Electronic Supplementary Material (ESI) for Environmental Science: Processes & Impacts.

Analytical Methodologies for Oxidized Organic Compounds in the Atmosphere

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Content

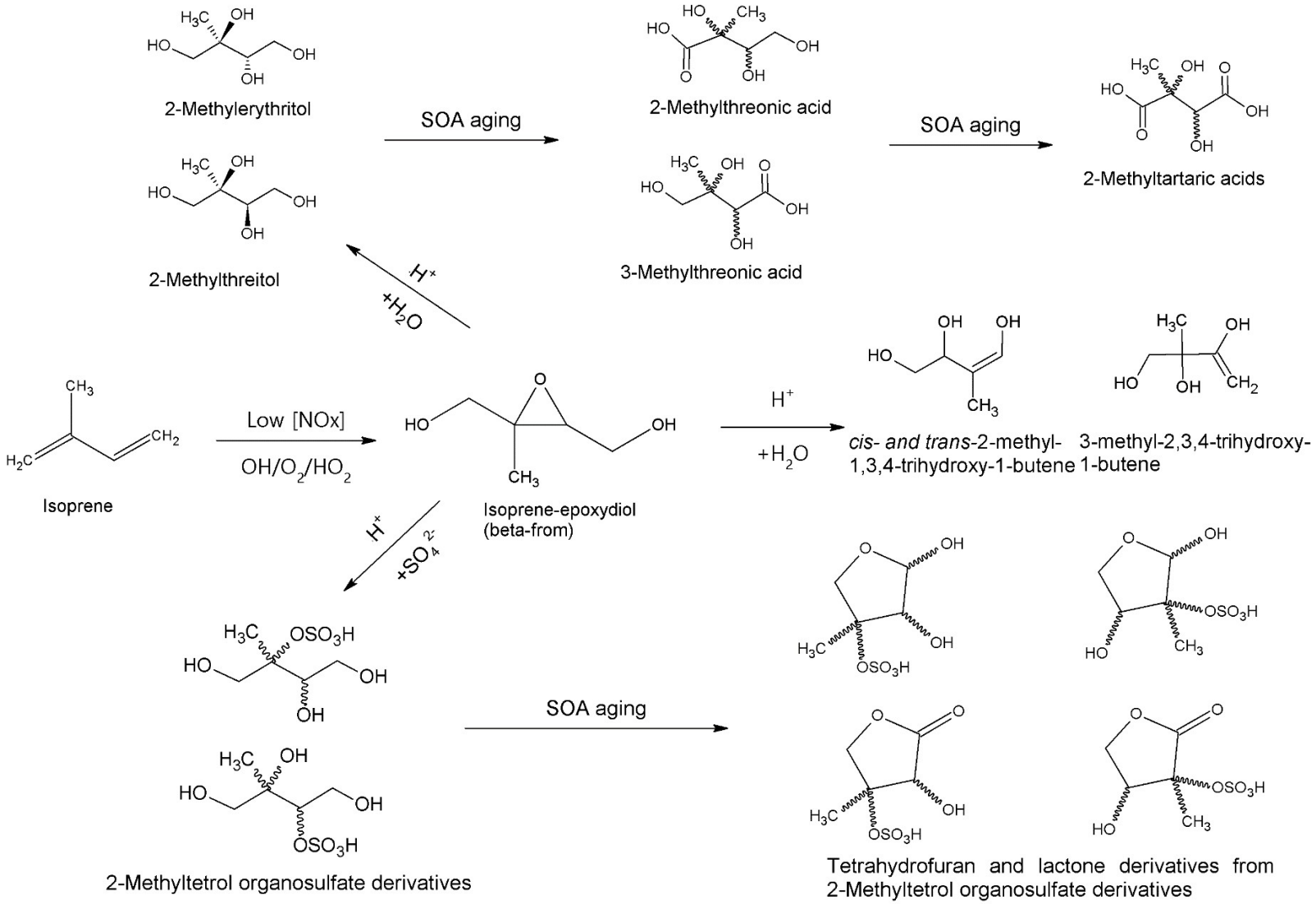

Figure S1. Isoprene markers of first-generation and higher generation products indicating secondary organic aerosol (SOA) aging formed at low NOx concentrations and with different nucleophiles attacking isoprene-epoxydiol.

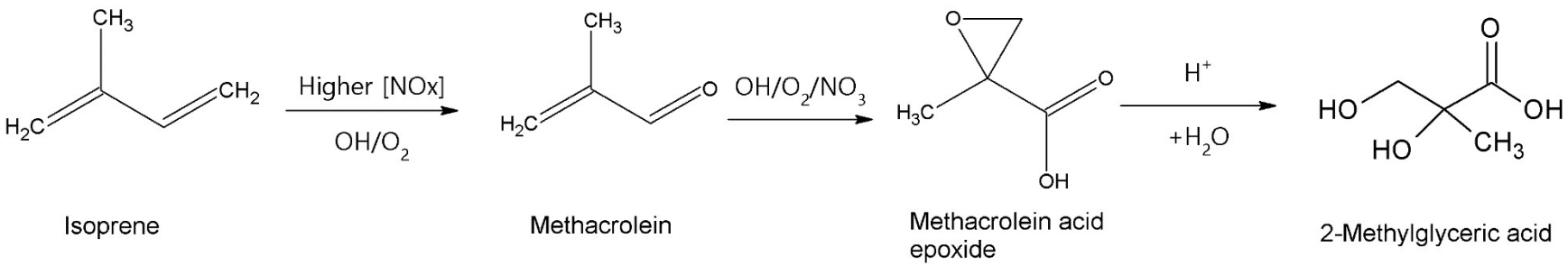

Figure S2. Isoprene oxidation in higher NOx with few significant intermediates and the final product.

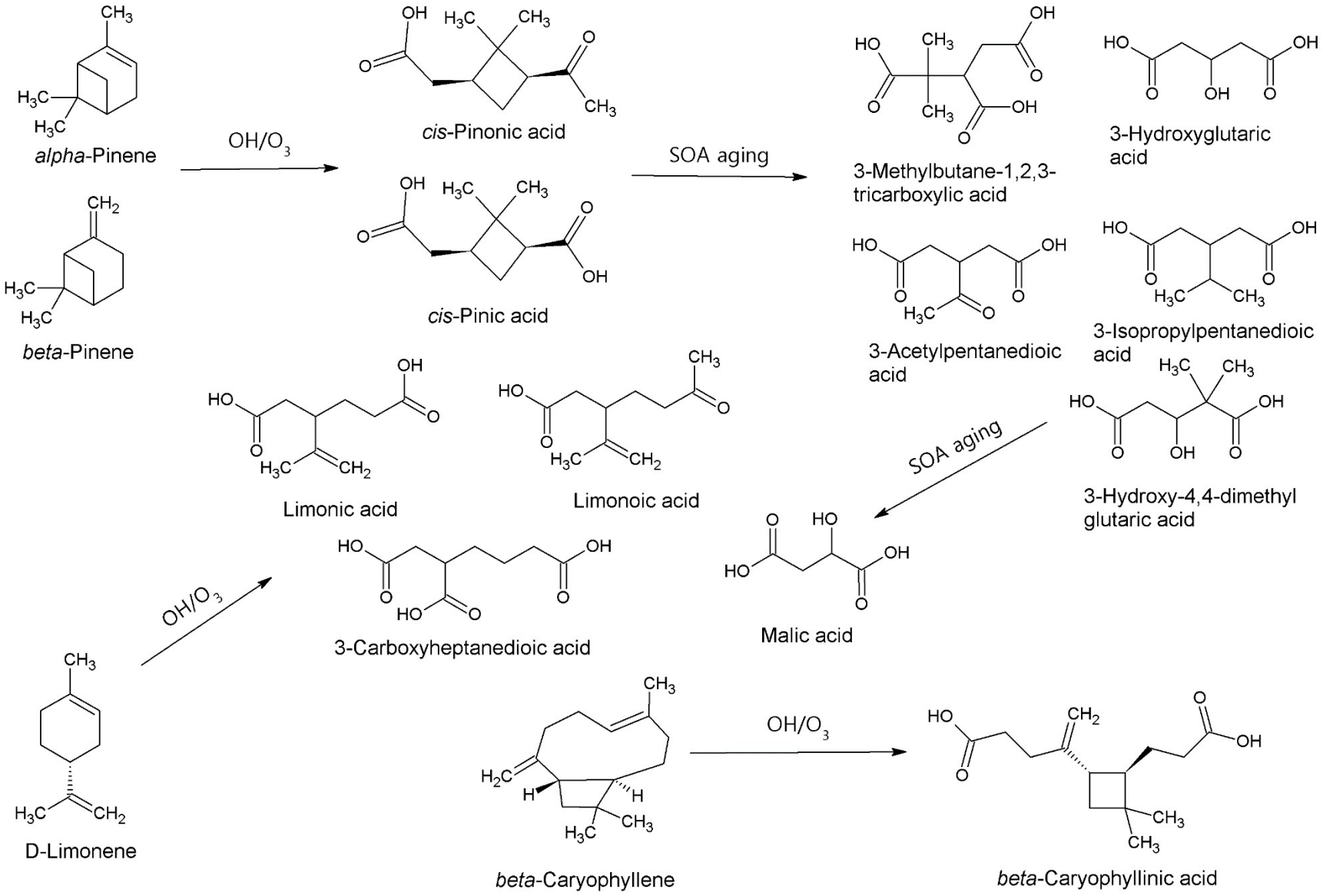

Figure S3. Common terpene precursors and their oxidized markers.

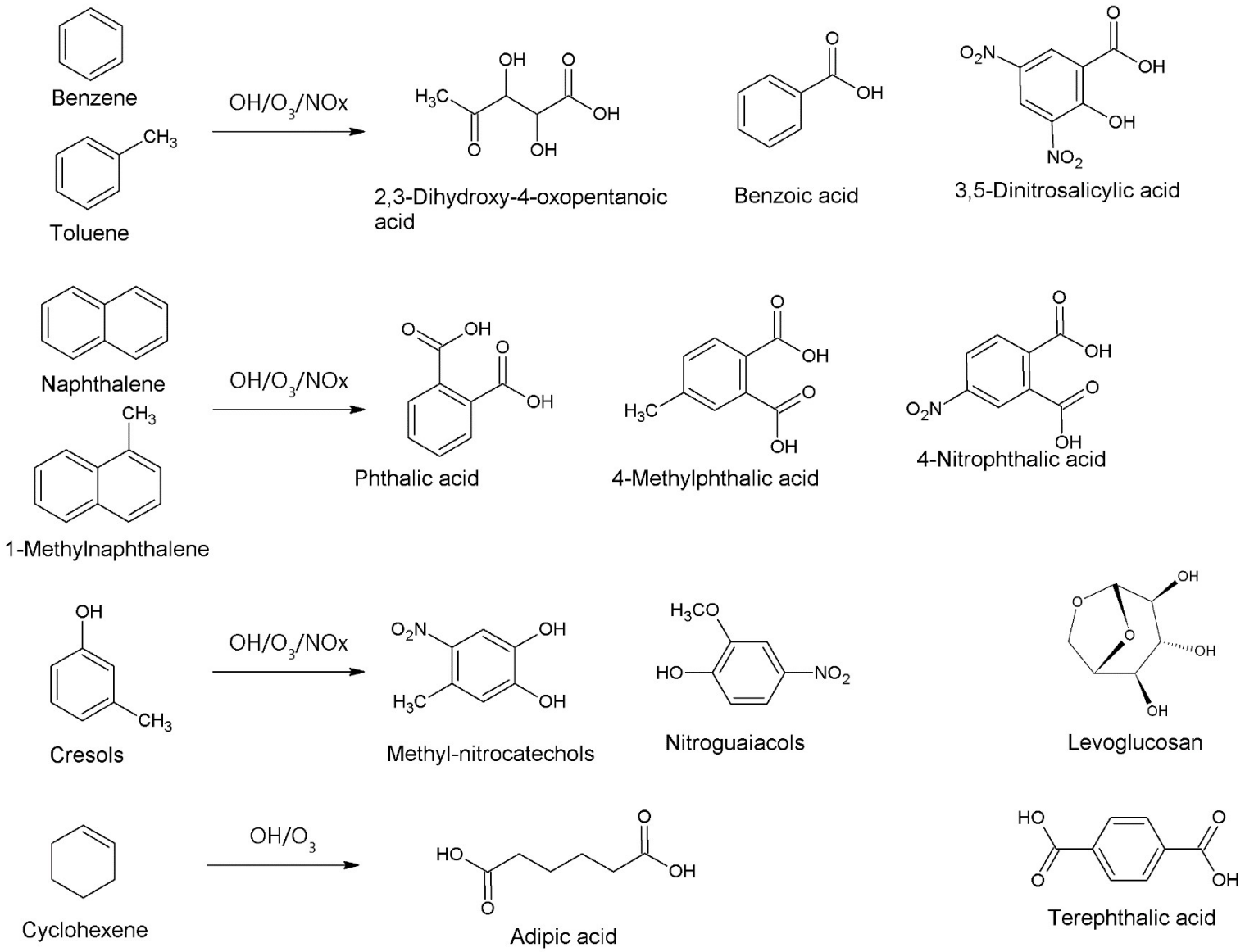

Figure S4. Examples of anthropogenic primary compounds or precursors with their oxidized markers.

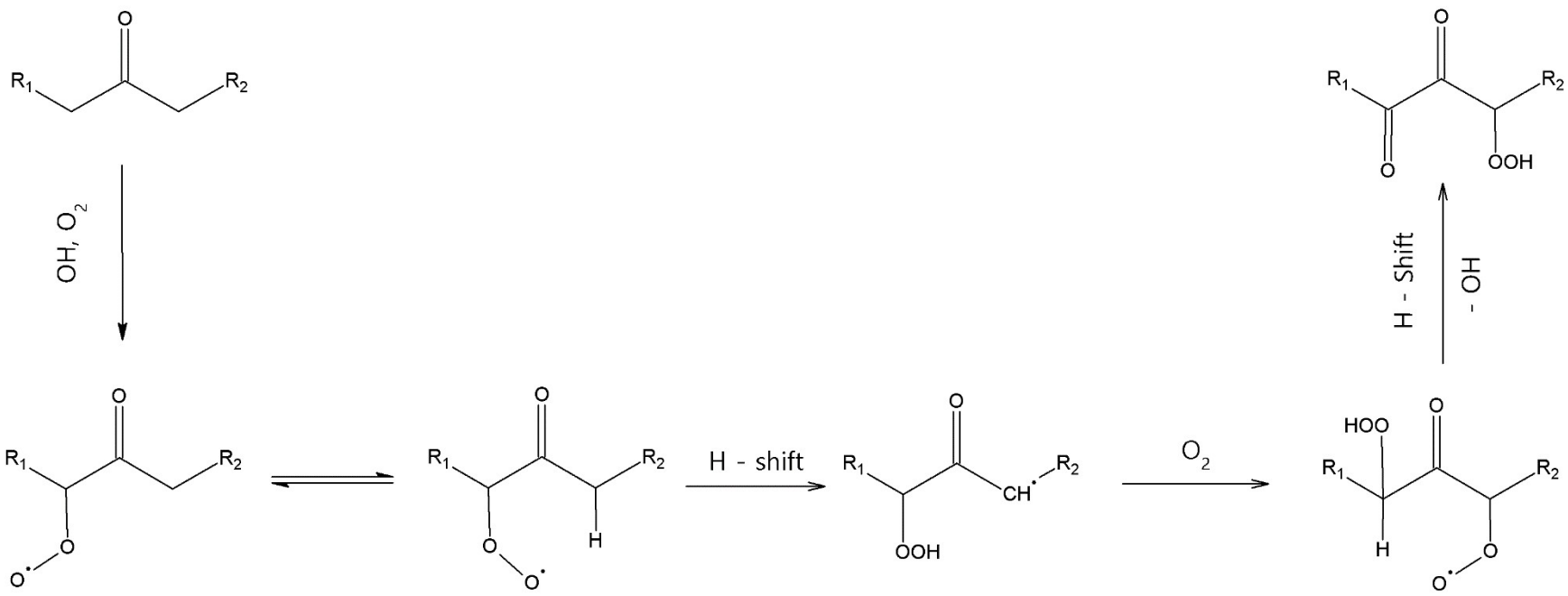

Figure S5. Proposed reaction mechanism for autoxidation reaction. Redrawn and modified with permission from ACS Publications. Ref [1].

Table S1. Common employed reagents for different functional groups.

Reagent	Functional Group	Derivative	Analysis Technique	References
DNPH[1]	Carbonyl	DNPH derivative	LC	[2–4]
MHA,[2] BHA,[3] TBHA,[4] PFBHA[5]	Carbonyl	Oximes	GC, LC	[5–10]
14 % Boron trifluoride in butanol	Carbonyl	Butoxy acetals or ketals	GC	[11–13]
	Carboxyl	Butyl esters		
TMSD[6] + excess methanol	Carboxyl	Methyl esters	GC	[7,8,14]
BSTFA[7] or MSTFA[8] + 1 % TMCS[9]	Carboxyl	Trimethylsilyl derivatives	GC	[7,8,11,14–16]

[1] 2,4-Dinitrophenylhydrazine
[2] O-methylhydroxylamine
[3] O-benzylhydroxylamine
[4] O-*tert*-butylhydroxylamine
[5] O-(2,3,4,5,6-pentafluorobenzyl)hydroxylamine
[6] Trimethylsilyldiazomethane
[7] N,O-bis(trimethylsilyl) trifluoroacetamide
[8] N-Methyl-N-(trimethylsilyl)trifluoroacetamide
[9] Trimethylchlorosilane

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