Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Determining the *Q-e* values of polymer radicals and monomers separately through the derivation of an intrinsic *Q-e* scheme for radical copolymerization

Susumu Kawauchi, Akinori Akatsuka, Yoshihiro Hayashi, Hidemine Furuya, Toshikazu Takata*

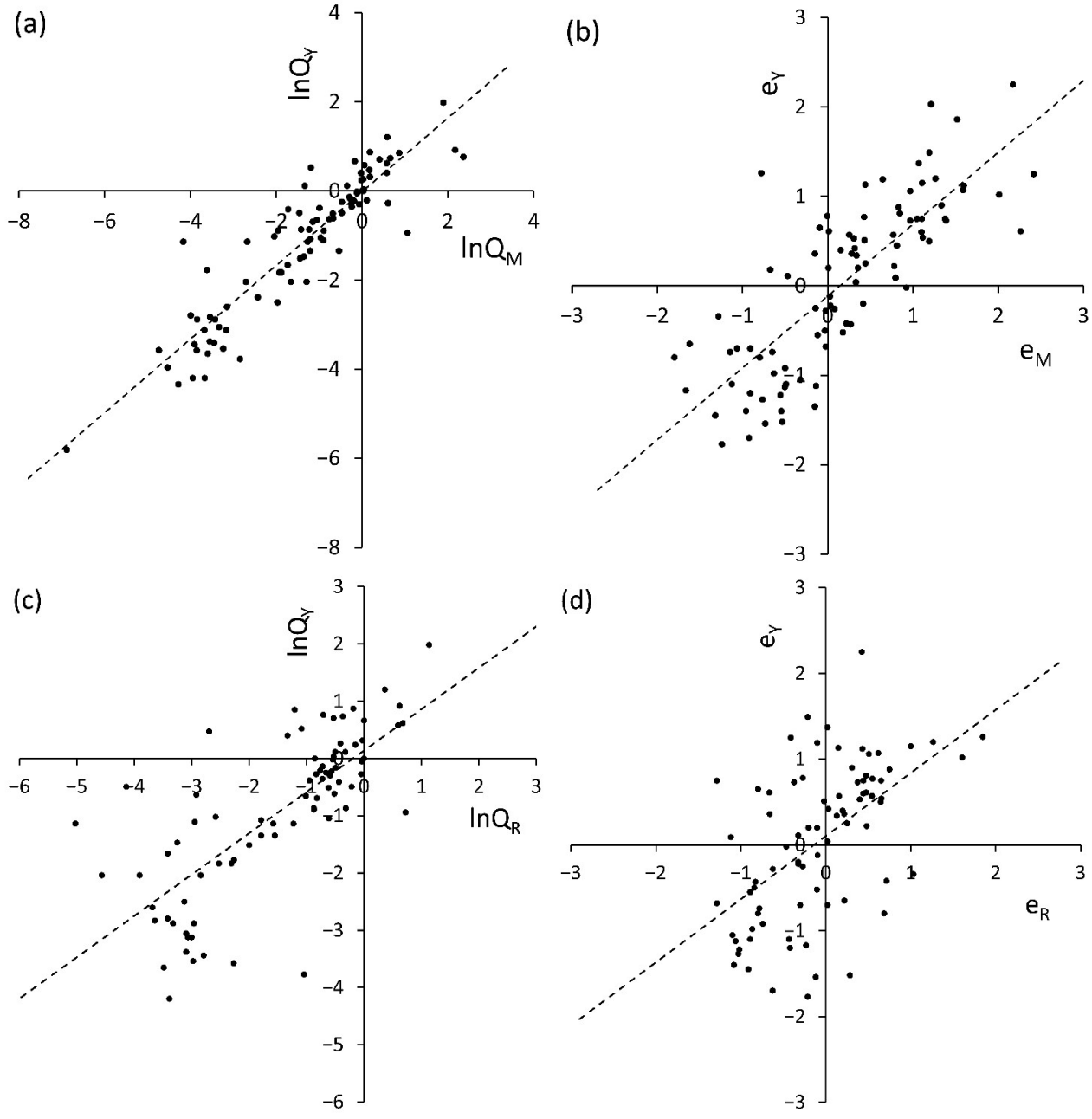

Figure S1. Relationship between the *Q-e* values for a monomer (Q_M,e_M) and a radical (Q_R, e_R) and the Young's *Q-e* values (Q_Y, e_Y) for 82 monomers: (a) lnQ_Y vs lnQ_M, (b) e_Y vs e_M, (c) lnQ_Y vs lnQ_R, and (d) e_Y vs e_R. The dashed lines indicate the regression lines corresponding to (a) $lnQ_Y = 0.826\ lnQ_M - 0.013\ (r^2 = 0.840)$, (b) $e_Y = 0.802\ e_M - 0.117\ (r^2 = 0.638)$, (c) $lnQ_Y = 0.722\ lnQ_R + 0.141\ (r^2 = 0.546)$, and (d) $e_Y = 0.735\ e_R + 0.102\ (r^2 = 0.298)$, respectively.

Table S1. Reactivity ratios with respect to styrene and acrylonitrile (r_{1S}, r_{1A}, r_{A1}, r_{S1}), and the intrinsic *Q*-*e* parameters (Q°_{M}, Q°_{R}, e°_{M}, e°_{R})[a]

Monomer	r_{1S}	r_{1A}	r_{A1}	r_{S1}	Q°_{M}	Q°_{R}	e°_{M}	e°_{R}
Acenaphthylene	0.330	2.560	0.020	3.810	0.26	0.33	−2.03	3.02
Acetylene, phenyl	0.330	0.330	0.270	0.320	3.13	0.33	3.05	0.97
Aconitate, trimethyl			4.240	1.026	0.97		4.64	
Acrolein	0.270	1.110	0.780	0.230	4.35	0.27	4.44	2.38
Acrolein, methyl	0.600	3.100	0.150	0.260	3.85	0.60	2.67	2.61
Acrylamide	0.700	1.100	0.900	1.200	0.83	0.70	2.93	1.42
Acrylamide, *N*-methylol	0.480	2.430	0.600	0.030	33.33	0.48	6.21	2.59
Acrylamide, *N*-octadecyl	0.540	1.400	1.030	2.080	0.48	0.54	2.52	1.92
Acrylate, benzyl	0.200	0.720	1.490	0.490	2.04	0.20	4.33	2.25
Acrylate, butyl	0.180	0.970	1.110	0.770	1.30	0.18	3.58	2.65
Acrylate, 2-chloroethyl	0.120	0.870	1.030	0.530	1.89	0.12	3.88	2.95
Acrylate, *α*-chloro-, methyl	0.300	1.760	0.120	0.250	4.00	0.30	2.48	2.74
Acrylate, *α*-cyano-, methyl	0.610	0.680	0.010	0.050	20.00	0.61	1.61	1.08
Acrylate, 3,4-epoxyhexahydrobenzyl	1.970	0.390	0.250	0.270	3.70	1.97	3.14	−0.65
Acrylate, *β*-ethoxy-, ethyl			2.420	46.98	0.02		0.25	
Acrylate, ethyl	0.170	0.870	0.800	0.810	1.23	0.17	3.21	2.60
Acrylate, methyl	0.180	0.850	1.420	0.750	1.33	0.18	3.86	2.52
Acrylate, octadecyl	0.260	1.200	3.150	0.610	1.64	0.26	4.86	2.50
Acrylate, octyl	0.125	0.840	1.980	0.390	2.56	0.13	4.84	2.87
Acrylate, 2-nitrobutyl	0.120	1.760	0.670	0.350	2.86	0.12	3.87	3.65
Acrylate, α-phenyl-, methyl	1.280	6.700	0.080	0.060	16.67	1.28	3.51	2.62
Acrylate, di-zinc	0.900	0.240	0.410	1.100	0.91	0.90	2.23	−0.35
Acrylonitrile (*reference*)	0.040	1.000	1.000	0.380	2.63	0.04	4.19	4.19

Acryloyl chloride	0.020	1.000	1.200	0.100	10.00	0.02	5.70	4.88
Allyl acetate			6.570	90.00	0.01		0.60	
Allyl chloride	0.040	0.040	2.800	36.00	0.03	0.04	0.66	0.97
Aniline, *N*,*N*-divinyl	0.033	0.050	0.246	5.380	0.19	0.03	0.13	1.38
Benzothiazole, vinylmercapto-	0.420	0.180	0.190	2.600	0.38	0.42	0.60	0.12
Butadiene	1.400	0.290	0.060	0.570	1.75	1.40	0.97	−0.61
Butadiene-1-carboxylic acid	5.550	7.500	0.120	0.115	8.70	5.55	3.26	1.27
Butadiene-1-carboxylate, ethyl	0.300	3.200	0.300	0.120	8.33	0.30	4.14	3.33
Butadiene-1,4-dicarboxylic acid	0.520	4.000	0.200	0.150	6.67	0.52	3.51	3.01
Butadiene, 1,4-dicarboxylate-, diethyl	0.550	2.790	0.290	0.090	11.11	0.55	4.39	2.59
Butadiene, 2-chloro-	6.910	5.180	0.050	0.038	26.32	6.91	3.49	0.68
Butadiene, 2-fluoro-	1.670	0.600	0.077	0.220	4.55	1.67	2.17	−0.06
Butadiene, 2-trimethylsilyloxy-	1.200	0.070	0.036	0.640	1.56	1.20	0.34	−1.87
Carbazole, *N*-vinyl			0.390	5.820	0.17		0.52	
Cinnamonitrile	0.050	0.360	8.460	2.550	0.39	0.05	4.42	2.94
Citraconimide, *N*-methyl-	0.240	0.600	0.530	0.145	6.90	0.24	4.52	1.88
Crotonaldehyde	0.070	0.010	25.00	14.70	0.07	0.07	3.75	−0.98
Crotonate, *α*-acetyl-, methyl			8.680	2.700	0.37		4.39	
Crotonate, *α*-carboethoxy-, ethyl			18.70	8.240	0.12		4.04	
Crotonate, *α*-chloro-, ethyl			9.530	5.130	0.19		3.84	
Crotonate, *α*-cyano-, ethyl	0.020	0.060	11.400	0.260	3.85	0.02	7.00	2.07
Crotonate, ethyl			25.20	27.00	0.04		3.15	
Crotonate, *α*-methoxy-, methyl	0.040	0.050	1.000	18.40	0.05	0.04	0.31	1.19
Crotonate, *α*-methyl-, methyl	0.020	0.050	2.970	39.70	0.03	0.02	0.63	1.88
Crotonic acid			21.00	20.00	0.05		3.27	
Diallylphthalate	0.076	0.039	3.500	23.50	0.04	0.08	1.31	0.29
Ethylene	0.050	0.050	7.000	14.88	0.07	0.05	2.46	0.97

Ethylene, tetrachloro-			463.0	195.0	0.01		4.08	
Ethylene, trichloro-			64.50	14.60	0.07		4.70	
Ethylene, diphenyl-			0.050	0.335	2.99		1.32	
Fumarate, diethyl	0.060	0.050	9.000	0.330	3.03	0.06	6.52	0.79
Fumarate, diisopropyl	0.055	0.200	16.00	0.400	2.50	0.06	6.91	2.26
Hexatriene, tetrachloro-	0.850	4.010	0.234	0.123	8.13	0.85	3.86	2.52
lmidazole, *N*-vinyl	0.680	0.832	3.390	8.380	0.12	0.68	2.31	1.17
Isoprene	1.840	0.450	0.030	0.458	2.18	1.84	0.49	−0.44
Isopropenyl isocyanate	0.096	0.100	0.240	7.480	0.13	0.10	−0.22	1.01
Isopropenyl methyl ketone	0.480	0.950	0.330	0.380	2.63	0.48	3.08	1.65
ltaconic acid	0.120	0.860	0.590	0.260	3.85	0.12	4.04	2.94
ltaconic anhydride	0.550	4.830	0.034	0.031	32.26	0.55	3.31	3.14
Maleate, diethyl	0.040	0.050	16.00	7.030	0.14	0.04	4.04	1.19
Maleic anhydride	0.011	0.050	6.000	0.360	2.78	0.01	6.03	2.48
Maleimide, *N*-(2-chlorophenyl)-	0.021	1.078	0.956	0.025	40.82	0.02	6.88	4.91
Methacrylamide, *N*-phenyl-	0.880	0.710	0.381	1.240	0.81	0.88	2.04	0.75
Methacrylate, benzyl	0.470	0.960	0.200	0.520	1.92	0.47	2.26	1.68
Methacrylate, 2-bromoethyl	0.410	2.380	0.310	0.320	3.13	0.41	3.19	2.73
Methacrylate, butyl	0.530	0.980	0.291	0.600	1.67	0.53	2.50	1.58
Methacrylate, isobutyl	0.420	1.050	0.217	0.540	1.85	0.42	2.31	1.88
Methacrylate, 2-chloroethyl	0.300	1.300	0.140	0.370	2.70	0.30	2.25	2.43
Methacrylate, ferrocenylmethyl	0.010	0.820	0.150	3.600	0.28	0.01	0.04	5.37
Methacrylate, glycidyl	0.500	1.320	0.140	0.415	2.41	0.50	2.13	1.94
Methacrylate, 2-hydroxyethyl	0.640	1.000	0.200	0.480	2.08	0.64	2.34	1.41
Methacrylate, methyl	0.460	1.320	0.138	0.500	2.00	0.46	1.93	2.02
Methacrylate, 3,5-dimethyladamantyl	0.630	1.300	0.190	0.890	1.12	0.63	1.67	1.69
Methacrylate, 2,2,6,6-	0.300	14.00	0.020	0.630	1.59	0.30	−0.23	4.81

tetramethyl-4-piperidinyl-								
Methacrylate, phenyl	0.510	0.460	0.360	0.250	4.00	0.51	3.58	0.86
Methacrylic acid	0.524	0.200	0.040	0.240	4.17	0.52	1.43	0.00
Methacrylonitrile	0.330	1.670	0.430	0.380	2.63	0.33	3.34	2.59
Methacryloylacetone	1.660	3.740	0.010	0.067	14.93	1.66	1.32	1.78
Methylenebutyrolactone	0.700	1.100	0.090	0.090	11.11	0.70	3.22	1.42
Naphthalene, 1-vinyl-	2.020	0.451	0.107	0.699	1.43	2.02	1.34	−0.53
Oct-1-ene, 6,6-dimethyl-4,8-dioxaspiro (2,5)-	0.271	1.484	0.985	1.930	0.52	0.27	2.55	2.67
Oxazoline, 2-isopropenyl-	0.640	0.520	0.130	0.670	1.49	0.64	1.58	0.76
Oxazoline, 2-isopropenyl-4,4-dimethyl-	0.680	1.830	0.240	0.550	1.82	0.68	2.39	1.96
Pentadienoate, trans-4-ethoxy-2,4-, ethyl	12.20	5.400	0.010	0.040	25.00	12.20	1.83	0.15
Phthalimide, *N*-vinyl-	0.070	0.240	0.430	6.270	0.16	0.07	0.54	2.20
Propene, 3,3,3-trichloro-	0.050	0.100	12.20	6.900	0.14	0.05	3.79	1.66
Pyridazinone, 3-(2-vinyl)-6-methyl-	0.850	0.190	0.320	0.900	1.11	0.85	2.18	−0.53
Pyridazinone, 3-(2-vinyl)-6-methyl-4,5-dihydro-	0.130	0.020	0.740	5.920	0.17	0.13	1.14	−0.90
Pyridine, 2-methyl-5-vinyl-	0.850	0.310	0.160	0.700	1.43	0.85	1.74	−0.04
Pyridine, 2-vinyl-	1.260	0.440	0.100	0.530	1.89	1.26	1.55	−0.08
Pyridine, 2-vinyl-5-ethyl-	1.090	0.430	0.040	0.740	1.35	1.09	0.30	0.04
Pyridine, 4-vinyl-	0.690	0.375	0.100	0.520	1.92	0.69	1.57	0.36
Silane, 3-methacryloxypropyl, trimethoxy-	0.868	3.790	0.094	0.425	2.35	0.87	1.71	2.44
Styrene (*reference*)	1.000	0.380	0.040	1.000	1.00	1.00	0.00	0.00
Styrene, *p*-acetoxy-	1.260	0.400	0.070	0.860	1.16	1.26	0.71	−0.18
Styrene, 3-tri-*n*-butylstannyl-	0.030	0.001	4.880	18.50	0.05	0.03	1.89	−2.43
Styrene, 2,5-dichloro-	0.400	0.080	0.240	0.236	4.24	0.40	3.24	−0.64

Styrene, *p*-chloromethyl-	1.120	0.560	0.067	0.620	1.61	1.12	0.99	0.27
Styrene, *p*-1-(2-hydroxypropyl)-	0.910	0.530	0.100	0.970	1.03	0.91	0.95	0.43
Styrene, α-methoxy	0.070	0.050	0.060	2.510	0.40	0.07	−0.51	0.63
Styrene, α-methyl	0.600	0.143	0.047	1.100	0.91	0.60	0.07	−0.47
Styrene, *p*-methyl	0.993	0.330	0.050	0.891	1.12	0.99	0.34	−0.13
Succinimide, *N*-vinyl	0.033	0.516	0.116	7.710	0.13	0.03	−0.98	3.72
Tetrazole, 1-vinyl-	0.184	0.314	0.540	3.850	0.26	0.18	1.25	1.50
Tetrazole, 5-phenyl-2-(4'-vinyl)-phenyl-	2.200	1.400	0.320	0.480	2.08	2.20	2.81	0.52
Toluenesulphonamide, *N*,*N*-methyl-vinyl-	0.050	0.040	0.420	5.600	0.18	0.05	0.63	0.74
Triallyl citrate	0.076	0.050	1.760	20.00	0.05	0.08	0.79	0.55
Vinyl acetate	0.020	0.050	4.780	48.00	0.02	0.02	0.91	1.88
Vinyl benzoate	0.060	0.019	5.030	31.56	0.03	0.06	1.38	−0.18
Vinyl benzoic acid, *p*-	1.030	1.630	0.060	0.282	3.55	1.03	1.67	1.43
Vinyl benzyl methyl carbinol	0.940	0.540	0.110	0.980	1.02	0.94	1.03	0.41
Vinyl bromide	0.054	0.060	2.520	16.60	0.06	0.05	1.33	1.07
Vinyl isobutyl ether	0.320	0.400	0.400	24.50	0.04	0.32	−0.90	1.19
Vinyl butyl sulfide	0.050	0.041	0.086	2.690	0.37	0.05	−0.22	0.77
Vinyl isobutyl sulfide	0.050	0.027	0.074	2.380	0.42	0.05	−0.25	0.35
Vinyl tert-butyl sulfide	0.158	0.050	0.090	4.360	0.23	0.16	−0.66	−0.18
Vinyl chloride	0.055	0.045	3.290	18.70	0.05	0.06	1.48	0.77
Vinyl chloroacetate	0.030	0.090	0.340	45.00	0.02	0.03	−1.67	2.07
Vinyl dichloroacetate	0.280	0.040	3.850	20.00	0.05	0.28	1.57	−0.98
Vinyl 2-chloroethyl ether	0.070	0.050	1.090	160.0	0.01	0.07	−1.77	0.63
Vinyl chloromethyl ketone	0.507	0.880	0.064	0.127	7.87	0.51	2.53	1.52
Vinyl cymantrene	0.096	0.050	0.446	2.320	0.43	0.10	1.57	0.32
Vinyl dodecyl ether			0.820	41.50	0.02		−0.71	

Vinylene carbonate	0.050	0.080	14.90	70.00	0.01	0.05	1.67	1.44
Vinyl ethyl ether	0.050	0.060	0.690	100.0	0.01	0.05	−1.76	1.15
Vinyl ethyl oxalate			1.340	5.620	0.18		1.79	
Vinyl ethyl sulfide	0.182	0.055	0.075	5.380	0.19	0.18	−1.05	−0.23
Vinyl ethyl sulfoxide	0.100	0.050	1.630	7.820	0.13	0.10	1.65	0.27
Vinyl ferrocene	0.170	0.158	0.173	3.570	0.28	0.17	0.19	0.89
Vinyl hendecanoate	0.050	0.090	1.880	24.89	0.04	0.05	0.64	1.56
Vinylidene chloride	0.108	0.320	0.640	1.790	0.56	0.11	2.19	2.06
Vinyl isocyanate	0.080	0.160	0.190	8.130	0.12	0.08	−0.54	1.66
Vinyl isothiocyanate	0.435	1.400	0.360	0.725	1.38	0.44	2.52	2.14
Vinyl methyl ketone	0.320	1.570	0.610	0.290	3.45	0.32	3.96	2.56
Vinyl phenyl ether	0.010	0.230	2.500	1.700	0.59	0.01	3.60	4.10
Vinyl phenyl sulfide	0.140	0.030	0.110	3.800	0.26	0.14	−0.32	−0.57
Vinyl stearate	0.050	0.078	4.640	15.96	0.06	0.05	1.98	1.41
Vinyl triethoxysilane	0.050	0.410	6.590	20.86	0.05	0.05	2.07	3.07
Vinyl-tris(trimethoxysiloxy)silane	0.005	0.075	3.900	25.00	0.04	0.01	1.36	3.68
Vinyl trimethylsilane	0.050	0.100	4.080	10.32	0.10	0.05	2.29	1.66

[a]Reactivity ratios were taken from the *Polymer Handbook*.[1]

Table S2. *Q-e* parameters for the monomers and radicals (Q_M, Q_R, e_M, e_R), Greenley's *Q-e* Parameters (Q_G, e_G), and Young's *Q-e* Parameters (Q_G, e_G)[a]

Monomer	Q_M	Q_R	e_M	e_R	Q_G	e_G	Q_Y	e_Y
Acenaphthylene	0.58	0.17	−1.80	0.69	0.72	−1.88	0.26	−0.8
Acetylene, phenyl	0.94	0.20	0.70	−0.32	0.45	0.10		
Aconitate, trimethyl	0.16		1.48		0.25	2.27		
Acrolein	0.76	0.61	1.39	0.37	0.80	1.31	0.85	0.73
Acrolein, methyl	1.34	1.14	0.51	0.49	1.83	0.71		
Acrylamide	0.26	0.61	0.64	−0.10	0.23	0.54	1.12	1.19
Acrylamide, *N*-methylol	2.88	2.06	2.26	0.48	0.52	1.15	0.39	0.61
Acrylamide, *N*-octadecyl	0.18	0.65	0.44	0.15	0.66	1.64	0.66	1.13
Acrylate, benzyl	0.37	0.39	1.33	0.31	0.33	1.13	0.68	0.9
Acrylate, butyl	0.32	0.44	0.97	0.51	0.38	0.85	0.50	1.06
Acrylate, 2-chloroethyl	0.41	0.42	1.11	0.65	0.49	1.03	0.41	0.54
Acrylate, *α*-chloro-, methyl	1.50	0.59	0.42	0.55	2.43	0.35	2.02	0.77
Acrylate, *α*-cyano-, methyl	10.61	0.49	−0.01	−0.27	4.91	0.91	2.14	0.78
Acrylate, 3,4-epoxyhexahydrobenzyl	1.07	0.35	0.75	−1.12				
Acrylate, *β*-ethoxy-, ethyl	0.02		−0.68				0.015	0.18
Acrylate, ethyl	0.35	0.36	0.78	0.48	0.41	0.55	0.52	0.22
Acrylate, methyl	0.29	0.42	1.10	0.44	0.45	0.64	0.42	0.6
Acrylate, octadecyl	0.24	0.73	1.59	0.43	0.33	1.26	0.42	1.12
Acrylate, octyl	0.38	0.54	1.59	0.62	0.63	2.01	0.35	1.07
Acrylate, 2-nitrobutyl	0.62	0.81	1.11	1.00	0.69	1.09	0.61	1.15
Acrylate, *α*-phenyl-, methyl	4.19	2.99	0.93	0.49	5.19	0.96		
Acrylate, di-zinc	0.38	0.31	0.30	−0.97				
Acrylonitrile (*reference*)	0.51	0.54	1.26	1.26	0.48	1.23	0.60	1.20
Acryloyl chloride	1.06	1.81	2.01	1.60	1.82	1.92	1.78	1.02

Allyl acetate	0.01		−0.50		0.24	−1.07	0.028	−1.13
Allyl chloride	0.02	0.04	−0.47	−0.32	0.026	−0.60	0.056	0.11
Aniline, *N*,*N*-divinyl	0.18	0.03	−0.73	−0.12	0.26	−0.68	0.19	−1.54
Benzothiazole, vinylmercapto-	0.30	0.34	−0.50	−0.74	0.36	−0.44	1.68	−0.92
Butadiene	1.20	0.83	−0.32	−1.10	1.70	−0.50	2.39	−1.05
Butadiene-1-carboxylic acid	2.40	4.19	0.81	−0.18				
Butadiene-1-carboxylate, ethyl	1.63	1.67	1.24	0.84	1.67	1.26		
Butadiene-1,4-dicarboxylic acid	1.67	1.69	0.93	0.68				
Butadiene, 1,4-dicarboxylate-, diethyl	1.97	1.54	1.36	0.48	1.94	1.39		
Butadiene, 2-chloro-	6.64	3.10	0.92	−0.47	10.52	1.20	7.26	−0.02
Butadiene, 2-fluoro-	1.93	0.69	0.27	−0.83	1.88	0.63	2.08	−0.43
Butadiene, 2-trimethylsilyloxy-	1.37	0.90	−0.63	−1.72				
Carbazole, *N*-vinyl	0.14		−0.55		0.26	−1.29	0.41	−1.4
Cinnamonitrile	0.07	0.21	1.38	0.65			0.32	0.75
Citraconimide, *N*-methyl-	1.16	0.32	1.42	0.13	0.87	1.58		
Crotonaldehyde	0.02	0.01	1.05	−1.28	0.023	0.84	0.32	0.75
Crotonate, *α*-acetyl-, methyl	0.07		1.36					
Crotonate, *α*-carboethoxy-, ethyl	0.02		1.19					
Crotonate, *α*-chloro-, ethyl	0.04		1.09					
Crotonate, *α*-cyano-, ethyl	0.24	0.04	2.65	0.22				
Crotonate, ethyl	0.01		0.75					
Crotonate, *α*-methoxy-, methyl	0.05	0.04	−0.65	−0.21				
Crotonate, *α*-methyl-, methyl	0.02	0.02	−0.49	0.13				
Crotonic acid	0.01		0.81		0.017	0.89	0.013	0.45
Diallylphthalate	0.03	0.05	−0.15	−0.66	0.031	−0.26	0.044	0.36
Ethylene	0.03	0.03	0.41	−0.32	0.016	0.05	0.015	−0.2
Ethylene, tetrachloro-	0.00		1.21		0.001	1.24	0.003	2.03

Ethylene, trichloro-	0.01		1.52		0.01	1.29	0.019	1.86
Ethylene, diphenyl-	1.78		−0.15		0.17	−1.71	1.50	−1.35
Fumarate, diethyl	0.23	0.02	2.41	−0.41	0.25	2.26	0.61	1.25
Fumarate, diisopropyl	0.16	0.16	2.60	0.31	0.11	2.58		
Hexatriene, tetrachloro-	1.77	1.97	1.10	0.44	1.83	0.94	1.85	0.75
lmidazole, *N*-vinyl	0.05	0.53	0.34	−0.22	0.11	−0.68		
Isoprene	1.80	1.44	−0.56	−1.02	1.99	−0.55	3.33	−1.22
Isopropenyl isocyanate	0.15	0.10	−0.91	−0.30	0.18	−1.05	0.16	−0.7
Isopropenyl methyl ketone	0.78	0.49	0.72	0.01	1.03	0.64		
ltaconic acid	0.78	0.43	1.19	0.65	0.78	1.07	0.76	0.5
ltaconic anhydride	8.75	1.86	0.83	0.75			2.5	0.88
Maleate, diethyl	0.03	0.03	1.19	−0.21	0.053	1.08	0.059	1.49
Maleic anhydride	0.26	0.04	2.17	0.42	0.86	3.69	0.23	2.25
Maleimide, *N*-(2-chlorophenyl)-	2.71	5.05	2.59	1.62	2.29	2.87		
Methacrylamide, *N*-phenyl-	0.36	0.57	0.20	−0.43	0.40	0.19		
Methacrylate, benzyl	0.79	0.49	0.31	0.03	0.88	0.35	0.70	0.42
Methacrylate, 2-bromoethyl	0.89	0.96	0.77	0.54	1.18	0.74	0.95	0.57
Methacrylate, butyl	0.62	0.52	0.43	−0.02	0.82	0.28	0.78	0.51
Methacrylate, isobutyl	0.75	0.49	0.34	0.13	0.82	0.27	0.87	0.34
Methacrylate, 2-chloroethyl	1.11	0.47	0.31	0.40	1.04	0.31	0.81	0.53
Methacrylate, ferrocenylmethyl	0.27	0.01	−0.78	1.85	0.22	0.65	0.13	1.26
Methacrylate, glycidyl	1.04	0.59	0.25	0.15	0.96	0.25	1.03	0.57
Methacrylate, 2-hydroxyethyl	0.83	0.57	0.35	−0.10	1.78	−0.39	0.8	0.2
Methacrylate, methyl	0.93	0.55	0.15	0.20	0.78	0.40	0.74	0.40
Methacrylate, 3,5-dimethyladamantyl	0.58	0.65	0.02	0.03				
Methacrylate, 2,2,6,6-tetramethyl-4-piperidinyl-	1.74	0.25	−0.91	1.57	0.52	−1.09		
Methacrylate, phenyl	0.97	0.26	0.97	−0.37	1.25	0.79	1.49	0.73

Methacrylic acid	2.37	0.30	−0.10	−0.80	0.98	0.62	2.34	0.65
Methacrylonitrile	0.70	0.72	0.85	0.48	0.86	0.68	1.12	0.81
Methacryloylacetone	8.88	1.74	−0.15	0.08	5.47	−0.76		
Methylenebutyrolactone	3.12	0.60	0.79	−0.10	2.48	0.83		
Naphthalene, 1-vinyl-	0.84	1.00	−0.14	−1.06			1.94	−1.12
Oct-1-ene, 6,6-dimethyl-4,8-dioxaspiro (2,5)-	0.19	0.52	0.45	0.51	0.25	0.61		
Oxazoline, 2-isopropenyl-	0.80	0.46	−0.02	−0.43	0.59	−0.64		
Oxazoline, 2-isopropenyl-4,4-dimethyl-	0.71	0.83	0.38	0.16	0.87	0.34		
Pentadienoate, trans-4-ethoxy-2,4-, ethyl	12.14	6.34	0.10	−0.72				
Phthalimide, *N*-vinyl-	0.13	0.08	−0.53	0.28			0.36	−1.52
Propene, 3,3,3-trichloro-	0.03	0.05	1.07	0.02	0.03	1	0.056	1.37
Pyridazinone, 3-(2-vinyl)-6-methyl-	0.47	0.27	0.28	−1.06	0.57	0.24		
Pyridazinone, 3-(2-vinyl)-6-methyl-4,5-dihydro-	0.11	0.06	−0.24	−1.25	0.18	−0.32		
Pyridine, 2-methyl-5-vinyl-	0.72	0.42	0.06	−0.82	1.32	−0.66		
Pyridine, 2-vinyl-	1.02	0.66	−0.04	−0.84	1.41	−0.42	1.3	−0.5
Pyridine, 2-vinyl-5-ethyl-	1.20	0.97	−0.65	−0.78	1.29	−0.91	1.37	−0.74
Pyridine, 4-vinyl-	1.04	0.43	−0.03	−0.62	2.47	0.84	1	−0.28
Silane, 3-methacryloxypropyl, trimethoxy-	1.20	1.22	0.04	0.40				
Styrene (*reference*)	1.00	1.00	−0.80	−0.80	1	−0.8	1	−0.8
Styrene, *p*-acetoxy-	0.88	0.92	−0.45	−0.89				
Styrene, 3-tri-*n*-butylstannyl-	0.03	0.00	0.13	−2.00	0.014	−0.61		
Styrene, 2,5-dichloro-	1.18	0.07	0.79	−1.12	1.5	0.94	1.6	0.09
Styrene, *p*-chloromethyl-	1.09	0.81	−0.31	−0.66	1.39	−0.38		
Styrene, *p*-1-(2-hydroxypropyl)-	0.71	0.69	−0.33	−0.59	1.08	−0.35		
Styrene, *α*-methoxy	0.49	0.08	−1.05	−0.49	1.53	−1.40		

Styrene, *α*-methyl	0.89	0.58	−0.77	−1.03	0.97	−0.81	0.98	−1.27
Styrene, *p*-methyl	0.98	0.86	−0.63	−0.87	1.1	−0.63	1.27	−0.98
Succinimide, *N*-vinyl	0.19	0.02	−1.28	1.03	0.19	−1.42	0.13	−0.34
Tetrazole, 1-vinyl-	0.16	0.18	−0.18	−0.06	0.13	−0.14		
Tetrazole, 5-phenyl-2-(4'-vinyl)-phenyl-	0.69	1.03	0.59	−0.55	1.11	0.53		
Toluenesulphonamide, *N*,*N*-methyl-vinyl-	0.14	0.04	−0.49	−0.43	0.18	−0.53	0.082	−1.1
Triallyl citrate	0.04	0.06	−0.41	−0.53	0.054	0.26		
Vinyl acetate	0.01	0.02	−0.35	0.13	0.026	−0.88	0.026	−0.22
Vinyl benzoate	0.02	0.03	−0.12	−0.89	0.03	−0.89	0.061	−0.55
Vinyl benzoic acid, *p*-	1.84	0.95	0.02	−0.10			0.76	−0.12
Vinyl benzyl methyl carbinol	0.68	0.69	−0.29	−0.60				
Vinyl bromide	0.04	0.05	−0.14	−0.27	0.038	−0.23	0.047	−0.25
Vinyl isobutyl ether	0.06	0.35	−1.24	−0.21	0.03	−1.27	0.023	−1.77
Vinyl butyl sulfide	0.41	0.05	−0.91	−0.42			0.33	−1.2
Vinyl isobutyl sulfide	0.46	0.05	−0.92	−0.63	0.49	−0.95	0.53	−1.7
Vinyl tert-butyl sulfide	0.30	0.21	−1.13	−0.89	0.046	−2.20	0.26	−1.1
Vinyl chloride	0.03	0.04	−0.07	−0.42	0.056	0.16	0.044	0.2
Vinyl chloroacetate	0.04	0.03	−1.62	0.22	0.039	−1.61	0.074	−0.65
Vinyl dichloroacetate	0.03	0.10	−0.03	−1.28	0.059	−1.38	0.17	−0.68
Vinyl 2-chloroethyl ether	0.01	0.11	−1.67	−0.49	0.019	−1.64		
Vinyl chloromethyl ketone	2.90	0.48	0.45	−0.05	16	1.78		
Vinyl cymantrene	0.23	0.06	−0.03	−0.64	0.39	−0.57		
Vinyl dodecyl ether	0.03		−1.15		0.041	−1.69	0.033	−0.74
Vinylene carbonate	0.01	0.05	0.02	−0.09	0.04	-0.49		
Vinyl ethyl ether	0.02	0.06	−1.67	−0.23	0.018	−1.8	0.032	−1.17
Vinyl ethyl oxalate	0.09		0.08		0.056	−0.65	0.092	−0.26
Vinyl ethyl sulfide	0.28	0.29	−1.32	−0.91	0.27	−1.31	0.32	−1.45

Vinyl ethyl sulfoxide	0.07	0.06	0.01	−0.66	0.065	0.05	0.13	0.61
Vinyl ferrocene	0.26	0.16	−0.71	−0.36	0.31	−1.34		
Vinyl hendecanoate	0.03	0.05	−0.49	−0.03	0.056	−0.84		
Vinylidene chloride	0.24	0.14	0.28	0.21	0.31	0.34	0.22	0.36
Vinyl isocyanate	0.15	0.08	−1.06	0.02			0.16	−0.7
Vinyl isothiocyanate	0.51	0.60	0.44	0.25	0.59	0.37	0.54	0.25
Vinyl methyl ketone	0.72	0.79	1.15	0.46	0.66	1.05		
Vinyl phenyl ether	0.14	0.09	0.98	1.22	0.046	−2.16		
Vinyl phenyl sulfide	0.30	0.17	−0.96	−1.08	0.33	−0.99	0.34	−1.4
Vinyl stearate	0.03	0.05	0.18	−0.10	0.043	−0.97	0.034	−0.52
Vinyl triethoxysilane	0.02	0.10	0.22	0.71	0.021	0.87	0.028	−0.42
Vinyl-tris(trimethoxysiloxy)silane	0.02	0.01	−0.13	1.01	0.022	−0.12		
Vinyl trimethylsilane	0.04	0.05	0.33	0.02	0.027	0.19	0.029	0.04

[a]Greenley's and Young's data were taken from the *Polymer Handbook*.[2,3]

Table S3. Intrinsic *Q*-*e* parameters (Q_M°, e_M°), *Q*-*e* parameters (Q_M, e_M), and Greenley's Q-e parameters (Q_G, e_G) for the transfer agents[a]

Transfer agent	$Q_M^\circ \times 10^4$	e_M°	$Q_M \times 10^4$	e_M	$Q_G \times 10^4$	e_G
Acetaldehyde	8.5	1.51	22.0	−0.06		
Acetamide, *N*,*N*-dimethyl-	4.6	3.14	6.28	0.74		
Acetic acid	2.22	4.23	1.97	1.28		
Acetone	0.32	1.96	0.70	0.16	0.11	0.35
Acetonitrile	0.44	1.70	1.06	0.04		
Allyl chloride	15.1	4.15	13.8	1.24		
Aluminum, hydrodiisobutyl	275000	7.46	68200	2.88		
Aluminum, triethyl	125000	8.57	20020	3.42		
Aluminum, triisobutyl	285000	3.24	374000	0.79		
Aniline	20	2.30	37.9	0.33		
Aniline, *N*,*N*-dimethyl-	53	0.88	176	−0.36		
Anthracene	20000	3.32	25400	0.84		
Benzene	0.03	−1.19	0.23	−1.39	0.05	−1.21
Benzene, bromo-	1.78	3.49	2.12	0.92		
Benzene, *tert*-butyl-	0.05	−0.43	0.28	−1.01		
Benzene, chloro-	0.41	2.56	0.70	0.46	0.07	0.08
Benzene, ethyl-	0.7	−0.71	4.36	−1.15	0.95	−1.02
p-Benzoquinone	2270000	8.38	392000	3.33		
Borane, tributyl	34.8	−2.01	361	−1.79		
Butanone	5	2.97	7.30	0.66		
Butyl alcohol	1.6	0.95	5.16	−0.33	0.53	−0.57
sec-Butyl alcohol	0.56	−1.94	5.66	−1.76		
tert-Butyl alcohol	0.3	2.84	0.46	0.60		
Butyl mercaptan	219900	7.20	60500	2.75		

Butyric acid, 4-hydroxy-γ-lactone	0.4	2.66	0.66	0.51		
Cadmium, dibutyl	1170	−0.63	7050	−1.11		
Carbonic acid, cyclic ethylene ester	0.24	3.83	0.25	1.09		
Chloroform	0.5	0.77	1.73	−0.42		
Copper (II) chloride	103000000	8.25	18800000	3.26		
Cumene	0.9	−0.61	5.38	−1.10		
Cyclohexane	0.05	−0.50	0.29	−1.05	0.11	−0.64
Dimethyl sulfoxide	0.5	3.76	0.53	1.05		
Diphenylamine	0.9	−3.44	16.4	−2.49		
Ethane,1,2-dichloro-	2	3.53	2.34	0.94	0.62	1.34
Ethane, 1,1,2,2-tetrachloro-	10.8	4.46	8.74	1.40		
Ether, dodecyl vinyl	3.72	2.93	5.50	0.64		
Ethyl acetate	15.5	5.03	10.1	1.68	0.07	−0.87
Formamide, *N*,*N*-dimethyl-	1	2.20	1.98	0.28		
α-D-Glucoside, methyl, 6-deoxy-6-mercapto-	55000	6.96	16600	2.63		
α-D-Glucoside, methyl-, di-*O*-benzyl-	62	2.85	95	0.60		
α-D-Glucoside, methyl-2,3,4.6-tetra-O-acetyl-	2	0.51	7.69	−0.55		
α-D-Glucoside, methyl-6-(p-toluene sulfonyl)-	2	1.61	4.99	−0.01		
α-D-Glucoside, methyl-6-*O*-triphenylmethyl-	21	1.88	47.0	0.13		
β-D-GIucoside, methyl-6-deoxy-6-dipropylamino-	22	−0.69	136	−1.14		
Glycerol	28.64	3.42	35.0	0.88		
Heptanol, dodecafluoro-	13.33	5.17	8.18	1.75		
Indium, triethyl	17600	5.29	10300	1.81		
Iron(III) chloride	5360000	8.30	9570000	3.29		

Isobutyl alcohol	0.5	−0.65	3.04	−1.12		
Isobutyronitrile	2.7	3.15	3.67	0.75		
Lead, tetraethyl	1.24	−2.06	13.1	−1.81		
Mercury, diethyl	0.34	−2.14	3.71	−1.85		
Methane, dichloro-	0.15	0.20	0.65	−0.70	0.1	−0.68
Methane, tetrabromo-	22000	6.47	8070	2.39	7300	2.9
Methane, tetrachloro-	100	7.83	21.4	3.06	3.64	3.21
Methane, nitro-	10	3.73	10.8	1.04	3.26	−1.5
Methanol	0.74	3.61	0.84	0.98	0.18	−0.93
Octadiene, 2,6-dimethyl-	2	−2.20	22.3	−1.88		
Oxime, acrolein-	10800	−0.84	70700	−1.21		
Oxime, crotonaldehyde-	1500	0.60	5560	−0.50		
Oxime, ethyl isopropenyl ketone-	4300	2.35	8020	0.36		
Oxime, methacrolein-	13000	1.24	37500	−0.19		
Oxime, methylacrolein-	400	−1.68	3640	−1.63		
Oxime, methyl isopropenyl ketone-	1100	0.48	4290	−0.57		
Oxime, methyl vinyl ketone-	2700	1.73	6430	0.05		
Pentanol, octafluoro-	11.36	5.01	7.42	1.67		
Silane, tetraethyl	8.12	2.27	15.6	0.32		
Stibine, tributyl	58	−4.34	1510	−2.94		
Tin, tetrabutyl	3.71	0.14	16.5	−0.73		
Toluene	0.12	−0.06	0.58	−0.83		
Triethylamine	7.1	−2.84	102	−2.20	28.8	−2.39
Tripropylamine	24.2	−1.96	246	−1.76		
Zinc, diethyl	3660	1.74	8650	0.06		

[a]Greenley's data were taken from the *Polymer Handbook*.[2]

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