

Supplementary Material

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Table S1: The oxidation of cycloalkenes (with/without) stabiliser in the absence of a catalyst

Cycloalkene	Stabiliser	Temperature (°C)	Conversion (%)	Selectivity %		
				Epoxide	Cy-one	Cy-ol
Cyclopentene	Yes	26	0.1	-	-	-
	No		0.22	-	-	-
Cyclohexene	Yes	50	0.04	-	-	-
	No		0.1	-	-	-
Cycloheptene	Yes	60	2	24	31	44
	No		2.7	19	30.4	50.2
Cyclooctene	Yes	80	0.03	-	-	-
	No		0.05	-	-	-

Reaction conditions: substrate (10ml), glass reactor, 24 h, atmospheric pressure, TBHP (0.064×10⁻³ mol) only added when cycloalkene contained stabiliser.

Table S2: Comparison of oxidation activity for α -alkenes (stabilizer-free), in the presence/absence of TBHP and in the presence of 1%Au/Graphite catalyst.

α -Alkenes (free stabilizer)	Temperature (° C)	Conversion %	
		With TBHP	Without TBHP
1-Octene	70	2.9	0
1-hexene	40	1.2	0
cis-2-hexene	40	1.2	0.9
cis-3-hexene	40	9.6	11.4

Reaction conditions: substrate (5 ml), 1%Au/G (0.06g), glass reactor, TBHP (0.032×10^{-3} mol), 24h, atmospheric pressure.

Table S3: Further information about the source and purity of the alkenes as provided from the repective suppliers after electronic communication.

Alkene containing stabiliser	Supplier	Concentration of stabiliser	Stabiliser-free alkene	Supplier/treatment
Cyclopentene	Sigma – Aldrich 344508-100ML	0.01% 2,6-di-tert-butyl-4-methylphenol	Cyclopentene	Alfa Aesar 344508-100ML
Cyclohexene	Sigma – Aldrich 29240-500ML	0.01% 2,6-di-tert-butyl-4-methylphenol	Cyclohexene	Sigma – Aldrich 125431-500ML
Cycloheptene	Alfa Aesar H29062	0.1% BHT	Cycloheptene	Stabiliser removed by treatment
Cyclooctene	Alfa Aesar A13477	100 to 200 ppm irganox 1076	Cyclooctene	
1-hexene	Not available		1-hexene	Sigma – Aldrich 240761-100ML
1-octene			1-octene	Sigma – Aldrich O4806-100ML
2-hexene			2-hexene	Alfa Aesar H53506
3-hexene			3-hexene	Alfa Aesar H53485