Reactivity Scales	selecti param allow consta of ele	reactivity poster shows a ion of the published reactivity neters E , N , and s_N , which the calculation of the rate ants for combination reactions ectrophiles with nucleophiles, he following equation:	E = electroph $N = nucleophs_N = nucleoph(N and s_N are)$	$F_{C} = S_{N}(N + E)$ nilicity parameter nilicity parameter hile-specific sensitivity parameter solvent-dependent; solvent is	 How to read the scales: Nucleophiles and electrop level (E + N = 0) combine k ≈ 1 M⁻¹ s⁻¹ at 20 °C, correctimes of 10 seconds for 0.3 At 20 °C electrophiles will nucleophiles positioned m Electrophiles will generally controlled (often unselect 	hiles located on the same with rate constants of sponding to half-reaction 1 M solutions. generally not react with ore than 5 units higher. y undergo diffusion	$E = \frac{6.87}{5.47} \qquad F + F + F = \frac{5.47}{5.01} \qquad F + F + F = \frac{5.01}{5.01} \qquad F + F = F = \frac{1}{5}$	$F \underbrace{f}_{F} \underbrace{f}_{F} \underbrace{f}_{F} \underbrace{f}_{F} \underbrace{\frac{6.11}{6.04}}_{\frac{6.74}{5.74}} \underbrace{f}_{F} \underbrace{\frac{1}{5.74}}_{\frac{1}{5.74}} \underbrace{f}_{\frac{1}{5.74}} \underbrace{f}_{\frac{1}{5.75}} \underbrace{f}_{\frac{1}{5.75}} \underbrace{f}_{\frac{1}{5.75}} \underbrace{f}_{\frac{1}{5.75}} \underbrace{f}_{\frac{1}{5.75}} \underbrace{f}_{\frac{1}{$	
$\begin{array}{c} OSiMe_{3} \\ OSIMe_{3} \\$		О <mark>Н</mark> (-3.50/0.80)	CH ₂ Cl ₂ if not	mentioned otherwise)	nucleophiles positioned m	ore than 9 units lower. -4 -	= 4 $= 4$	FF <u>4.15</u>	
-25 $-20 - k_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ no reaction at 20 °C $-10 - k_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ Michael additions $-15 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ Michael additions $-10 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ Mannich $-10 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ Mannich $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ Michael additions $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ Michael additions $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ Michael additions $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ M}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-1}$ $-5 - K_{calcd} < 10^{-6} \text{ m}^{-1} \text{ s}^{-$	1W99HFIP -1.93/1.09 1 st order 1W99HFIP 1 st order 5W95HFIP -0.10/0.97 1 st order 10W90HFIP 0.96/0.93 1 st order	$\begin{array}{c} \begin{array}{c} & H \\ & (-2.86/0.80) \end{array} \\ & H \\ & (-2.86/0.80) \\ & SiMe_3 \\ & (-2.86/0.80) \end{array} \\ & (-2.86/0.80) \\ & SiMe_3 \\ & (-2.86/0.80) \\ & SiMe_3 \\ & (-2.86/0.80) \\ & (-2.$	$ \begin{array}{c} $	(-1.55/1.10) $(-1.00/1.40)$ $(-0.35/1.10)$ $(-0.08/1.15)$ $(0.65/1.17)$ $(0.68/1.10)$ $(0.68/1.10)$	$ \begin{array}{c} 2.45/1.10\\ .44/1.09\\ 1.07/1.10\\ 0.87/1.00\\ .41/1.12\\ .06/1.10\\ 34/0.68\\ .67/1.10 \end{array} $		$= 3 \frac{2.90}{}$ $= 2 \frac{2.11}{}$ $= 2 \frac{1.48}{}$ $= 1 \frac{0.61}{}$ $= 0 \frac{0.00}{}$ $= -0 \frac{0.00}{}$ $= -0 \frac{0.00}{}$ $= -0 \frac{0.00}{}$ $= -0 \frac{0.00}{}$	$\frac{2.89}{2.70}$ $\frac{2.41}{2.41}$ $\frac{1.23}{0.98}$ $\frac{Ph}{Ph} + Ph$ $\frac{1.23}{Ph} + Ph$	$\frac{2.97}{\cancel{c}} + OMe$ $\frac{1.90}{\cancel{c}} + OMe$ $\frac{1.12}{Ph} + OMe$ $\frac{1.12}{Ph} + OMe$ $\frac{0.14}{\cancel{c}} + OMe$ $\frac{0.14}{\cancel{c}} + OMe$ $\frac{-0.25}{Cr(CO)_3} + Ph$
$\vec{u} = 0 - Hosomi-Sakurai$ $k_{calcd} > 10^{10} M^{-1} s^{-1}$ $k_{calcd} > 10^{10} M^{-1} s^{-1}$ $\vec{v} = 0$	CF ₃ CH ₂ OH (T) $1.11/0.96$ 1st order 50W50HFIP $1.50/1.03$ 1st order 10W90T $2.93/0.88$ 1st order 50W50T $3.57/0.89$ 1st order	$Ph_{3}Si \rightarrow H$ $(2.65/0.72)$ $Ft_{3}Si \rightarrow H$ $(3.58/0.70)$ $H H$ $(4.00/0.70)$ $GePh_{3} (1.20/0.90)$ $GePh_{3} (1.20/0.90)$ $GiPh_{3} (1.77/1.10)$ $GiPh_{3} (1.98/1.10)$ $GiPh_{3} (1.98/1.10)$	$ \begin{array}{c} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 $	$ \begin{array}{c} & 1.11/0.98 \\ & (1.37/1.10) \\ & & (1.37/1.10) \\ & & & (1.1) \\ & & & $.17/1.00)	$1 - \frac{1.68/1.26}{MeCN}$ $2 - \frac{1.68/1.19}{MeCN}$ $3 - \frac{1.68/1.26}{MeCN}$	1 + + $-1.36 + +$ $2 + +$ $2 + +$ $2 + +$ $2 + +$ $3 + +$	$\begin{array}{c} \begin{array}{c} & \begin{array}{c} + & -1.45 \\ \hline \\ MeO \end{array} \\ \hline \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \\ \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \end{array} \\ \begin{array}{c} \\ \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \\ \end{array} \\ $	$-0.97 \qquad + Pn \\ Co_2(CO)_6 \\ -1.58 Ph - + \\ Co_2(CO)_6 \\ Me_3Si - + \\ Co_2(CO)_6 \\ Me_3Si - + \\ Co_2(CO)_6 \\ + \\ Co_2(CO)_6 \\ He_3Si - + \\ Fe(CO)_3 \\ + \\ F$
	10W90AN 4.56/0.94 1 st order 10W90AN 4.56/0.94 1 st order H ₂ O 5.20/0.89 1 st order 10W90A 5.70/0.85 1 st order 60W40E 5.81/0.81 1 st order 50E50AN 6.37/0.90 1 st order EtOH 7.44/0.90	$\begin{array}{c} (4.00/0.70) \\ (MeCN) \\ (5.54/0.90) \\ (CH_2Cl_2) \\ \\ Ph_3Sn-H \\ (5.64/0.59) \\ Bu_3Ge-H \\ (5.92/0.73) \\ \end{array}$	5) (H_{C}^{N})	NC - N = C 3.57/0.72	96/0.91 91/0.95 29/0.92 61/0.65 Me	$- \qquad \qquad$	-4 -4.72 -4.72 -4.72 -4.72 -5.53 -5.53 -5.53 -5.89 -6 -6 -6 -7 -7.02	$(+)^{-3.72}$ $NC \qquad CN$ $(+)^{-3.72}$ $(+)^{-3.72}$ $(+)^{-3.72}$ $(+)^{-3.72}$ $(+)^{-3.72}$ $(+)^{-3.72}$ $(+)^{-4.96}$ $(+)^{-4.96}$ $(+)^{-5.52}$ $(+)^{-5.52}$ $(+)^{-5.52}$ $(+)^{-6.43}$ $(+)^{-7.15}$ $(+)^{+1}$ $(+)^{-7.15}$ $(+)^{+1}$	(-5.17) $M_{+}^{(-5.17)}$ $M_{e}^{(-5.77)}Cl \qquad N_{+}^{Me}$ $-6.69 \qquad M_{+}^{Me}$ Me $-6.19 \qquad -6.19 \qquad -6.19$
$P(OMe)_{3} = 9.04/0.70 \\ (91M9AN) = 9.04/0.70 \\ (91M9AN) = 9.04/0.75 \\ (H_{2}O) = 0.04/0.75 \\ (H_{2}O) = 0.04/0.$	1 st order MeOH 7.54/0.92 1 st order HO ⁻ 10.19/0.62 (50W50AN)	$H + H = CONH_{2} + SnBu_{3} - 7.48/0.89$ $= + SnBu_{3} - 7.48/0.89$ $= + Fp = 8.45/0.83$ $= Fp = Fe(CO)_{2}C_{5}H_{5}$ $= + H + CO_{2}Et + (9.00/0.90)$ $= H + H + CO_{2}Et + (9.00/0.90)$ $= H + H + CO_{2}Et + (9.00/0.90)$ $= H + H + CO_{2}Et + (9.96/0.55)$	$\frac{1}{10000000000000000000000000000000000$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	17/0.83	$- \qquad \qquad$	$-\frac{-7.69}{Me} + \frac{N}{Me} + \frac{-9.45}{Me} + \frac{-10.04}{Me} + \frac{N}{Me} + \frac{N}{M$	Ph -7.20 -7.50 N Ph -7.50 N TsNCO -7.69 SO_2Ph SO_2	$-7.76 \qquad \qquad$
$ = P(OC_4H_9)_3 = 10.36/0.70 $ $ (10.20/0.71) = N = N = N = 1.44/0.68 $ $ (H_2O) = 11.39/0.69 = NH_3 = N = N = 11.44/0.68 $ $ (MeCN) = 11.47/0.79 $ $ (MeCN) = N = 11.90/0.73 $ $ (MeCN) = N = 12.03/0.98 $ $ (12.15/0.65) = F_3C = NH_2 = N = 12.03/0.98 $ $ (12.90/0.67) = N = N = 13.19/0.56 $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \sum_{n=1}^{N-BH_{3}} (10.01/0.75) $ $ \sum_{n=1}^{N-BH_{3}} (10.01/0.75) $ $ \sum_{n=1}^{N-BH_{3}} (10.01/0.75) $ $ \sum_{n=1}^{Ph_{3}} (11.20/0.64) $	$\begin{array}{c} \begin{array}{c} & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ \end{array} \end{array} \begin{array}{c} & & & \\ & & & \\ & & & \\ \end{array} \begin{array}{c} & & & \\ & & & \\ \end{array} \end{array} \begin{array}{c} & & & \\ & & & \\ \end{array} \begin{array}{c} & & & \\ \end{array} \end{array}{c} \end{array} \begin{array}{c} & & \\ \end{array} \end{array}{c} \end{array} \begin{array}{c} & & \\ \end{array} \end{array}{c} \end{array}{c} \end{array} \begin{array}{c} & & \\ \end{array} \end{array}{c} \end{array}{c} \end{array} \end{array}{c} \end{array}{c} \end{array} \end{array}{c} \end{array}{c} \end{array} $ \\c} \end{array}{c} \end{array}{c} \end{array}{c} \end{array} \end{array}{c} \end{array}{c} \end{array}{c} \end{array} \end{array}{c} \end{array}{c}	$\begin{array}{c} & & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\$	0.48/0.78 10.67/0.91 (MeCN) 11.63/0.95 (MeCN) 1.94/0.75 2.32/0.72 2.60/0.72) 3.10/0.72	$\begin{array}{c} \begin{array}{c} & Ph_{3}P \\ & & (MeCN) \end{array} \end{array} = \\ \begin{array}{c} & & 10.27/0.83 \\ & (MeCN) \end{array} \end{array} = \\ \begin{array}{c} & & 11- \\ & & - \\ \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \end{array} \\ \begin{array}{c} & & \\ & & \\ \end{array} \end{array} \\ \begin{array}{c} & & \\ \end{array} \end{array} \\ \begin{array}{c} & & \\ \end{array} \\ \begin{array}{c} & & \\ \end{array} \\ \begin{array}{c} & & \\ \end{array} \\ \end{array} \\ \begin{array}{c} & & \\ \end{array} \\ \end{array} \\ \begin{array}{c} & & \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} & & \\ \end{array} \\ \end{array} \\ \begin{array}{c} & & \\ \end{array} \\ \end{array} \\ \end{array} $ \\ \begin{array}{c} & & \\ \end{array} \\ \end{array} \\ \begin{array}{c} & & \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} & & \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} & & \\ \end{array}	$-11 + CF_{3} + CF_{$	$EtO_{2}C$ N -10.30 -10.30 -10.80 Ph -10.80 Ph NC CN OMe $O^{-11.32}$ NO_{2} -12.33 $SO_{2}Ph$ -12.93 $SO_{2}Ph$	$-\frac{10.69}{MeO} + \frac{11.20}{MeO} + \frac{-10.11}{Pd(P(OPh)_{3})_{2}} + \frac{-11.20}{Fe(CO)_{2}Cp} + \frac{-11.20}{Fe(CO)_{2}Cp} + \frac{-12.90}{Ph^{2}O} + \frac{-12.90}{Ph^{2}$
$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $	$= \frac{Ph^{-0}O^{-}(H_{2}O)^{13.92/0.61}}{IBuOO^{-}(H_{2}O)^{14.29/0.51}}$ $= \frac{SO_{5}^{2-}(H_{2}O)^{14.41/0.60}}{SO_{5}^{2-}(H_{2}O)^{14.50/0.58}}$ $= \frac{HOO^{-}(H_{2}O)^{15.40/0.55}}{MeO^{-}(M)^{15.78/0.65}}$	tBu ^N P ^N tBu ^{13.46/0.52} (MeCN) Na(AcO) ₃ BH ^(14.45/0.76) (DMSO) NaBH ₄ ^(14.74/0.81) (DMSO)	$ = \bigvee_{N} 13.36/0.81 \\ Mes \\ Mes \\ (THF) \\ Mes \\ Mes \\ 14.91/0.86 \\ MeCN) \\ CO_2Me \\ MecN \\ CO_2Me \\ 15.91/0.86 \\ MeCN \\ CO_2Me \\ CO_2Me \\ MecN \\ CO_2Me \\ CO_$		14.99/0.83 (DMSO) 15.33/0.72 (DMSO) $\xrightarrow{Mes}_{N+} 0^{-}$ 15.33/0.79 (DMSO) $\xrightarrow{Mes}_{Ph} 0^{-}$ (THF) 15.93/0.99 (DMSO) $\xrightarrow{Mes}_{N+} 0^{-}$ 15.92/0.72 16.29/0.75	$\begin{array}{c} \begin{array}{c} & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ \end{array} \end{array} \xrightarrow{\begin{tmatrix}{llllllllllllllllllllllllllllllllllll$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} O_{2}N & \swarrow & NO_{2} \\ Ph & NO_{2} & -\underline{13.85} \\ & & & & & \\ & & & & & \\ & & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & &$	$-\frac{14.22}{Ph} N^{Boc}$ $-\frac{14.14}{Ph} Ph + Ph^{+} Ph^{+} Pd(PPh_{3})_{2}$
$ \underbrace{NMe_2}_{Me_2N} \underbrace{NMe_2}_{Me_2N} \underbrace{NMe_2}_{Me_2N} \underbrace{NMe_2}_{Me_2N} \underbrace{NMe_2}_{Me_2N} \underbrace{NMe_2}_{Me_2N} \underbrace{NMe_2}_{N_2N} \underbrace{NMe_2}_{N_2\mathsf$	$= BrO^{-}(H_{2}O) 16.69/0.46$ $= 17.03/063$ $iPrO^{-} 17.71/0.58$ $(91iPr9AN)$ $= 0^{-}O^{-} 18.19/0.47$ $(H_{2}O)$ $= 0^{-}O^{-} 18.57/0.43$ $(H_{2}O)$	$t_{Bu} = N_{H} - t_{Bu} \frac{18.74/0.47}{(MeCN)}$	Mes Ph Mes Mes 17.12/0.80 (THF) Mes Mes	$ \begin{array}{c} & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & \\ & & & & \\ & & & & \\ & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & $	(DMSO) 17.33/0.74 $CF_3(DMSO)$ 17.33/0.74 $CF_3(DMSO)$ 18.29/0.71 (DMSO) 18.29/0.71 (DMSO) 18.69/0.72 (DMSO) 18.69/0.72 (DMSO) 0 Cl 0 0 Cl 0 0 0 0 0 0 0 0	Me ₂ S 18- 	$\begin{array}{c ccccc} -& & & & & & \\ \hline & -& & & & \\ \hline & -& & \\ \hline \hline & -& & \\ \hline & -& & \\ \hline \hline & -& $	$\begin{array}{c} \begin{array}{c} & & & \\ & & $	-18.40 $-N$ $=0$ $\frac{10.2}{-18.5}$ CO_2Me CO_2Me -18.5 N_2 $=$ CO_2Me
$\begin{array}{c} 19.91/0.60 \\ (DMSO) \\ (DMSO) \\ (20.33/0.64) \\ NC-NH \\ (DMSO) \\ (21.09/0.51) \\ (DMSO) \\ (21.09/0.51) \\ (DMSO) \\ N \end{array} \qquad \begin{array}{c} N_3^- \\ (DMSO) \\ (20.54/0.60) \\ (MeCN) \\ (MeCN) \\ (MeCN) \end{array}$	0 0 0 0 20.97/0.56 (H ₂ O) 0 21.20/0.63 (MeCN)	Image: A state of the stat		$Ph_{2}P \subseteq CO_{2}Et$ $(DMSO)$	$ \begin{array}{c} \begin{array}{c} \begin{array}{c} 19.20/0.69\\(DMSO)\\ 19.67/0.68\\(DMSO)\\ \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} $ \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \begin{array}{c} \end{array} \\ \begin{array}{c} \end{array} \\ \end{array} \begin{array}{c} \end{array} \\ \end{array} \begin{array}{c} \end{array} \end{array} \begin{array}{c} \end{array} \begin{array}{c} \end{array} \begin{array}{c} \end{array} \begin{array}{c} \end{array} \end{array} \begin{array}{c} \end{array} \begin{array}{c} \end{array} \begin{array}{c} \end{array} \end{array} \begin{array}{c} \end{array} \end{array} \begin{array}{c} \end{array} \end{array} \begin{array}{c} \end{array} \end{array} \begin{array} \end{array} \begin{array} \end{array} \begin{array} } \end{array}	$- \underbrace{(N_{H_{2}})^{0}}_{H_{2}C} \underbrace{(DMSO)}^{20.24/0.60}_{(DMSO)} = \underbrace{(DMSO)}^{20^{-1}}_{H_{2}C} \underbrace{(DMSO)}^{-1}_{H_{2}C} = \underbrace{(DMSO)}^{0}_{H_{2}C} \underbrace{(DMSO)}^{+1}_{H_{3}C} = \underbrace{(DMSO)}^{-1}_{(DMSO)} = \underbrace{(DMSO)}^{-1}_{H_{2}C} = \underbrace{(DMSO)}^{-1}_{H_{3}C} = (D$	$\begin{array}{c} -20 \\ -20 \\ -20.55 \\ -21 \end{array} \xrightarrow{EtO_2C} \\ -21.47 \\ EtO_2C \\ EtO_2C \\ OMe \end{array}$	$\begin{array}{c} -19.03 \\ \hline \\ CO_{2}Et \\ CO_{2}Et \\ -19.49 \\ \hline \\ Ph \\ -19.39 \\ \hline \\ -19.39 \\ \hline \\ Ph \\ -19.39 \\ \hline \\ -19.4 \\ \hline \\ Ph \\ -19.39 \\ \hline \\ -19.4 \\ \hline \\ Ph \\ -20.14 \\ \hline \\ Ph \\ -20.14 \\ \hline \\ Ph \\ -20.14 \\ \hline \\ \hline \\ \hline \\ -20.14 \\ \hline \\ \hline \\ \hline \\ -20.14 \\ \hline \\ \hline \\ \hline \\ -22.1 \\ \hline \\ $	$-\overline{19.90} \qquad \longrightarrow = 0$ $-\overline{20.55} \qquad \longrightarrow = 0$ $-\overline{21.4} \qquad N_2 = \bigvee_{Ph}^{Ph}$
$\begin{array}{c} 22.67/0.54\\ (DMSO)\end{array} \qquad \qquad$	$-O_{2}C - S^{-} 22.62/0.43 (H_{2}O)$ $-S^{-} 23.36/0.74 (DMSO)$ $-\frac{NH_{2}}{O_{2}C} - S^{-} 23.43/0.42 (H_{2}O)$ $MeO - S^{-} 24.97/0.68 (DMSO)$	E ethanol M methanol nPr n-propanol iPr isopropanol TFE trifluoroethan W water	Ol interpresent triangle interpresent tri	$2 \qquad \begin{array}{c c c c c c c c c c c c c c c c c c c $	0 23.15/0.60 (DMSO) Ph 23.27/0.70 (DMSO) CO2Et 27.54/0.57 (DMSO) N _ CO2tBu 27.77/0.47 - (DMSO)	25.94/0.42 (DMSO) 23 - 23 - 24 - 24 - 25 - N		$\frac{Ph}{O} - 23.01}{CO_2Et} - 23.59} \qquad \qquad$	
W water								Electro	philes

Nucleophiles

Further reactivity parameters are accessible at: www.cup.lmu.de/oc/mayr/DBintro.html



F<u>6.11</u> 6.04 5.74

F<u>4.15</u>

-<u>23.32</u> F₃CS-N Me

Cr(CO)₃ Co₂(CO) -<u>3.49</u> + Fe(CO)₃ Co₂(CO)₅(PPh 76 (+) Fe(CO)₃ Fe(CO -<u>13.4</u>4 Ph N $-\underline{18.2}^{\mathsf{CO}_{2}\mathsf{Me}}$ -19.90

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