Practical β -Lactone Synthesis: Epoxide Carbonylation at 1 atm

John W. Kramer, Emil B. Lobkovsky, Geoffrey W. Coates*

General Procedure for Determination of Lactone Purity:

The purity of lactone products was measured on an HP 6890 Series GC equipped with an HP 19091J-413 phenylmethyl silicone column (0.32 mm $\times$ 30 m) using helium as the carrier gas. Upon injection at 55 °C, the temperature was held constant for 8 minutes. If necessary, the oven temperature was increased in the following increments: 30 °C/min to 100 °C and held for 7 minutes, then 30 °C/min to 130 °C and held for 5 minutes, and finally 30 °C/min to 150 °C and held for 5 minutes.

PO to BBL in DME at 100 psi CO

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Acq. Method : TLC_IR2.M
Method Profile:

Signal 1:FID1 B,

Peak #	RT [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	2.954	PB	0.0312	55.884	100.00	

BO to BVL in DME at 100 psi CO

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Acq. Method : TLC_IR2.M
Method Profile:

Signal 1:FID1 B,

Peak #	RT [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	5.034	PB	0.0455	225.469	100.00	

dodecene oxide to lactone in DME at 100 psi CO

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Acq. Method : TLC_IR2.M
Method Profile:

Signal 1:FID1 B,

Peak #	RT [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	14.297	MM	0.1468	43.016	100.00	

hexadiene monoepoxide to lactone in DME at 100 psi CO

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Acq. Method : TLC_IR2.M
Method Profile:

Signal 1:FID1 B,

Peak #	RT [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	10.961	PB	0.0393	314.637	100.00	

allyl glycidyl ether to lactone in DME at 100 psi CO

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Acq. Method : TLC_IR2.M
Method Profile:

Signal 1:FID1 B,

Peak #	RT [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	13.225	MM	0.0570	253.515	100.00	

Bu glycidyl ether to lactone in DME at 100 psi CO

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Acq. Method : TLC_IR2.M
Method Profile:

Signal 1:FID1 B,

Peak #	RT [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	16.897	BB	0.0494	173.904	100.00	

TBDMS glycidyl ether to lactone in DME at 100 psi CO

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Acq. Method : TLC_IR2.M
Method Profile:

Signal 1:FID1 B,

Peak #	RT [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	20.243	BB	0.0531	414.486	100.00	

glycidyl acetate to lactone in DME at 100 psi CO

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Acq. Method : TLC_IR2.M
Method Profile:

Signal 1:FID1 B,

Peak #	RT [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	13.459	PB	0.0533	129.107	100.00	

glycidyl benzoate to lactone in DME at 100 psi CO

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Acq. Method : TLC_IR2.M
Method Profile:

Signal 1:FID1 B,

Peak #	RT [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	21.749	BB	0.0409	98.816	100.00	