Hemi-labile Ligands in Organolithium Chemistry: Rate Studies of the LDA-Mediated α- and β–Elimination of Epoxides.

Antonio Ramírez and David B. Collum*
Department of Chemistry and Chemical Biology,
Baker Laboratory, Cornell University. Ithaca, New York 14853-1301

Supporting Information

I Plot of k_{obsd} vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the β-deprotonation of 2,3-dimethyl-2-butene oxide (**8**, 0.004 M) by LDA (0.10 M).

II Plot of k_{obsd} vs. [LDA] in $MeOCH_2CH_2NMe_2$ (0.5 M) and hexane co-solvent for the β-deprotonation of 2,3-dimethyl-2-butene oxide (**8**, 0.004 M).

III Plot of k_{obsd} vs. [*n*-BuOMe] in hexane co-solvent for the β-deprotonation of 2,3-dimethyl-2-butene oxide (**8**, 0.004 M) by LDA (0.10 M).

IV Plot of k_{obsd} vs. [LDA] in *n*-BuOMe (0.5 M) and hexane co-solvent for the β-deprotonation of 2,3-dimethyl-2-butene oxide (**8**, 0.004 M).

V Plot of k_{obsd} vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the α-deprotonation of *exo*-norbornene oxide (**10**, 0.004 M) by LDA (0.10 M).

VI Plot of k_{obsd} vs. [LDA] in $MeOCH_2CH_2NMe_2$ (3.0 M) and hexane co-solvent for the α-deprotonation of *exo*-norbornene oxide (**10**, 0.004 M).

VII Plot of k_{obsd} vs. [*n*-BuOMe] in hexane co-solvent for the α-deprotonation of *exo*-norbornene oxide (**10**, 0.004 M) by LDA (0.10 M).

VIII Plot of k_{obsd} vs. [LDA] in *n*-BuOMe (3.0 M) and hexane co-solvent for the α-deprotonation of *exo*-norbornene oxide (**10**, 0.004 M).

IX Plot of ($k_{obsd(\alpha)} + k_{obsd(\beta)}$) vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the α- and β-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.10 M).

X Plot of ($k_{obsd(\alpha)} + k_{obsd(\beta)}$) vs. [LDA] in $MeOCH_2CH_2NMe_2$ (3.0 M) and hexane co-solvent for the α- and β-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M).

XI Plot of ($k_{obsd(\alpha)} + k_{obsd(\beta)}$) vs. [LDA] in $MeOCH_2CH_2NMe_2$ (0.5 M) and

hexane co-solvent for the α- and β-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M).

XII Plot of $k_{obsd(\alpha)}$ vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the α-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.10 M).

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XIV Plot of $k_{obsd(\alpha)}$ vs. [LDA] in $MeOCH_2CH_2NMe_2$ (0.5 M) and hexane co-solvent for the α-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M).

XV Plot of $k_{obsd(\beta)}$ vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the β-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.10 M).

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XVII Plot of $k_{obsd(\beta)}$ vs. [LDA] in $MeOCH_2CH_2NMe_2$ (0.5 M) and hexane co-solvent for the β-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M).

XVIII Plot of k_{obsd} vs. [*n*-BuOMe] in hexane co-solvent for the α-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.40 M).

XIX Plot of k_{obsd} vs. [LDA] in *n*-BuOMe (0.5 M) and hexane co-solvent for the α-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M).

XX Table of data for plot in Sections I.

XXI Table of data for plot in Sections II.

XXII Table of data for plot in Section III.

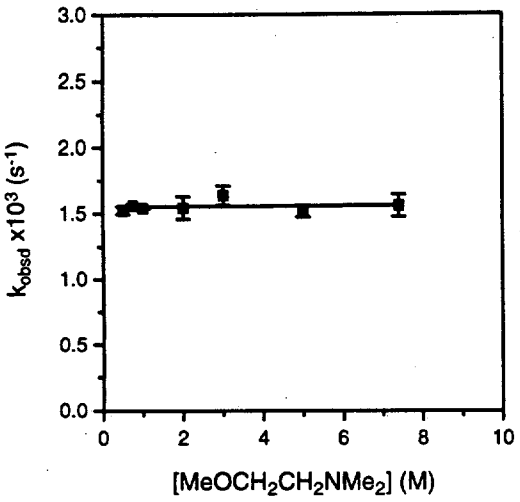
XXIII Table of data for plot in Section IV.

XXIV Table of data for plot in Section V.

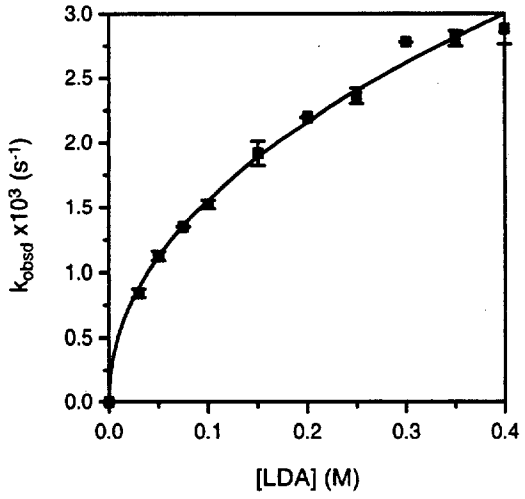
XXV Table of data for plot in Section VI.

XXVI Table of data for plot in Section VII

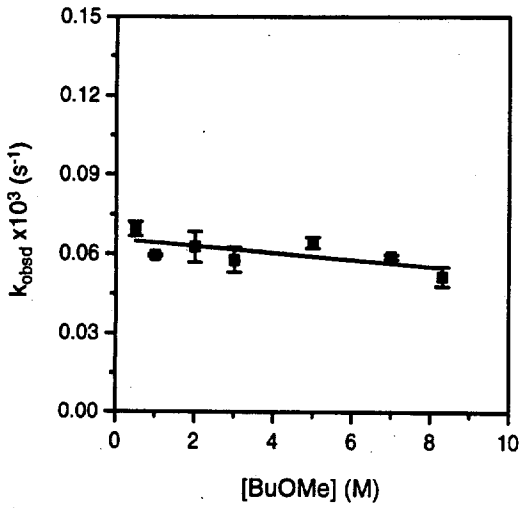
XXVII Table of data for plot in Section VIII.



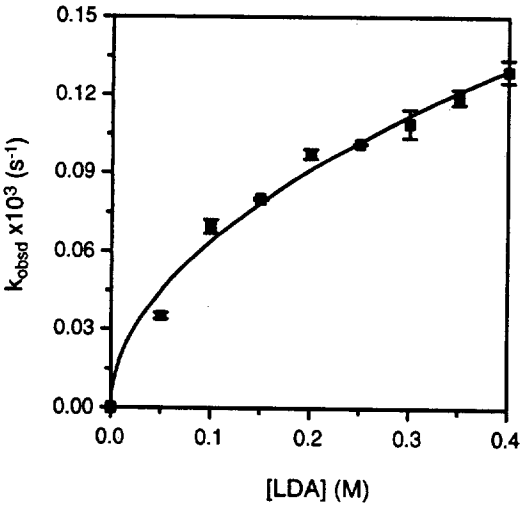
I. Plot of k_{obsd} vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the β-deprotonation of 2,3-dimethyl-2-butene oxide (**8**, 0.004 M) by LDA (0.10 M) at 0 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k\,[MeOCH_2CH_2NMe_2] + k'$ ($k = 1 \pm 7 \times 10^{-6}$, $k' = 1.55 \pm 0.02 \times 10^{-3}$).



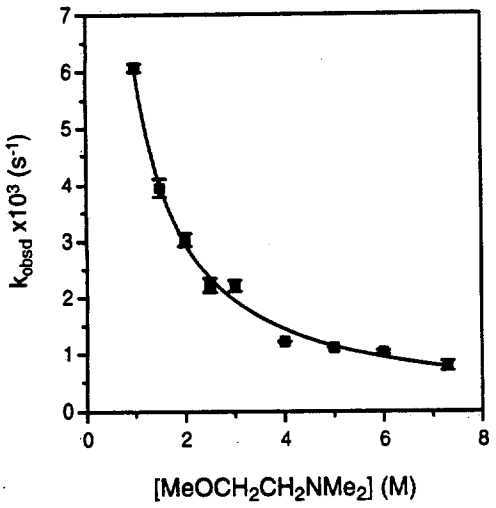
II. Plot of k_{obsd} vs. [LDA] in $MeOCH_2CH_2NMe_2$ (0.5 M) and hexane co-solvent for the β-deprotonation of 2,3-dimethyl-2-butene oxide (**8**, 0.004 M) at 0 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k[LDA]^n$ ($k = 4.6 \pm 0.1 \times 10^{-3}$, $n = 0.47 \pm 0.02$).



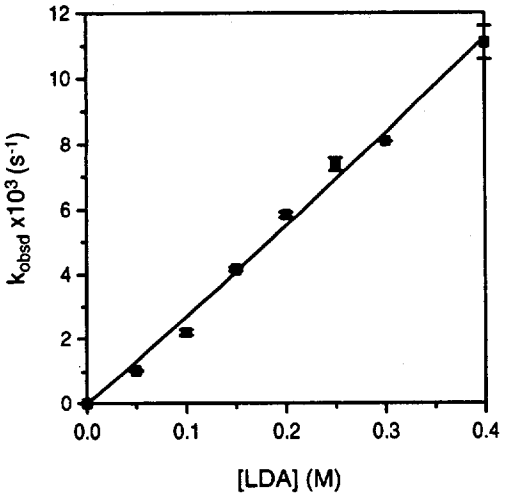
III. Plot of k_{obsd} vs. [*n*-BuOMe] in hexane co-solvent for the β-deprotonation of 2,3-dimethyl-2-butene oxide (**8**, 0.004 M) by LDA (0.10 M) at 0 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k[n\text{-BuOMe}] + k'$ ($k = -1.3 \pm 0.6 \times 10^{-6}$, $k' = 6.6 \pm 0.3 \times 10^{-5}$).



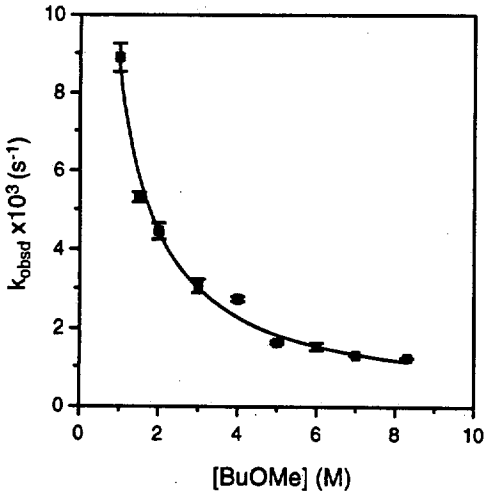
IV. Plot of k_{obsd} vs. [LDA] in *n*-BuOMe (0.5 M) and hexane co-solvent for the β-deprotonation of 2,3-dimethyl-2-butene oxide (**8**, 0.004 M) at 0 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k[\text{LDA}]^n$ ($k = 1.2 \pm 0.1 \times 10^{-2}$, $n = 0.51 \pm 0.04$).



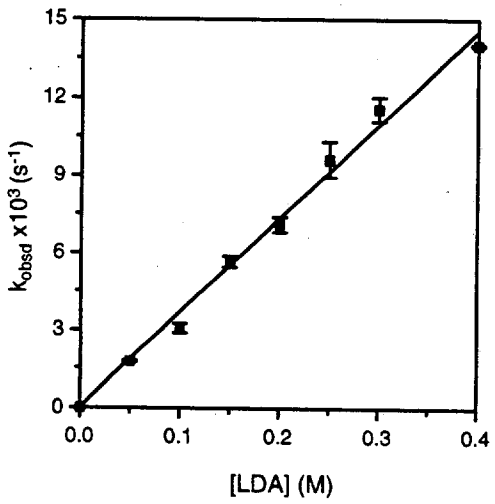
V. Plot of k_{obsd} vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the α-deprotonation of *exo*-norbornene oxide (**10**, 0.004 M) by LDA (0.10 M) at -70 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k\,[MeOCH_2CH_2NMe_2]^n$ ($k = 6.1 \pm 0.1 \times 10^{-3}$, $n = -1.03 \pm 0.03$).



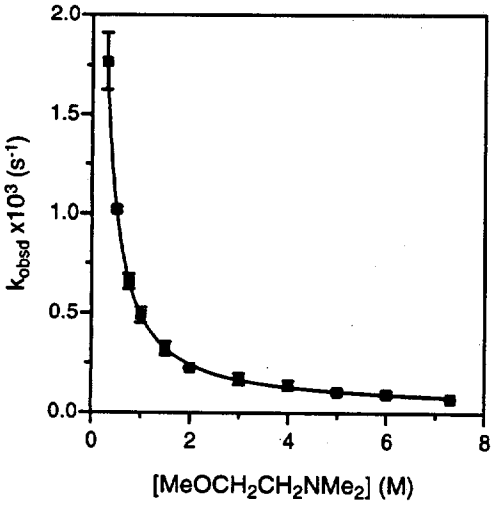
VI. Plot of k_{obsd} vs. [LDA] in $MeOCH_2CH_2NMe_2$ (3.0 M) and hexane co-solvent for the α-deprotonation of *exo*-norbornene oxide (**10**, 0.004 M) at -70 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k[LDA]^n$ ($k = 2.9 \pm 0.2 \times 10^{-2}$, $n = 1.03 \pm 0.05$).



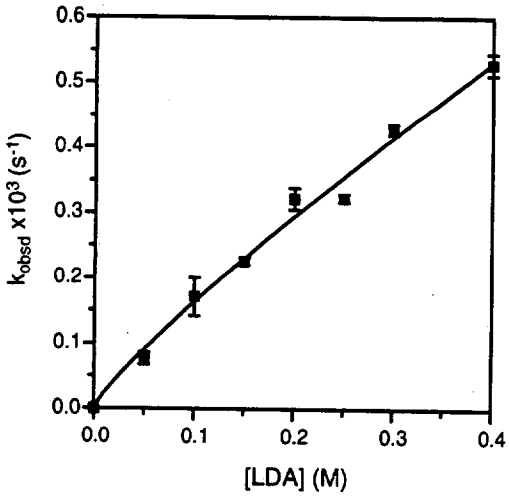
VII. Plot of k_{obsd} vs. [*n*-BuOMe] in hexane co-solvent for the α-deprotonation of *exo*-norbornene oxide (**10**, 0.004 M) by LDA (0.10 M) at 0 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k\,[n\text{-BuOMe}]^n$ ($k = 8.6 \pm 0.3 \times 10^{-3}$, $n = -0.96 \pm 0.05$).



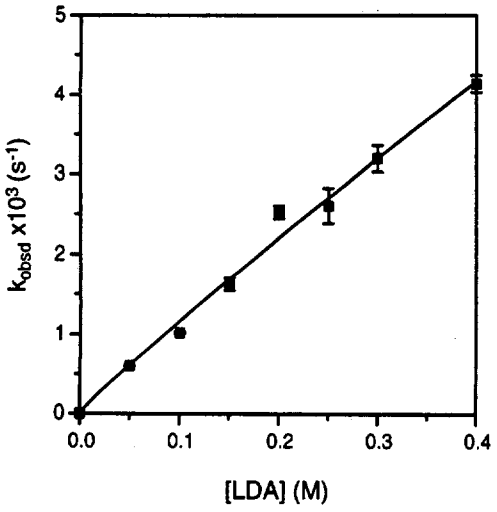
VIII. Plot of k_{obsd} vs. [LDA] in *n*-BuOMe (3.0 M) and hexane co-solvent for the α-deprotonation of *exo*-norbornene oxide (**10**, 0.004 M) at 0 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k[\text{LDA}]^n$ ($k = 3.6 \pm 0.3 \times 10^{-2}$, $n = 0.99 \pm 0.06$).



IX. Plot of ($k_{obsd(\alpha)} + k_{obsd(\beta)}$) vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the α– and β-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.10 M) at 20 °C. The curve depicts the result of an unweighted least-squares fit to ($k_{obsd(\alpha)} + k_{obsd(\beta)}$) = $k[MeOCH_2CH_2NMe_2]^n + k'$ ($k = 4.6 \pm 0.8 \times 10^{-4}$, $n = -1.10 \pm 0.01$, $k' = 2.9 \pm 0.6 \times 10^{-5}$).



X. Plot of ($k_{obsd(\alpha)} + k_{obsd(\beta)}$) vs. [LDA] in $MeOCH_2CH_2NMe_2$ (3.0 M) and hexane co-solvent for the α– and β-deprotonation of *cis*-cyclooctene oxide ((**5**, 0.004 M)) at 20 °C. The curve depicts the result of an unweighted least-squares fit to ($k_{obsd(\alpha)} + k_{obsd(\beta)}$) = $k[LDA]^n$ ($k = 1.1 \pm 0.1 \times 10^{-3}$, $n = 0.85 \pm 0.06$).



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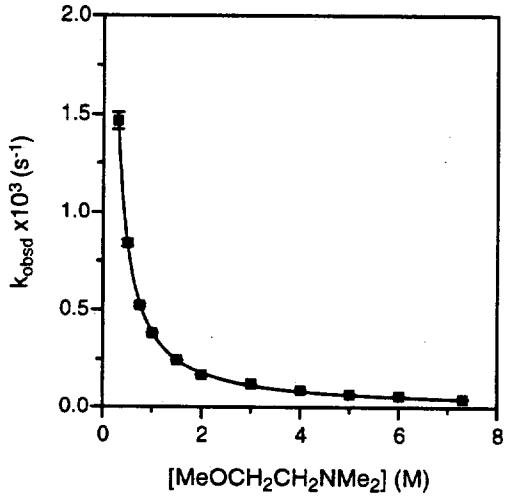
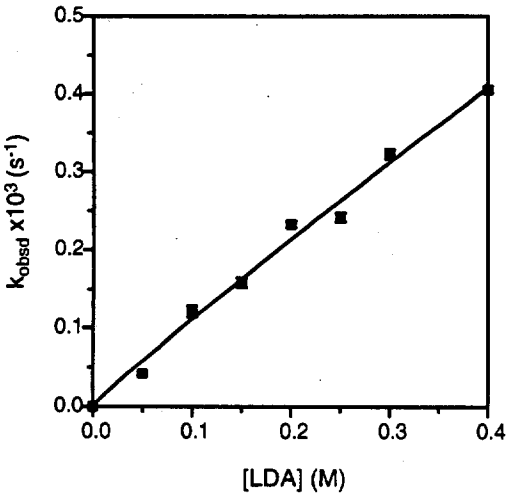
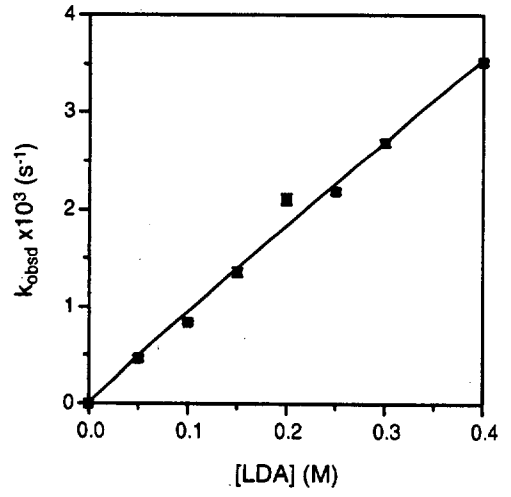


XII. Plot of $k_{obsd(\alpha)}$ vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the α–deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.10 M) at 20 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd(\alpha)} = k[MeOCH_2CH_2NMe_2]^n$ ($k = 3.8 \pm 0.1 \times 10^{-4}$, $n = -1.11 \pm 0.01$).



XIII. Plot of $k_{obsd(\alpha)}$ vs. [LDA] in $MeOCH_2CH_2NMe_2$ (3.0 M) and hexane co-solvent for the α–deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) at 20 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd(\alpha)} = k[LDA]^n$ ($k = 9.6 \pm 0.8 \times 10^{-4}$, $n = 0.94 \pm 0.06$).



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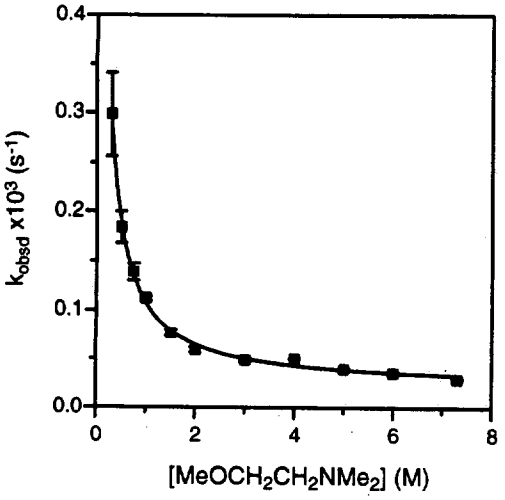
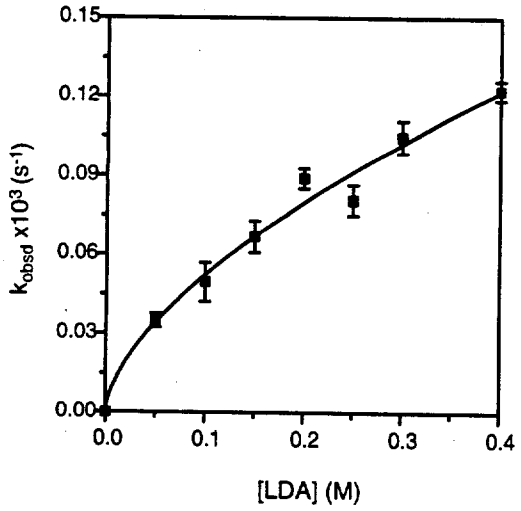


XV. Plot of $k_{obsd(\beta)}$ vs. [$MeOCH_2CH_2NMe_2$] in hexane co-solvent for the α– and β-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.10 M) at 20 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd(\beta)} = k[MeOCH_2CH_2NMe_2]^n + k'$ ($k = 8.6 \pm 5.6 \times 10^{-6}$, $n = -0.97 \pm 0.05$, $k' = 2.1 \pm 0.4 \times 10^{-5}$).



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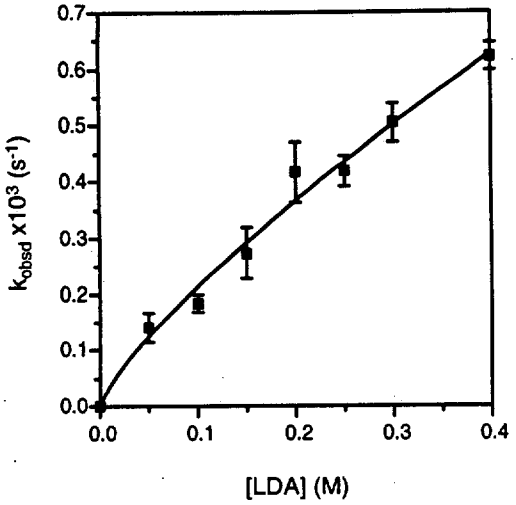
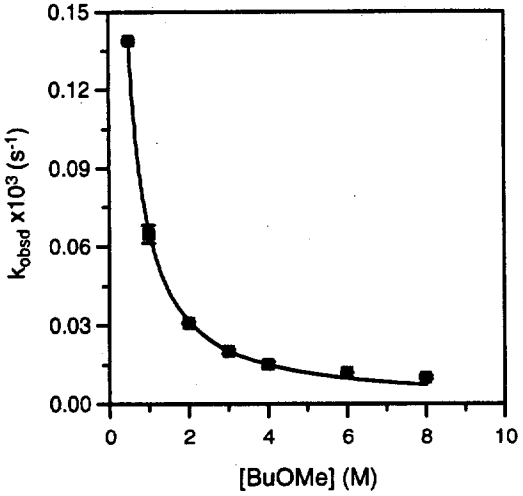
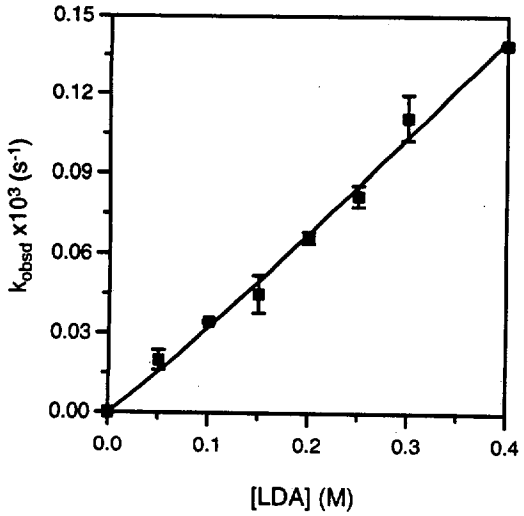


XVII. Plot of $k_{obsd(\beta)}$ vs. [LDA] in $MeOCH_2CH_2NMe_2$ (0.5 M) and hexane co-solvent for the α– and β-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) at 20 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd(\beta)} = k[LDA]^n$ ($k = 1.3 \pm 0.1 \times 10^{-3}$, $n = 0.78 \pm 0.06$).



XVIII. Plot of k_{obsd} vs. [*n*-BuOMe] in hexane co-solvent for the α-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.40 M) at 20 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k\,[n\text{-BuOMe}]^n$ ($k = 6.6 \pm 0.1 \times 10^{-5}$, $n = -1.06 \pm 0.02$).



XIX. Plot of k_{obsd} vs. [LDA] in *n*-BuOMe (0.5 M) and hexane co-solvent for the α-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) at 20 °C. The curve depicts the result of an unweighted least-squares fit to $k_{obsd} = k[LDA]^n$ ($k = 3.7 \pm 0.3 \times 10^{-4}$, $n = 1.06 \pm 0.06$).

XX. Table of data for plot in Section I

[$MeO(CH_2)_2NMe_2$] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.50	0.00150 ± 8E-5	0.00154 ± 6E-5	0.00152 ± 3E-5
0.75	0.0015 ± 1E-4	0.0016 ± 1E-4	0.00156 ± 1E-5
1.00	0.00154 ± 6E-5	0.00154 ± 3E-5	0.00154 ± 1E-6
2.00	0.00148 ± 7E-5	0.00160 ± 4E-5	0.00154 ± 8E-5
3.00	0.00169 ± 5E-5	0.00158 ± 6E-5	0.00164 ± 7E-5
5.00	0.00148 ± 6E-5	0.00155 ± 5E-5	0.00152 ± 4E-5
7.30	0.00150 ± 6E-5	0.00162 ± 4E-5	0.00156 ± 8E-5

XXI. Table of data for plot in Section II

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.030	0.00087 ± 4E-6	0.00081 ± 7E-5	0.00084 ± 4E-5
0.050	0.00110 ± 5E-5	0.00115 ± 3E-5	0.00112 ± 3E-5
0.075	0.00135 ± 8E-5	0.00135 ± 9E-5	0.00135 ± 3E-6
0.100	0.00150 ± 8E-5	0.00155 ± 6E-5	0.00152 ± 3E-5
0.150	0.00198 ± 9E-5	0.0018 ± 1E-4	0.00192 ± 9E-5
0.200	0.00220 ± 2E-5	0.00220 ± 2E-5	0.00220 ± 1E-5
0.250	0.00240 ± 4E-5	0.00231 ± 2E-5	0.00235 ± 6E-5
0.300	0.00278 ± 4E-5	0.00278 ± 4E-5	0.00278 ± 2E-6
0.350	0.00285 ± 5E-5	0.00276 ± 3E-5	0.00280 ± 6E-5
0.400	0.00280 ± 4E-5	0.00296 ± 7E-5	0.00288 ± 1E-4

XXII. Table of data for plot in Section III

[*n*-BuOMe] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.50	0.0000715 ± 5E-6	0.0000677 ± 4E-6	0.0000696 ± 3E-7
1.00	0.0000598 ± 3E-6	0.0000593 ± 4E-6	0.0000596 ± 1E-7
2.00	0.0000587 ± 4E-6	0.0000670 ± 4E-6	0.0000628 ± 6E-7
3.00	0.0000545 ± 3E-6	0.0000612 ± 4E-6	0.0000578 ± 5E-7
5.00	0.0000628 ± 2E-6	0.0000658 ± 2E-6	0.0000643 ± 2E-7
7.00	0.0000585 ± 4E-6	0.0000597 ± 4E-6	0.0000591 ± 1E-7
8.20	0.0000490 ± 3E-6	0.0000543 ± 2E-6	0.0000517 ± 4E-7

XXIII. Table of data for plot in Section IV

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.000036 ± 2E-6	0.000034 ± 3E-6	0.000035 ± 1E-6
0.100	0.000072 ± 4E-6	0.000068 ± 4E-6	0.000070 ± 3E-6
0.150	0.000080 ± 5E-6	0.000080 ± 8E-6	0.0000801 ± 3E-7
0.200	0.000100 ± 4E-6	0.000096 ± 5E-6	0.000097 ± 2E-6
0.250	0.000101 ± 8E-6	0.000101 ± 8E-6	0.000101 ± 1E-6
0.300	0.000105 ± 8E-6	0.00011 ± 3E-6	0.000109 ± 5E-6
0.350	0.000121 ± 5E-6	0.00012 ± 1E-5	0.000119 ± 3E-6
0.400	0.000132 ± 7E-6	0.00013 ± 1E-5	0.000129 ± 4E-6

XXIV. Table of data for plot in Section V

$[MeO(CH_2)_2NMe_2]$ (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
1.00	0.0060 ± 1E-4	0.00612 ± 8E-5	0.00607 ± 7E-5
1.50	0.0038 ± 1E-4	0.00407 ± 6E-5	0.0040 ± 2E-4
2.00	0.0030 ± 2E-4	0.0031 ± 1E-4	0.0030 ± 1E-4
2.50	0.00213 ± 8E-5	0.00230 ± 5E-5	0.0022 ± 1E-4
3.00	0.00226 ± 2E-5	0.00213 ± 3E-5	0.00220 ± 9E-5
4.00	0.00123 ± 7E-5	0.0012 ± 1E-4	0.00123 ± 1E-5
5.00	0.00111 ± 8E-5	0.0011 ± 1E-4	0.00112 ± 1E-5
6.00	0.00100 ± 3E-5	0.00106 ± 2E-5	0.00103 ± 4E-5
7.30	0.00073 ± 4E-5	0.00085 ± 5E-5	0.00079 ± 8E-5

XXV. Table of data for plot in Section VI

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.00104 ± 6E-5	0.00102 ± 6E-5	0.00103 ± 2E-5
0.100	0.0023 ± 2E-4	0.0021 ± 3E-4	0.00220 ± 9E-5
0.150	0.0041 ± 1E-4	0.0042 ± 2E-4	0.00415 ± 5E-5
0.200	0.0059 ± 2E-4	0.00578 ± 7E-5	0.00584 ± 8E-5
0.250	0.0075 ± 1E-4	0.0072 ± 1E-4	0.0074 ± 2E-4
0.300	0.0081 ± 4E-4	0.0081 ± 4E-4	0.00811 ± 1E-5
0.400	0.0114 ± 2E-4	0.0107 ± 3E-4	0.0111 ± 5E-4

XXVI. Table of data for plot in SectionVII

[*n*-BuOMe] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
1.00	0.0086 ± 4E-4	0.0092 ± 3E-4	0.0089 ± 4E-4
1.50	0.0052 ± 3E-4	0.0054 ± 2E-4	0.0053 ± 1E-4
2.00	0.0043 ± 1E-4	0.0046 ± 2E-4	0.0045 ± 2E-4
3.00	0.0029 ± 3E-4	0.0032 ± 1E-4	0.0031 ± 2E-4
4.00	0.0026 ± 1E-4	0.0028 ± 1E-4	0.00272 ± 6E-5
5.00	0.0017 ± 1E-4	0.00161 ± 6E-5	0.00164 ± 4E-5
6.00	0.0015 ± 1E-4	0.0016 ± 1E-4	0.0015 ± 1E-4
7.00	0.00130 ± 8E-5	0.0013 ± 1E-4	0.00130 ± 1E-5
8.30	0.00124 ± 6E-5	0.00122 ± 2E-5	0.00123 ± 1E-5

XXVII. Table of data for plot in Section VIII

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.0018 ± 2E-4	0.0017 ± 1E-4	0.00176 ± 3E-5
0.100	0.00293 ± 8E-5	0.0032 ± 1E-4	0.0031 ± 2E-4
0.150	0.0058 ± 4E-4	0.0055 ± 1E-4	0.0057 ± 2E-4
0.200	0.0073 ± 1E-4	0.0069 ± 1E-4	0.0071 ± 3E-4
0.250	0.0091 ± 7E-4	0.0101 ± 7E-4	0.0096 ± 7E-4
0.300	0.0119 ± 2E-4	0.0112 ± 8E-4	0.0116 ± 5E-4
0.400	0.0140 ± 2E-4	0.0140 ± 2E-4	0.0140 ± 1E-4

XXVIII. Table of data for plot in Section IX

[$MeO(CH_2)_2NMe_2$] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.30	0.0019 ± 2E-4	0.00167 ± 9E-5	0.00177 ± 14E-5
0.50	0.00103 ± 5E-5	0.00101 ± 6E-5	0.00102 ± 1E-5
0.75	0.00069 ± 3E-5	0.000635 ± 6E-5	0.00066 ± 4E-5
1.00	0.00052 ± 4E-5	0.000463 ± 6E-5	0.00049 ± 4E-5
1.50	0.00035 ± 2E-5	0.000298 ± 2E-5	0.00032 ± 3E-5
2.00	0.000223 ± 7E-6	0.000230 ± 22E-5	0.000227 ± 5E-6
3.00	0.00015 ± 2E-5	0.000192 ± 2E-5	0.00017 ± 3E-5
4.00	0.00016 ± 2E-5	0.000123 ± 1E-5	0.00014 ± 2E-5
5.00	0.00012 ± 1E-5	0.0000980 ± 1E-5	0.00012 + 1E-5
6.00	0.000088 ± 9-E-6	0.000106 ± 1E-6	0.000095 ± 4E-6
7.30	0.000072 ± 2-E-6	0.0000737 ± 5E-6	0.0000731 ± 8E-7

XXIX. Table of data for observed ratio of [**6**]:[**7**] ($k_{obsd(\alpha)}/k_{obsd(\beta)}$) vs. $[MeOCH_2CH_2NMe_2]$ in hexane co-solvent for the α- and β-deprotonation of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.10 M)

$[MeO(CH_2)_2NMe_2]$ (M)	ratio 1 ([**6**]:[**7**])	ratio 2 ([**6**]:[**7**])	ratio ([**6**]:[**7**]) (avg)
0.30	4.4 ± 0.3	5.5 ± 0.4	4.9 ± 0.8
0.50	4.2 ± 0.4	4.9 ± 0.5	4.5 ± 0.5
0.75	3.6 ± 0.3	4.0 ± 0.3	3.7 ± 0.3
1.00	3.5 ± 0.1	3.3 ± 0.2	3.4 ± 0.1
1.50	3.3 ± 0.2	3.1 ± 0.1	3.2 ± 0.2
2.00	2.7 ± 0.3	2.9 ± 0.3	2.8 ± 0.1
3.00	2.6 ± 0.2	2.4 ± 0.2	2.5 ± 0.1
4.00	1.8 ± 0.1	1.8 ± 0.1	1.8 ± 0.1
5.00	1.7 ± 0.1	1.6 ± 0.1	1.7 + 0.1
6.00	1.7 ± 0.1	1.6 ± 0.1	1.7 ± 0.1
7.30	1.5 ± 0.1	1.4 ± 0.1	1.5 ± 0.1

XXX. Table of data for plot in Section X

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.000084 ± 9E-6	0.00007 ± 1E-5	0.000077 ± 9E-6
0.100	0.00015 ± 2E-5	0.00019 ± 2E-5	0.00017 ± 3E-5
0.150	0.00023 ± 1E-5	0.000222 ± 6E-6	0.000226 ± 6E-6
0.200	0.00033 ± 1E-5	0.000310 ± 9E-6	0.00032 ± 2E-5
0.250	0.000327 ± 9E-6	0.00032 ± 1E-5	0.000322 ± 6E-6
0.300	0.00042 ± 2E-5	0.00043 ± 2E-5	0.000427 ± 8E-6
0.400	0.00054 ± 3E-5	0.00052 ± 1E-5	0.00053 ± 2E-5

XXXI. Table of data for observed ratio of [**6**]:[**7**] ($k_{obsd(\alpha)}/k_{obsd(\beta)}$) vs. [LDA] in $MeOCH_2CH_2NMe_2$ (3 M) and hexane co-solvent for the α- and β-elimination of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.10 M)

[LDA] (M)	ratio 1 ([**6**]:[**7**])	ratio 2 ([**6**]:[**7**])	ratio ([**6**]:[**7**]) (avg)
0.050	1.1 ± 0.1	1.3 ± 0.1	1.2 ± 0.2
0.100	2.6 ± 0.2	2.4 ± 0.2	2.5 ± 0.1
0.150	2.2 ± 0.2	2.6 ± 0.2	2.4 ± 0.3
0.200	2.5 ± 0.1	2.6 ± 0.1	2.6 ± 0.1
0.250	3.2 ± 0.3	2.7 ± 0.3	3.0 ± 0.3
0.300	2.9 ± 0.2	3.2 ± 0.2	3.1 ± 0.2
0.400	3.4 ± 0.2	3.2 ± 0.1	3.3 ± 0.1

XXXII. Table of data for plot in Section XI

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.00060 ± 2E-5	0.00061 ± 4E-5	0.000604 ± 8E-6
0.100	0.0010 ± 1E-4	0.00101 ± 6E-5	0.00102 ± 1E-5
0.150	0.0017 ± 1E-4	0.0016 ± 1E-4	0.00163 ± 8E-5
0.200	0.0026 ± 4E-4	0.0025 ± 2E-4	0.00252 ± 8E-5
0.250	0.0024 ± 1E-4	0.00277 ± 2E-5	0.0026 ± 2E-4
0.300	0.0031 ± 2E-4	0.0033 ± 2E-4	0.0032 ± 2E-4
0.400	0.0042 ± 1E-4	0.00407 ± 6E-5	0.0041 ± 1E-4

XXXIII. Table of data for observed ratio of **[6]**:**[7]** ($k_{obsd(\alpha)}/k_{obsd(\beta)}$) vs. [LDA] in $MeOCH_2CH_2NMe_2$ (0.5 M) and hexane co-solvent for the α- and β-elimination of *cis*-cyclooctene oxide (**5**, 0.004 M) by LDA (0.10 M)

[LDA] (M)	ratio 1 ([**6**]:[**7**])	ratio 2 ([**6**]:[**7**])	ratio ([**6**]:[**7**]) (avg)
0.050	2.8 ± 0.3	3.9 ± 0.4	3.4 ± 0.8
0.100	4.2 ± 0.4	4.9 ± 0.5	4.6 ± 0.5
0.150	4.3 ± 0.2	5.8 ± 0.5	5.0 ± 1.0
0.200	4.5 ± 0.5	5.7 ± 0.5	5.1 ± 0.8
0.250	4.9 ± 0.5	5.5 ± 0.3	5.2 ± 0.4
0.300	5.1 ± 0.3	5.7 ± 0.5	5.4 ± 0.4
0.400	5.5 ± 0.5	5.8 ± 0.5	5.7 ± 0.2

XXXIV. Table of data for plot in Section XII

[$MeO(CH_2)_2NMe_2$] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.30	0.0014 ± 1E-4	0.0015 ± 1E-4	0.00147 ± 4E-5
0.50	0.00083 ± 7E-5	0.00085 ± 8E-5	0.00084 ± 2E-5
0.75	0.00052 ± 5E-5	0.00053 ± 4E-5	0.000522 ± 2E-6
1.00	0.00038 ± 1E-5	0.00038 ± 2E-5	0.000380 ± 3E-6
1.50	0.00025 ± 2E-5	0.000243 ± 8E-6	0.000245 ± 2E-6
2.00	0.00016 ± 1E-5	0.00017 ± 2E-5	0.000167 ± 2E-6
3.00	0.00012 ± 1E-5	0.00012 ± 1E-5	0.00012 ± 2E-5
4.00	0.000090 ± 7E-6	0.000089 ± 7E-6	0.0000896 ± 6E-7
5.00	0.000068 ± 2E-6	0.000066 ± 3E-6	0.000067 + 1E-6
6.00	0.000061 ± 3E-6	0.000058 ± 5E-6	0.000060 ± 2E-6
7.30	0.000044 ± 2E-6	0.000043 ± 4E-6	0.000044 ± 1E-6

XXXV. Table of data for plot in Section XIII

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.000040 ± 4E-6	0.000044 ± 5E-6	0.000042 ± 3E-6
0.100	0.00012 ± 1E-5	0.000126 ± 2E-6	0.000121 ± 7E-6
0.150	0.00015 ± 2E-5	0.00016 ± 2E-5	0.000159 ± 6E-6
0.200	0.000230 ± 9E-6	0.000235 ± 5E-6	0.000233 ± 4E-6
0.250	0.00025 ± 3E-5	0.00024 ± 3E-5	0.000241 ± 6E-6
0.300	0.00032 ± 3E-5	0.00033 ± 2E-5	0.000323 ± 6E-6
0.400	0.00041 ± 2E-5	0.00040 ± 2E-5	0.000405 ± 4E-6

XXXVI. Table of data for plot in Section XIV

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.00044 ± 5E-5	0.00048 ± 5E-5	0.00046 ± 3E-5
0.100	0.00083 ± 9E-5	0.000848 ± 8E-6	0.00084 ± 1E-5
0.150	0.00132 ± 7E-5	0.0014 ± 1E-4	0.00135 ± 5E-5
0.200	0.0021 ± 2E-4	0.0021 ± 2E-4	0.00211 ± 5E-5
0.250	0.0022 ± 2E-4	0.00024 ± 1E-5	0.00219 ± 3E-5
0.300	0.0027 ± 2E-4	0.0022 ± 2E-4	0.00270 ± 3E-5
0.400	0.0035 ± 3E-4	0.0027 ± 2E-4	0.00352 ± 2E-5

XXXVII. Table of data for plot in Section XV

[$MeO(CH_2)_2NMe_2$] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.30	0.00033 ± 2E-5	0.00027 ± 2E-5	0.00030 ± 4E-5
0.50	0.00019 ± 2E-5	0.00017 ± 2E-5	0.00018 ± 2E-5
0.75	0.00014 ± 1E-5	0.00013 ± 1E-5	0.000138 ± 9E-6
1.00	0.000110 ± 3E-6	0.00011 ± 1E-5	0.000112 ± 2E-6
1.50	0.000074 ± 5E-6	0.000079 ± 8E-6	0.000077 ± 3E-6
2.00	0.000061 ± 6E-6	0.000058 ± 5E-6	0.000059 ± 2E-6
3.00	0.000048 ± 3E-6	0.000050 ± 5E-6	0.000049 ± 2E-6
4.00	0.000050 ± 4E-6	0.000051 ± 4E-6	0.000050 ± 1E-6
5.00	0.000039 ± 1E-6	0.000040 ± 2E-6	0.000040 + 1E-6
6.00	0.000035 ± 1E-6	0.000037 ± 3E-6	0.000036 ± 2E-6
7.30	0.000029 ± 1E-6	0.000030 ± 3E-6	0.000029 ± 1E-6

XXXVIII. Table of data for plot in Section XVI

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.000037 ± 4E-6	0.000033 ± 4E-6	0.000035 ± 3E-6
0.100	0.000055 ± 3E-6	0.000044 ± 4E-6	0.000050 ± 7E-6
0.150	0.000071 ± 8E-6	0.000062 ± 6E-6	0.000067 ± 6E-6
0.200	0.000092 ± 4E-6	0.000086 ± 2E-6	0.000089 ± 4E-6
0.250	0.000077 ± 8E-6	0.000085 ± 9E-6	0.000081 ± 6E-6
0.300	0.000109 ± 9E-6	0.000100 ± 6E-6	0.000105 ± 6E-6
0.400	0.000120 ± 7E-6	0.000125 ± 6E-6	0.000122 ± 4E-6

XXXIX. Table of data for plot in Section XVII

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.00016 ± 2E-5	0.00012 ± 1E-5	0.00014 ± 3E-5
0.100	0.00019 ± 2E-5	0.00017 ± 2E-5	0.00018 ± 2E-5
0.150	0.00031 ± 2E-5	0.00024 ± 2E-5	0.00027 ± 5E-5
0.200	0.00045 ± 5E-5	0.00038 ± 3E-5	0.00042 ± 5E-5
0.250	0.00044 ± 4E-5	0.00040 ± 2E-5	0.00042 ± 3E-5
0.300	0.00053 ± 4E-5	0.00048 ± 5E-5	0.00050 ± 3E-5
0.400	0.000638 ± 4E-6	0.00060 ± 5E-5	0.00062 ± 2E-5

XL. Table of data for plot in Section XVIII

[*n*-BuOMe] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.50	0.000140 ± 4E-6	0.000138 ± 6E-6	0.000139 ± 5E-6
1.00	0.000067 ± 2E-6	0.000062 ± 2E-6	0.000065 ± 2E-6
2.00	0.000031 ± 1E-6	0.0000307 ± 4E-7	0.0000308 ± 7E-7
3.00	0.000020 ± 1E-6	0.000021 ± 1E-6	0.0000203 ± 6E-7
4.00	0.000014 ± 1E-6	0.000016 ± 1E-6	0.0000152 ± 7E-7
6.00	0.0000120 ± 9E-7	0.0000120 ± 6E-7	0.0000120 ± 1E-7
8.20	0.0000096 ± 8E-7	0.0000105 ± 8E-7	0.0000101 ± 5E-7

XLI. Table of data for plot in Section XIX

[LDA] (M)	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
0.050	0.000023 ± 3E-6	0.000017 ± 3E-6	0.000020 ± 4E-6
0.100	0.000035 ± 2E-6	0.000034 ± 2E-6	0.0000342 ± 6E-7
0.150	0.000040 ± 2E-6	0.000050 ± 2E-6	0.000045 ± 7E-6
0.200	0.0000687 ± 7E-6	0.000064 ± 8E-6	0.000066 ± 2E-6
0.250	0.000079 ± 8E-6	0.000085 ± 7E-6	0.000082 ± 4E-6
0.300	0.000105 ± 4E-6	0.00012 ± 1E-5	0.000111 ± 8E-6
0.400	0.00014 ± 1E-5	0.000139 ± 5E-6	0.000139 ± 1E-6

XLII. Table of data for k_{obsd} in various ligands (0.5 M) and hexane co-solvent for the β-deprotonation of 2,3-dimethyl-2-butene oxide (0.004 M) by LDA (0.10 M)

	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
n-BuOMe	0.000071 ± 5E-6	0.000068 ± 4E-6	0.0000696 ± 3E-7
t-$BuOCH_2CH_2OMe$	0.000059 ± 24E-6	0.000066 ± 6E-6	0.000062 ± 4E-6
$MeOCH_2CH_2OMe$	0.000109 ± 7E-6	0.00132 ± 1E-5	0.000120 ± 5E-6
$MeOCH_2CH_2N(CH_2)_5$	0.000148 ± 9E-6	0.00163 ± 1E-5	0.000155 ± 6E-6
$MeOCH_2CH_2N(CH_2)_4$	0.00073 ± 1E-5	0.00715 ± 2E-5	0.00072 ± 1E-5
$MeOCH_2CH_2NMe_2$	0.00150 ± 8E-5	0.00154 ± 6E-5	0.00152 ± 3E-5

XLIII. Table of data for k_{obsd} in various ligands (0.5 M) and hexane co-solvent for the α-deprotonation of *exo*-norbornenene oxide (0.004 M) by LDA (0.10 M)

	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
n-BuOMe	0.000031 ± 3E-6	0.000031 ± 3E-6	0.0000310 ± 7E-7
t-$BuOCH_2CH_2OMe$	0.0000728 ± 9E-7	0.000074 ± 2E-6	0.000073 ± 1E-6
$MeOCH_2CH_2OMe$	0.0000937 ± 8E-7	0.0000892 ± 8E-7	0.0000913 ± 8E-7
$MeOCH_2CH_2N(CH_2)_5$	0.00011 ± 1E-5	0.000118 ± 8E-6	0.00011 ± 1E-5
$MeOCH_2CH_2N(CH_2)_4$	0.0011 ± 1E-4	0.0012 ± 1E-4	0.0012 ± 1E-4
$MeOCH_2CH_2NMe_2$	0.0025 ± 1E-4	0.0024 ± 2E-4	0.0024 ± 1E-4

XLIV Table of data for k_{obsd} in various ligands (0.5 M) and hexane co-solvent for the α– and β-deprotonation of *cis*-cyclooctenene oxide (0.004 M) by LDA (0.10 M)

	$k_{obsd}1$ (s^{-1})	$k_{obsd}2$ (s^{-1})	k_{obsd} (avg) (s^{-1})
n-BuOMe	0.000035 ± 2E-6	0.000034 ± 2E-6	0.0000342 ± 6E-7
t-$BuOCH_2CH_2OMe$	0.000022 ± 1E-6	0.000022 ± 2E-6	0.000022 ± 1E-6
$MeOCH_2CH_2OMe$	0.000044 ± 3E-6	0.000042 ± 9E-6	0.000043 ± 6E-6
$MeOCH_2CH_2N(CH_2)_5$	0.000077 ± 4E-6	0.000075 ± 7E-6	0.000076 ± 4E-6
$MeOCH_2CH_2N(CH_2)_4$	0.00032 ± 2E-5	0.00298 ± 1E-5	0.00031 ± 1E-5
$MeOCH_2CH_2NMe_2$	0.0010 ± 2E-4	0.0010 ± 3E-4	0.00102 ± 1E-5