°C

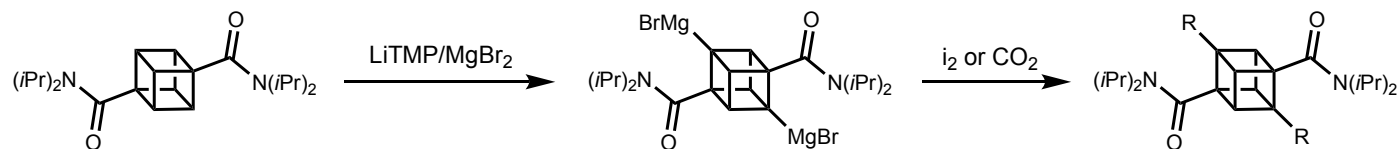
tosylate	experimental	calculated
<i>tert</i> -butyl	1	1
1-adamantyl	10 ⁻³	10 ⁻⁴
1-bicyclo[2.2.2]octyl	10 ⁻⁷	10 ⁻⁸
1-norbornyl	10 ⁻¹³	10 ⁻¹⁴
cubyl	10 ⁻¹⁰	<10 ⁻²⁵

J. Am. Chem. Soc. **1990**, *112*, 3225

Metalation and Transmetalation



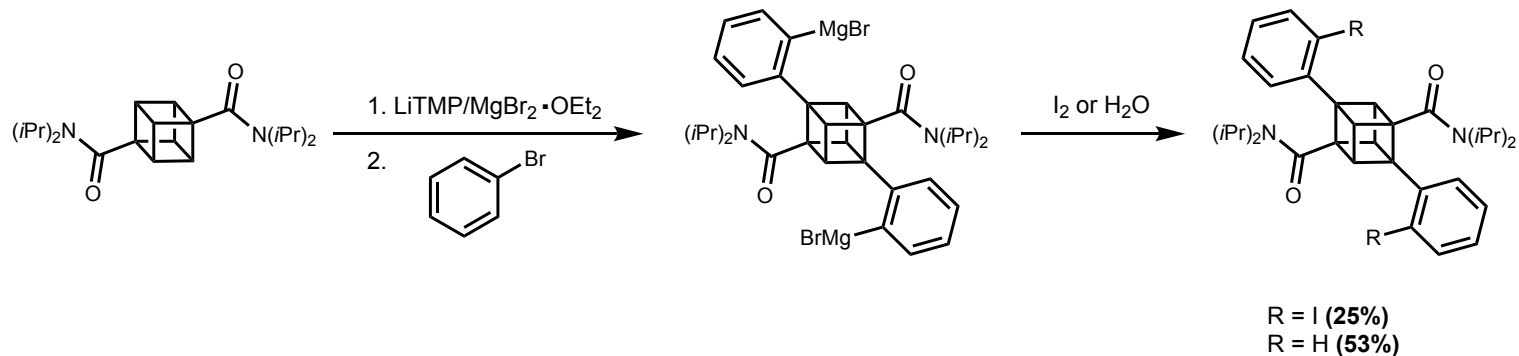
Acc. Chem. Res. **1982**, *15*, 306
J. Am. Chem. Soc. **1985**, *107*, 724



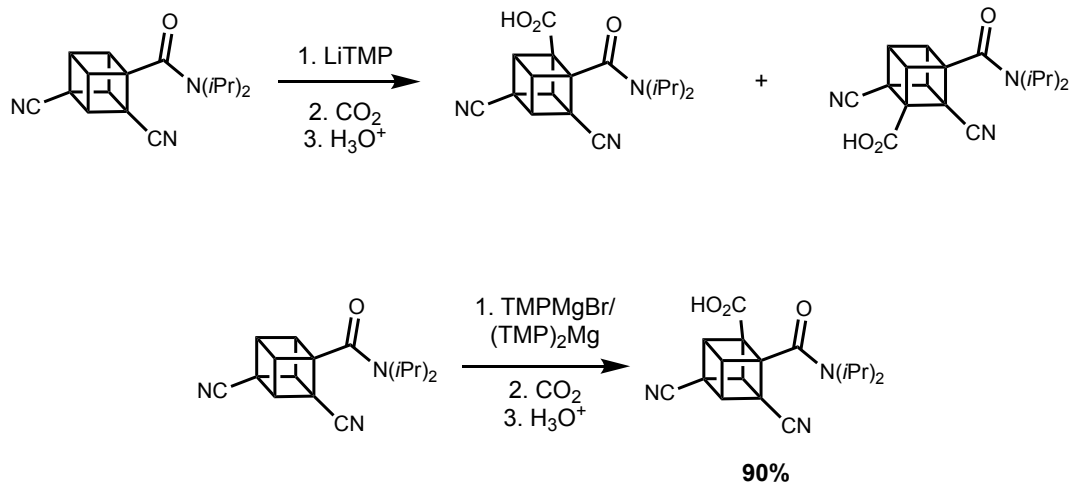
R = I (72%)
R = CO₂H (90%)

J. Am. Chem. Soc. **1988**, *110*, 7234

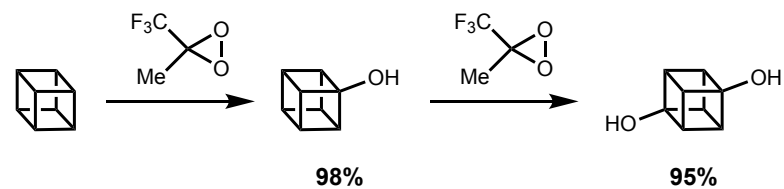
Transmetalation Cont.

*J. Am. Chem. Soc.* **1988**, *110*, 7234

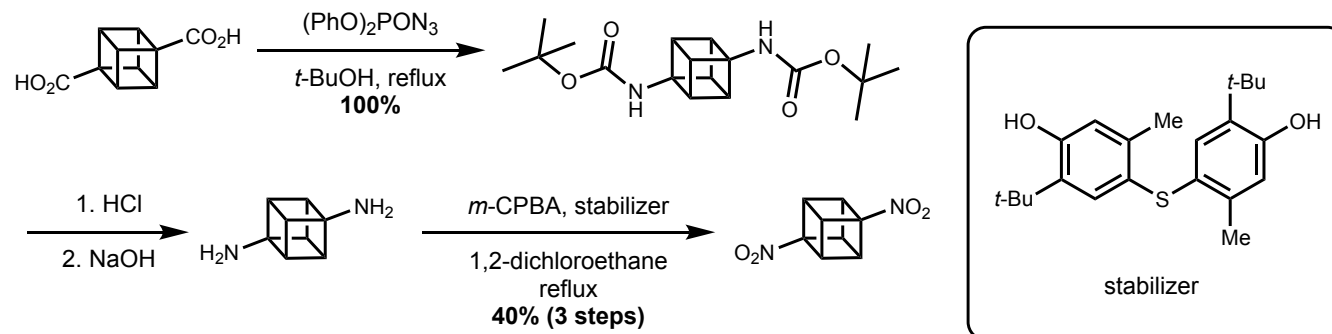
Direct Deprotonation of the Cubane Ring

*J. Am. Chem. Soc.* **1989**, *111*, 8016

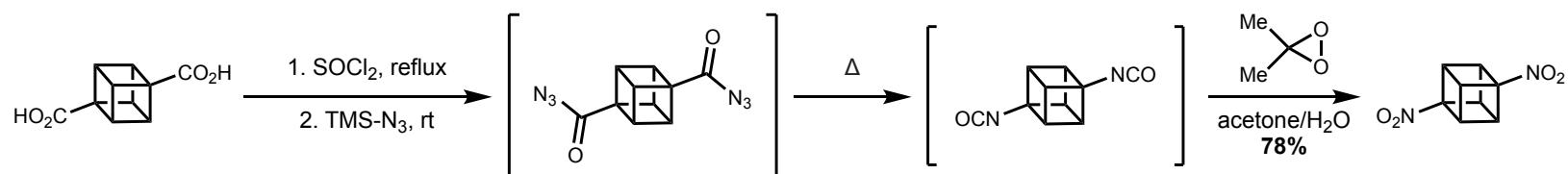
C-H Insertion

*Org. Lett.* **2009**, *11*, 3574

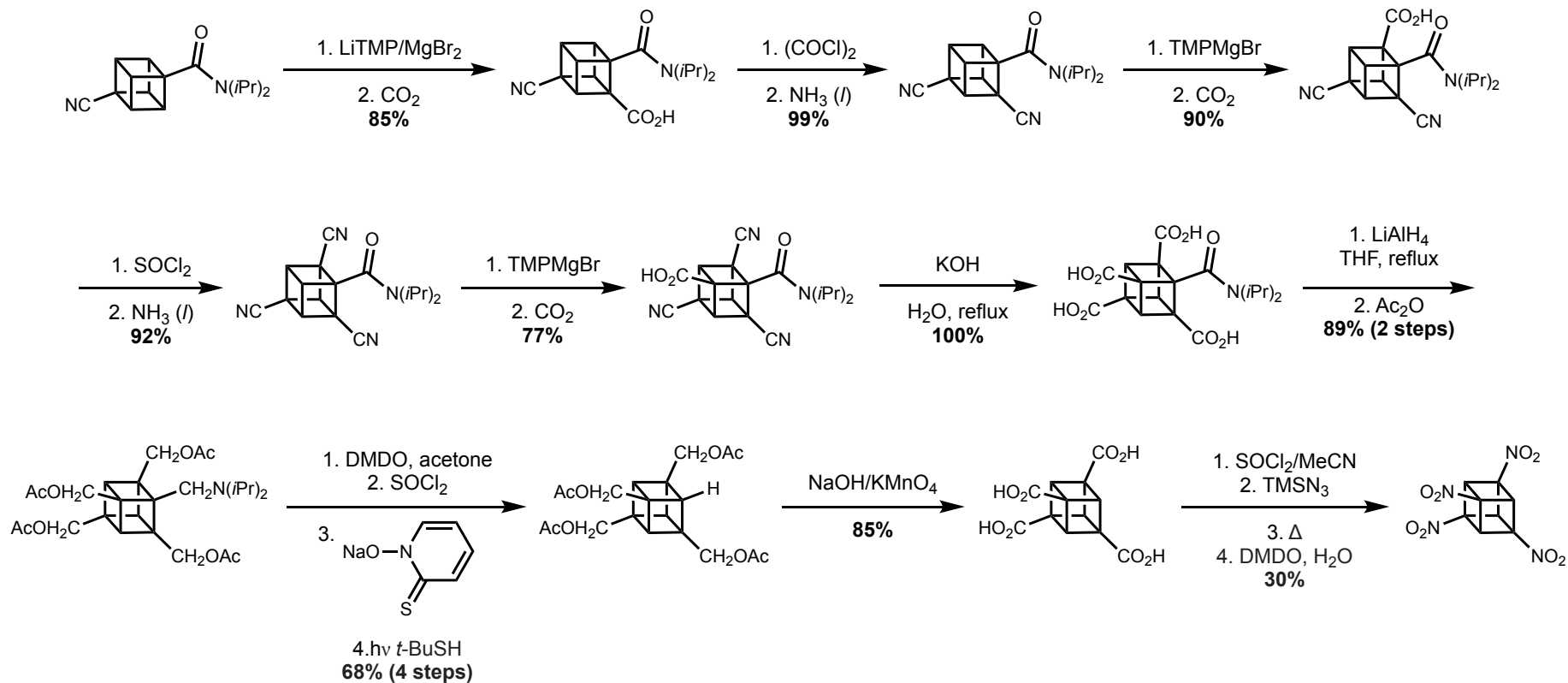
Cubanes in Energetic Materials



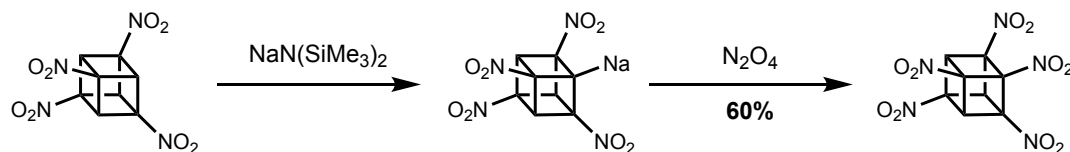
Synthesis of Dinitrocubane



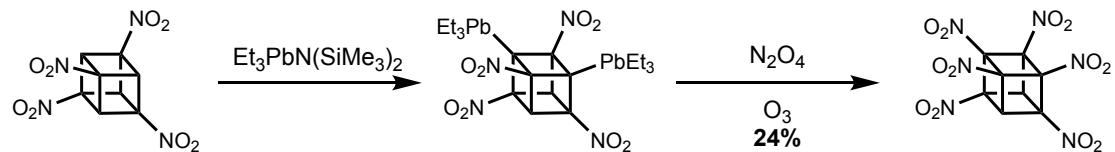
Synthesis of Tetranitrocubane



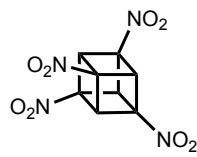
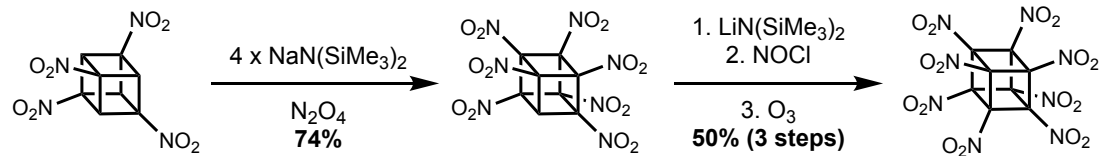
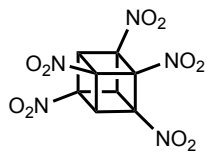
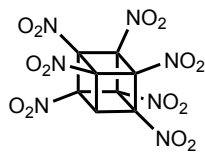
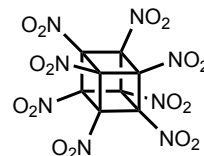
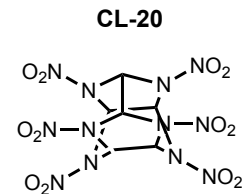
Synthesis of Pentanitrocubane



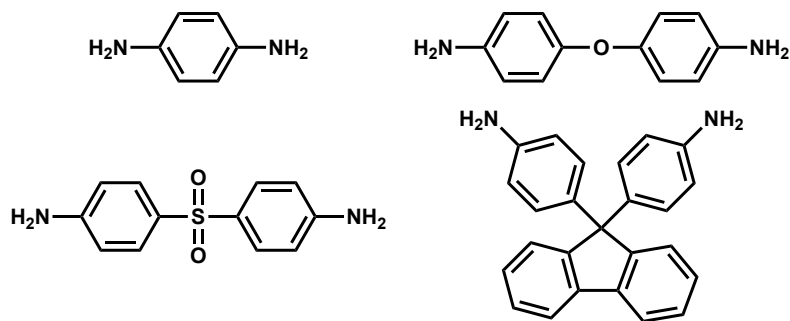
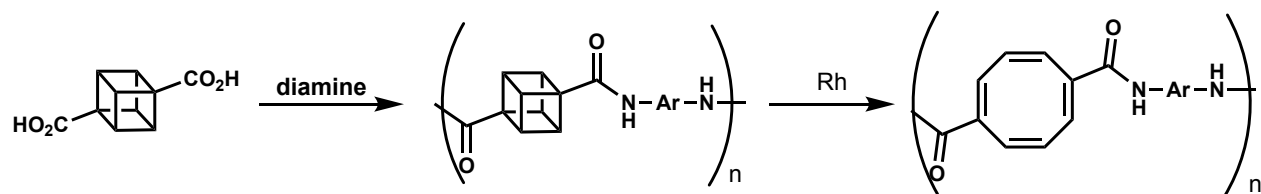
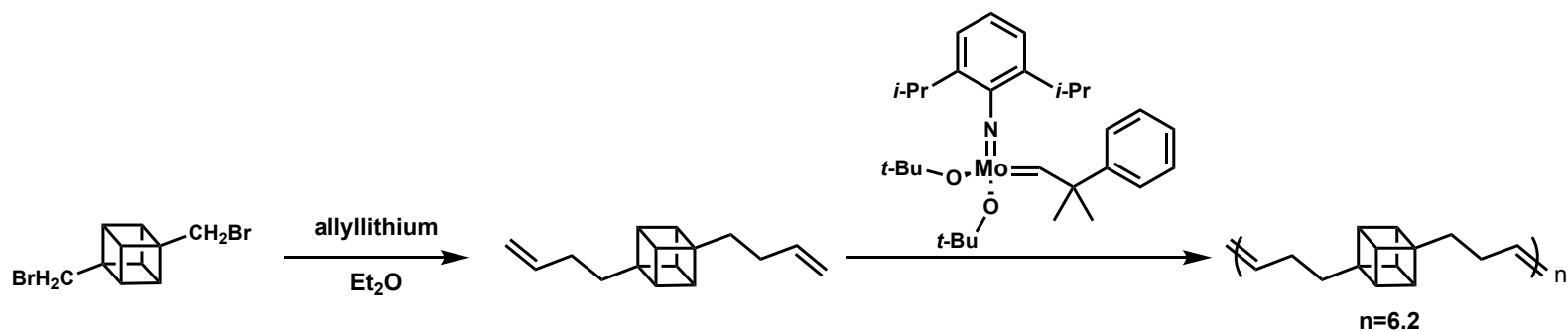
Synthesis of Hexanitrocubane



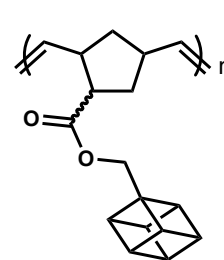
Synthesis of Hepta- and Octanitrocubane

1.813g/cm³1.960g/cm³2.028g/cm³1.979g/cm³2.04g/cm³

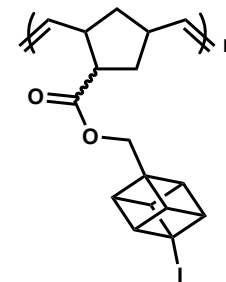
Cubanes In Polymers



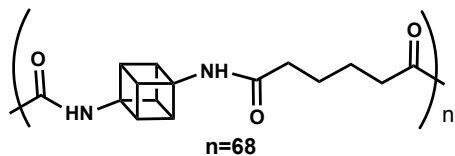
Polymers Cont.



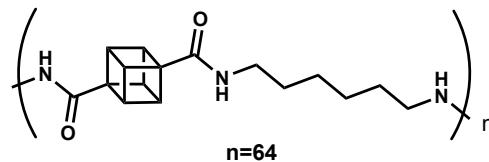
n=143



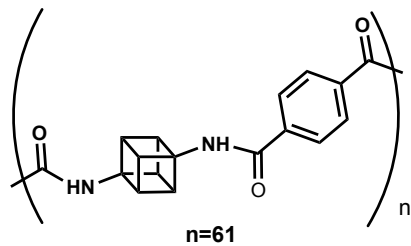
n=71



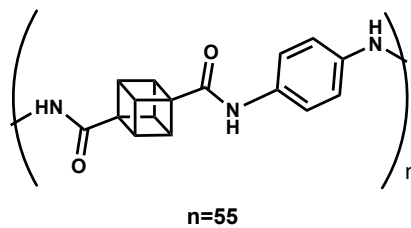
n=68



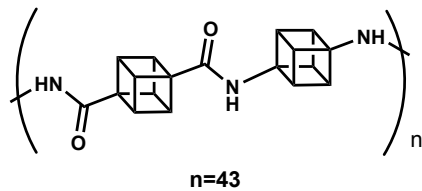
n=64



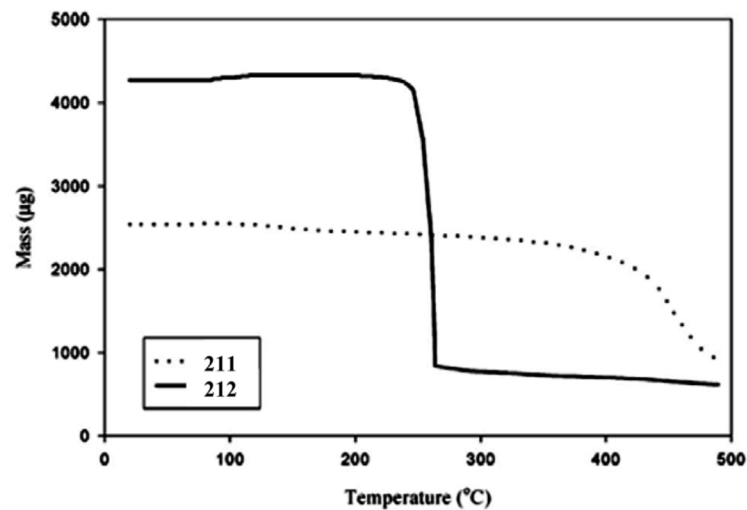
n=61



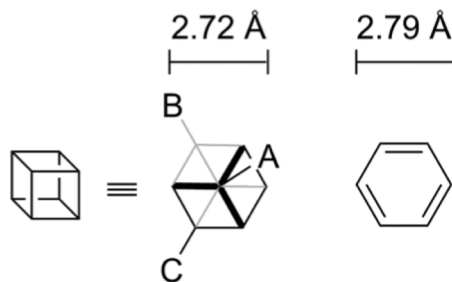
n=55



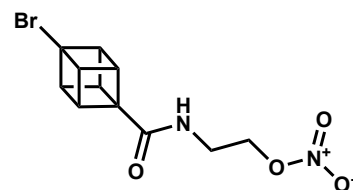
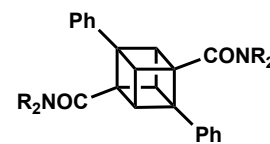
n=43



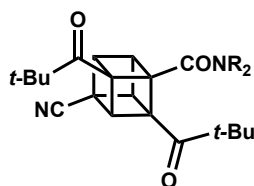
Cubanes in Medicinal Chemistry



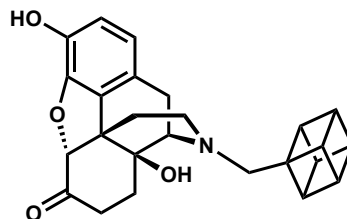
Antiviral Properties

K⁺ATP channel agonist

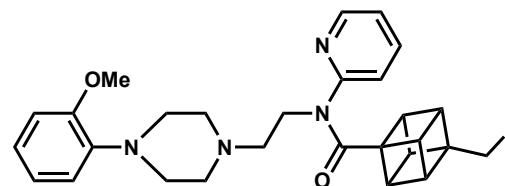
anticancer activity



Anti HIV activity



narcotic antagonist

5-HT_{1A} antagonist