Supporting Information

# The Cosolvent-Directed Diels-Alder Reaction in Ionic Liquids

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**Table 1: Second Order Rate Constants for Diels-Alder Reactions in Binary Mixtures of Ionic Liquids with Chloroform.**

| S. No. | $V_{f,2}$ | [3-MBP][$BF_4$] | | $V_{f,2}$ | [4-MBP][$BF_4$] | |
|---|---|---|---|---|---|---|
| | | $10^4\ k_2$ | $\eta$/cP | | $10^4\ k_2$ | $\eta$/cP |
| 1 | 0 | 6.279 | 0.560 | 0 | 6.279 | 0.56 |
| 2 | 0.04 | 4.770 | 0.850 | 0.04 | 3.629 | 0.64 |
| 3 | 0.08 | 3.892 | 1.140 | 0.08 | 3.343 | 0.70 |
| 4 | 0.12 | 3.170 | 1.360 | 0.12 | 3.721 | 0.87 |
| 5 | 0.16 | 2.510 | 1.500 | 0.16 | 3.404 | 0.98 |
| 6 | 0.20 | 1.753 | 1.960 | 0.20 | 3.386 | 2.24 |
| 7 | 0.40 | 1.618 | 8.950 | 0.40 | 1.870 | 6.95 |
| 8 | 0.60 | 1.405 | 18.540 | 0.60 | 1.929 | 17.60 |
| 9 | 0.80 | 0.397 | 65.800 | 0.80 | 1.203 | 39.50 |
| 10 | 1.00 | 0.554 | 166.700 | 1.00 | 0.422 | 200.65 |

**Table 2: Second Order Rate Constants for Diels-Alder Reactions in Binary Mixtures of Ionic Liquids with Methanol**

| S. No. | $V_{f,2}$ | [BP][$BF_4$] $10^4$ $k_2$ | $\eta$/cP | $V_{f,2}$ | [3-MBP][$BF_4$] $10^4$ $k_2$ | $\eta$/ cP | $V_{f,2}$ | [4MBP][$BF_4$]$10^4$ $k_2$ | $\eta$/ cP |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 7.825 | 0.56 | 0 | 7.825 | 0.56 | 0 | 7.825 | 0.56 |
| 2 | 0.04 | 6.334 | 0.68 | 0.04 | 6.167 | 0.60 | 0.04 | 6.425 | 0.59 |
| 3 | 0.07 | 5.880 | 0.77 | 0.08 | 5.690 | 0.63 | 0.08 | 5.151 | 0.62 |
| 4 | 0.11 | 4.439 | 0.81 | 0.12 | 4.775 | 0.67 | 0.12 | 4.112 | 0.67 |
| 5 | 0.15 | 5.370 | 0.85 | 0.16 | 4.678 | 0.71 | 0.16 | 2.681 | 0.77 |
| 6 | 0.20 | 5.180 | 0.93 | 0.20 | 4.578 | 0.78 | 0.20 | 3.094 | 0.85 |
| 7 | 0.40 | 4.410 | 1.57 | 0.40 | 1.775 | 1.53 | 0.40 | 2.370 | 1.48 |
| 8 | 0.60 | 3.550 | 4.15 | 0.60 | 1.750 | 3.38 | 0.60 | 2.907 | 3.47 |
| 9 | 0.80 | 3.733 | 14.497 | 0.80 | 1.786 | 13.92 | 0.80 | 2.750 | 14.00 |
| 10 | 1.00 | 0.431 | 145.23 | 1.00 | 0.554 | 166.70 | 1.00 | 0.422 | 200.65 |

**Table 3: Second Order Rate Constants for Diels-Alder Reaction in Binary Mixtures of Ionic Liquids with Water**

| S. No. | $V_{f,2}$ | [BP][$BF_4$] | | $V_{f,2}$ | [3-MBP][$BF_4$] | | $V_{f,2}$ | [4-MBP][$BF_4$] | |
|---|---|---|---|---|---|---|---|---|---|
| | | $10^3$ $k_2$ | $\eta$/ cP | | $10^3$ $k_2$ | $\eta$/ cP | | $10^3$ $k_2$ | $\eta$/ cP |
| 1 | 0 | 24.82 | 0.89 | 0 | 24.82 | 0.89 | 0 | 24.82 | 0.89 |
| 2 | 0.037 | 20.00 | 1.02 | 0.04 | 16.04 | 1.01 | 0.04 | 15.14 | 1.03 |
| 3 | 0.073 | 14.60 | 1.09 | 0.08 | 9.91 | 1.03 | 0.08 | 8.25 | 1.08 |
| 4 | 0.11 | 9.26 | 1.16 | 0.12 | 5.52 | 1.07 | 0.12 | 5.33 | 1.18 |
| 5 | 0.15 | 7.62 | 1.22 | 0.16 | 4.07 | 1.11 | 0.16 | 4.75 | 1.29 |
| 6 | 0.18 | -- | 1.30 | 0.18 | 2.44 | 1.17 | 0.18 | 2.79 | 1.45 |
| 7 | 0.20 | 5.01 | 1.33 | 0.20 | 2.07 | 1.42 | 0.20 | 2.71 | 1.40 |
| 8 | 0.40 | 1.79 | 2.03 | 0.40 | 0.94 | 2.41 | 0.40 | 0.94 | 1.92 |
| 9 | 0.60 | 0.73 | 3.35 | 0.60 | 0.59 | 4.02 | 0.60 | 0.49 | 2.84 |
| 10 | 0.80 | 0.53 | 7.29 | 0.80 | 0.86 | 7.97 | 0.80 | 0.40 | 5.32 |
| 11 | 1.00 | 0.43 | 145. 0 | 1.00 | 0.55 | 166.7 | 1.00 | 0.42 | 200.65 |