Supplementary Materials

Thermomechanical and Energetic Coupling in DVB-Based Copolymers: A Unified Physicochemical Study of Adsorption Distance, Surface Energy, and Specific Surface Area

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Table S1. Values of the specific surface area S_{BET} (m^2/g) and microporous volume V_m (cm^3/g) of the various copolymers.

copolymer	S_{BET} (m^2/g)	V_{micro} (cm^3/g)	V_{meso} (cm^3/g)
Poly(CDVB)-DCE	1317.8	0.49	0.93
Poly(CDVB)-NB	1268.6	0.49	0.93
Poly(DVB)-DCE	1379.5	0.52	0.49
Poly(DVB)-NB	1236.3	0.53	0.48
Poly(DVB)	775.4	0.55	0.42

Table S2. Variations of the free energy $\Delta G_a^0(T)$ (in kJ/mol) of solvents adsorbed on the different copolymers as a function of temperature.

Poly(CDVB)-DCE								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
n-Pentane	28.870	28.293	27.716	27.139	26.562	25.985	25.408	24.831
n-Hexane	33.454	32.800	32.146	31.492	30.838	30.184	29.530	28.876
n-Heptane	38.005	37.273	36.541	35.809	35.077	34.345	33.613	32.881
n-Octane	42.589	41.780	40.971	40.162	39.353	38.544	37.735	36.926
n-Nonane	47.141	46.254	45.367	44.480	43.593	42.706	41.819	40.932
Carbon tetrachloride	32.952	32.316	31.674	31.032	30.397	29.755	29.119	28.477
Nitromethane	26.705	26.206	25.703	25.200	24.702	24.198	23.700	23.197
Dichloromethane	25.742	25.258	24.770	24.283	23.799	23.311	22.828	22.340
Trichloromethane	31.325	30.736	30.141	29.547	28.958	28.363	27.774	27.179
Diethyl ether	33.164	32.496	31.822	31.148	30.479	29.805	29.137	28.463
THF	29.478	28.861	28.239	27.618	27.001	26.379	25.762	25.140
Ethyl Acetate	32.549	31.884	31.213	30.541	29.876	29.205	28.539	27.868
Acetone	25.460	24.971	24.479	23.986	23.498	23.005	22.516	22.024
Acetonitrile	22.932	22.480	22.024	21.568	21.115	20.660	20.207	19.751
Toluene	33.231	32.586	31.935	31.284	30.639	29.988	29.343	28.692
Benzene	28.628	28.060	27.487	26.913	26.346	25.772	25.204	24.631
Methanol	26.820	26.388	25.955	25.521	25.090	24.656	24.225	23.791
Ethanol	28.837	28.333	27.825	27.318	26.813	26.306	25.802	25.294
Cyclohexane	32.484	31.860	31.230	30.599	29.975	29.344	28.721	28.090
Poly(CDVB)-NB								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
n-Pentane	28.965	28.382	27.799	27.216	26.633	26.050	25.467	24.884
n-Hexane	33.554	32.890	32.226	31.562	30.898	30.234	29.570	28.906
n-Heptane	38.173	37.429	36.685	35.941	35.197	34.453	33.709	32.965

n-Octane	42.761	41.936	41.111	40.286	39.461	38.636	37.811	36.986
n-Nonane	47.380	46.475	45.570	44.665	43.760	42.855	41.950	41.045
Carbon tetrachloride	33.081	32.415	31.764	31.120	30.469	29.825	29.174	28.523
Nitromethane	26.956	26.425	25.889	25.358	24.823	24.292	23.756	23.221
Dichloromethane	25.944	25.433	24.917	24.406	23.891	23.380	22.864	22.349
Trichloromethane	32.038	31.383	30.722	30.067	29.406	28.750	28.089	27.428
Diethyl ether	33.757	33.048	32.334	31.625	30.911	30.203	29.489	28.775
THF	30.037	29.386	28.731	28.081	27.425	26.775	26.120	25.464
Ethyl Acetate	33.289	32.573	31.852	31.136	30.415	29.700	28.979	28.258
Acetone	25.440	24.946	24.448	23.954	23.456	22.962	22.464	21.966
Acetonitrile	23.428	22.929	22.428	21.930	21.428	20.930	20.429	19.928
Toluene	33.470	32.806	32.135	31.471	30.800	30.136	29.465	28.794
Benzene	28.719	28.144	27.563	26.988	26.407	25.831	25.250	24.669
Methanol	27.671	27.138	26.603	26.070	25.534	25.001	24.466	23.931
Ethanol	29.660	29.069	28.474	27.882	27.288	26.696	26.101	25.507
Cyclohexane	32.628	31.989	31.344	30.705	30.060	29.421	28.776	28.130
Poly(DVB)-DCE								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
n-Pentane	30.308	29.656	29.004	28.352	27.700	27.048	26.396	25.744
n-Hexane	34.535	33.845	33.155	32.465	31.775	31.085	30.395	29.705
n-Heptane	38.792	38.065	37.338	36.611	35.884	35.157	34.430	33.703
n-Octane	43.019	42.254	41.489	40.724	39.959	39.194	38.429	37.664
n-Nonane	47.277	46.475	45.673	44.871	44.069	43.267	42.465	41.663
Carbon tetrachloride	34.146	33.461	32.784	32.099	31.422	30.744	30.060	29.382
Nitromethane	28.557	27.946	27.341	26.731	26.125	25.520	24.910	24.304
Dichloromethane	27.587	26.987	26.392	25.793	25.198	24.602	24.003	23.408
Trichloromethane	32.779	32.121	31.469	30.811	30.159	29.507	28.850	28.198
Diethyl ether	35.194	34.441	33.693	32.941	32.193	31.446	30.693	29.946
THF	31.775	31.042	30.314	29.581	28.853	28.125	27.392	26.664
Ethyl Acetate	34.542	33.790	33.044	32.293	31.547	30.801	30.050	29.304

Acetone	27.972	27.336	26.704	26.069	25.437	24.805	24.169	23.537
Acetonitrile	25.589	24.971	24.355	23.737	23.121	22.506	21.887	21.272
Toluene	34.522	33.824	33.132	32.433	31.741	31.050	30.351	29.659
Benzene	30.055	29.402	28.756	28.103	27.457	26.810	26.158	25.511
Methanol	29.595	29.015	28.436	27.856	27.278	26.699	26.119	25.541
Ethanol	31.477	30.840	30.206	29.569	28.936	28.302	27.665	27.031
Cyclohexane	33.685	33.007	32.337	31.660	30.989	30.319	29.642	28.971
Poly(DVB)-NB								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
n-Pentane	30.836	30.206	29.576	28.946	28.316	27.686	27.056	26.426
n-Hexane	35.343	34.660	33.977	33.294	32.611	31.928	31.245	30.562
n-Heptane	39.880	39.145	38.410	37.675	36.940	36.205	35.470	34.735
n-Octane	44.388	43.600	42.812	42.024	41.236	40.448	39.660	38.872
n-Nonane	48.925	48.085	47.245	46.405	45.565	44.725	43.885	43.045
Carbon tetrachloride	34.879	34.217	33.548	32.872	32.202	31.526	30.856	30.180
Nitromethane	28.723	28.145	27.572	26.994	26.420	25.842	25.268	24.690
Dichloromethane	27.732	27.167	26.606	26.040	25.479	24.914	24.353	23.788
Trichloromethane	33.170	32.537	31.910	31.277	30.649	30.016	29.389	28.756
Diethyl ether	35.659	34.927	34.201	33.469	32.743	32.011	31.284	30.552
THF	32.043	31.343	30.649	29.949	29.255	28.555	27.860	27.161
Ethyl Acetate	34.971	34.245	33.525	32.799	32.079	31.353	30.633	29.907
Acetone	27.999	27.398	26.799	26.198	25.599	24.997	24.399	23.797
Acetonitrile	25.348	24.781	24.216	23.649	23.085	22.518	21.954	21.386
Toluene	35.233	34.546	33.865	33.178	32.497	31.810	31.129	30.442
Benzene	30.569	29.940	29.318	28.689	28.066	27.438	26.815	26.186
Methanol	29.170	28.631	28.094	27.555	27.017	26.478	25.941	25.402
Ethanol	31.284	30.683	30.084	29.483	28.885	28.284	27.686	27.085
Cyclohexane	34.388	33.722	33.063	32.397	31.738	31.072	30.413	29.747
Poly(DVB)								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15

n-Pentane	33.346	32.227	31.108	29.989	28.870	27.751	26.632	25.513
n-Hexane	46.154	44.431	42.708	40.985	39.262	37.539	35.816	34.093
n-Heptane	57.663	55.399	53.135	50.871	48.607	46.343	44.079	41.815
n-Octane	73.428	70.423	67.418	64.413	61.408	58.403	55.398	52.393
n-Nonane	83.316	79.845	76.374	72.903	69.432	65.961	62.490	59.019
Carbon tetrachloride	44.795	43.175	41.562	39.942	38.322	36.702	35.083	33.463
Nitromethane	29.457	28.768	28.084	27.395	26.707	26.018	25.330	24.640
Dichloromethane	29.953	29.563	29.179	28.789	28.400	28.010	27.621	27.231
Trichloromethane	40.800	39.650	38.507	37.356	36.207	35.057	33.908	32.757
Diethyl ether	53.621	51.590	49.565	47.534	45.504	43.472	41.442	39.411
THF	43.423	41.818	40.220	38.615	37.012	35.408	33.804	32.200
Ethyl Acetate	50.806	48.988	47.177	45.360	43.544	41.726	39.910	38.092
Acetone	38.213	36.876	35.541	34.204	32.867	31.530	30.193	28.856
Acetonitrile	38.869	37.512	36.157	34.801	33.444	32.087	30.731	29.374
Toluene	47.597	45.752	43.914	42.069	40.225	38.380	36.535	34.690
Benzene	32.640	31.565	30.498	29.423	28.350	27.276	26.202	25.128
Methanol	61.102	59.229	57.358	55.486	53.613	51.741	49.869	47.996
Ethanol	46.084	44.165	42.248	40.329	38.410	36.492	34.573	32.654
Cyclohexane	43.115	41.582	40.057	38.524	36.992	35.460	33.928	32.395

Table S3. Variations of the London dispersive free energy $\Delta G_a^d(T)$ (in kJ/mol) of solvents adsorbed on the different copolymers as a function of temperature.

Poly(CDVB)-DCE								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
n-Pentane	28.870	28.293	27.716	27.139	26.562	25.985	25.408	24.831
n-Hexane	33.454	32.800	32.146	31.492	30.838	30.184	29.530	28.876
n-Heptane	38.005	37.273	36.541	35.809	35.077	34.345	33.613	32.881
n-Octane	42.589	41.780	40.971	40.162	39.353	38.544	37.735	36.926
n-Nonane	47.141	46.254	45.367	44.480	43.593	42.706	41.819	40.932

Carbon tetrachloride	32.447	31.813	31.173	30.532	29.899	29.258	28.625	27.984
Nitromethane	22.692	22.223	21.749	21.275	20.806	20.332	19.862	19.388
Dichloromethane	22.444	21.978	21.509	21.039	20.574	20.104	19.639	19.169
Trichloromethane	26.962	26.420	25.874	25.327	24.786	24.239	23.698	23.151
Diethyl ether	26.617	26.081	25.540	24.999	24.464	23.923	23.387	22.846
THF	23.360	22.879	22.394	21.909	21.428	20.943	20.462	19.977
Ethyl Acetate	26.396	25.864	25.327	24.790	24.258	23.721	23.189	22.652
Acetone	19.023	18.615	18.204	17.793	17.385	16.974	16.566	16.155
Acetonitrile	15.341	14.996	14.647	14.299	13.953	13.605	13.259	12.911
Toluene	31.398	30.782	30.159	29.537	28.921	28.298	27.683	27.060
Benzene	28.468	27.901	27.328	26.756	26.189	25.617	25.050	24.478
Methanol	11.661	11.377	11.091	10.806	10.522	10.236	9.953	9.667
Ethanol	15.499	15.150	14.799	14.448	14.100	13.748	13.400	13.049
Cyclohexane	31.697	31.076	30.449	29.821	29.200	28.572	27.951	27.324
Poly(CDVB)-NB								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
n-Pentane	28.965	28.382	27.799	27.216	26.633	26.050	25.467	24.884
n-Hexane	33.554	32.890	32.226	31.562	30.898	30.234	29.570	28.906
n-Heptane	38.173	37.429	36.685	35.941	35.197	34.453	33.709	32.965
n-Octane	42.761	41.936	41.111	40.286	39.461	38.636	37.811	36.986
n-Nonane	47.380	46.475	45.570	44.665	43.760	42.855	41.950	41.045
Carbon tetrachloride	32.555	31.912	31.263	30.620	29.971	29.329	28.679	28.030
Nitromethane	22.727	22.256	21.779	21.307	20.831	20.359	19.883	19.406
Dichloromethane	22.476	22.009	21.537	21.070	20.598	20.130	19.658	19.186
Trichloromethane	27.029	26.482	25.930	25.383	24.831	24.285	23.733	23.181
Diethyl ether	26.684	26.144	25.598	25.057	24.511	23.971	23.425	22.879
THF	23.403	22.919	22.431	21.948	21.459	20.976	20.488	19.999
Ethyl Acetate	26.461	25.924	25.382	24.845	24.303	23.767	23.225	22.682
Acetone	19.032	18.624	18.213	17.806	17.394	16.987	16.575	16.164
Acetonitrile	15.320	14.976	14.630	14.287	13.941	13.598	13.252	12.906

Toluene	31.505	30.880	30.249	29.625	28.994	28.370	27.739	27.108
Benzene	28.550	27.977	27.399	26.826	26.247	25.674	25.095	24.516
Methanol	11.612	11.333	11.053	10.774	10.493	10.214	9.934	9.653
Ethanol	15.480	15.134	14.785	14.439	14.090	13.744	13.395	13.047
Cyclohexane	31.803	31.174	30.538	29.908	29.272	28.643	28.007	27.370
Poly(DVB)-DCE								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
n-Pentane	30.308	29.656	29.004	28.352	27.700	27.048	26.396	25.744
n-Hexane	34.535	33.845	33.155	32.465	31.775	31.085	30.395	29.705
n-Heptane	38.792	38.065	37.338	36.611	35.884	35.157	34.430	33.703
n-Octane	43.019	42.254	41.489	40.724	39.959	39.194	38.429	37.664
n-Nonane	47.277	46.475	45.673	44.871	44.069	43.267	42.465	41.663
Carbon tetrachloride	33.657	32.970	32.291	31.605	30.926	30.247	29.560	28.881
Nitromethane	24.566	23.962	23.362	22.758	22.158	21.558	20.954	20.354
Dichloromethane	24.339	23.736	23.139	22.536	21.939	21.341	20.739	20.141
Trichloromethane	28.547	27.907	27.272	26.632	25.997	25.363	24.723	24.088
Diethyl ether	28.184	27.547	26.916	26.279	25.647	25.016	24.379	23.748
THF	25.155	24.545	23.940	23.330	22.725	22.121	21.511	20.906
Ethyl Acetate	27.990	27.355	26.726	26.090	25.461	24.831	24.196	23.566
Acetone	21.130	20.556	19.986	19.413	18.843	18.274	17.700	17.131
Acetonitrile	17.735	17.192	16.652	16.109	15.569	15.029	14.486	13.946
Toluene	32.607	31.930	31.260	30.583	29.913	29.243	28.567	27.897
Benzene	29.897	29.245	28.599	27.946	27.300	26.654	26.001	25.355
Methanol	14.295	13.783	13.273	12.761	12.251	11.741	11.229	10.720
Ethanol	17.863	17.319	16.777	16.233	15.692	15.151	14.607	14.066
Cyclohexane	32.917	32.237	31.564	30.885	30.212	29.539	28.860	28.187
Poly(DVB)-NB								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
n-Pentane	30.836	30.206	29.576	28.946	28.316	27.686	27.056	26.426
n-Hexane	35.343	34.660	33.977	33.294	32.611	31.928	31.245	30.562

n-Heptane	39.880	39.145	38.410	37.675	36.940	36.205	35.470	34.735
n-Octane	44.388	43.600	42.812	42.024	41.236	40.448	39.660	38.872
n-Nonane	48.925	48.085	47.245	46.405	45.565	44.725	43.885	43.045
Carbon tetrachloride	34.389	33.714	33.047	32.372	31.704	31.029	30.361	29.687
Nitromethane	24.712	24.151	23.594	23.033	22.476	21.915	21.358	20.797
Dichloromethane	24.468	23.910	23.356	22.798	22.244	21.685	21.131	20.573
Trichloromethane	28.949	28.338	27.732	27.122	26.516	25.905	25.300	24.689
Diethyl ether	28.580	27.973	27.372	26.766	26.165	25.558	24.957	24.350
THF	25.353	24.784	24.220	23.651	23.087	22.518	21.954	21.386
Ethyl Acetate	28.369	27.765	27.166	26.562	25.963	25.359	24.760	24.156
Acetone	21.061	20.543	20.028	19.509	18.995	18.476	17.961	17.443
Acetonitrile	17.432	16.956	16.483	16.007	15.534	15.058	14.585	14.109
Toluene	33.302	32.640	31.985	31.323	30.668	30.006	29.350	28.689
Benzene	30.409	29.781	29.159	28.531	27.909	27.280	26.658	26.030
Methanol	13.774	13.341	12.910	12.477	12.046	11.613	11.182	10.749
Ethanol	17.576	17.098	16.623	16.146	15.671	15.193	14.719	14.241
Cyclohexane	33.619	32.953	32.294	31.629	30.970	30.304	29.645	28.979
Poly(DVB)								
Solvents	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
n-Pentane	33.346	32.227	31.108	29.989	28.870	27.751	26.632	25.513
n-Hexane	46.154	44.431	42.708	40.985	39.262	37.539	35.816	34.093
n-Heptane	57.663	55.399	53.135	50.871	48.607	46.343	44.079	41.815
n-Octane	73.428	70.423	67.418	64.413	61.408	58.403	55.398	52.393
n-Nonane	83.316	79.845	76.374	72.903	69.432	65.961	62.490	59.019
Carbon tetrachloride	43.206	41.621	40.044	38.459	36.875	35.289	33.705	32.120
Nitromethane	15.962	15.659	15.362	15.059	14.758	14.455	14.153	13.850
Dichloromethane	15.265	14.995	14.731	14.461	14.192	13.922	13.653	13.383
Trichloromethane	27.886	27.022	26.164	25.300	24.437	23.573	22.710	21.846
Diethyl ether	26.945	26.126	25.312	24.493	23.674	22.854	22.035	21.216
THF	17.847	17.455	17.069	16.678	16.287	15.896	15.505	15.114

Ethyl Acetate	26.321	25.531	24.747	23.956	23.167	22.377	21.587	20.797
Acetone	11.580	11.383	11.187	10.989	10.792	10.594	10.397	10.199
Acetonitrile	12.238	12.021	11.805	11.588	11.371	11.154	10.937	10.719
Toluene	40.319	38.870	37.428	35.979	34.531	33.081	31.633	30.184
Benzene	32.122	31.059	30.002	28.939	27.877	26.813	25.751	24.687
Methanol	8.064	7.906	7.749	7.591	7.433	7.275	7.117	6.959
Ethanol	9.619	9.510	9.403	9.294	9.185	9.077	8.968	8.860
Cyclohexane	41.137	39.649	38.169	36.681	35.195	33.707	32.220	30.732

Table S4. Variations of the polar free energy $\Delta G_a^p(T)$ (in kJ/mol) of solvents adsorbed on the different copolymers as a function of temperature.

Poly(CDVB)-DCE								
T(K)	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
CCl4	0.505	0.503	0.501	0.500	0.498	0.496	0.495	0.493
Nitromethane	4.013	3.983	3.954	3.925	3.896	3.867	3.837	3.808
DCM	3.298	3.280	3.262	3.243	3.225	3.207	3.189	3.171
TCM	4.363	4.315	4.268	4.220	4.172	4.124	4.076	4.029
Diethyl ether	6.548	6.415	6.282	6.149	6.016	5.882	5.749	5.616
THF	6.118	5.981	5.845	5.709	5.573	5.436	5.300	5.164
Ethyl Acetate	6.154	6.020	5.886	5.752	5.618	5.484	5.350	5.216
Acetone	6.437	6.356	6.275	6.194	6.112	6.031	5.950	5.869
Acetonitrile	7.591	7.484	7.377	7.269	7.162	7.055	6.948	6.841
Toluene	1.833	1.804	1.776	1.747	1.718	1.689	1.660	1.632
Benzene	0.161	0.159	0.158	0.157	0.156	0.155	0.154	0.153
Methanol	15.160	15.012	14.864	14.716	14.568	14.420	14.272	14.124
Ethanol	13.339	13.182	13.026	12.870	12.714	12.558	12.401	12.245
Cyclohexane	0.787	0.784	0.781	0.778	0.775	0.772	0.769	0.766
Poly(CDVB)-NB								
T(K)	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
CCl4	0.526	0.503	0.501	0.500	0.498	0.496	0.495	0.493
Nitromethane	4.228	4.169	4.110	4.051	3.992	3.933	3.874	3.815
DCM	3.468	3.424	3.380	3.337	3.293	3.250	3.206	3.162
TCM	5.010	4.901	4.792	4.683	4.574	4.465	4.356	4.247
Diethyl ether	7.072	6.904	6.736	6.568	6.400	6.232	6.064	5.896

THF	6.634	6.467	6.300	6.133	5.966	5.799	5.632	5.465
Ethyl Acetate	6.828	6.649	6.470	6.291	6.112	5.933	5.754	5.575
Acetone	6.408	6.322	6.235	6.148	6.062	5.975	5.889	5.802
Acetonitrile	8.108	7.953	7.798	7.642	7.487	7.332	7.177	7.022
Toluene	1.966	1.926	1.886	1.846	1.806	1.766	1.726	1.686
Benzene	0.169	0.167	0.164	0.162	0.160	0.157	0.155	0.153
Methanol	16.059	15.805	15.550	15.296	15.041	14.787	14.532	14.278
Ethanol	14.181	13.935	13.689	13.443	13.198	12.952	12.706	12.460
Cyclohexane	0.825	0.815	0.806	0.797	0.788	0.778	0.769	0.760
Poly(DVB)-DCE								
T(K)	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
CCl4	0.489	0.491	0.493	0.494	0.496	0.498	0.499	0.501
Nitromethane	3.990	3.985	3.979	3.973	3.967	3.961	3.956	3.950
DCM	3.248	3.251	3.254	3.256	3.259	3.261	3.264	3.267
TCM	4.232	4.214	4.197	4.179	4.162	4.144	4.127	4.109
Diethyl ether	7.010	6.894	6.778	6.662	6.546	6.430	6.314	6.198
THF	6.620	6.497	6.374	6.251	6.128	6.005	5.882	5.758
Ethyl Acetate	6.551	6.435	6.319	6.203	6.086	5.970	5.854	5.738
Acetone	6.842	6.780	6.718	6.656	6.593	6.531	6.469	6.407
Acetonitrile	7.855	7.779	7.703	7.628	7.552	7.477	7.401	7.325
Toluene	1.915	1.894	1.872	1.850	1.828	1.806	1.785	1.763
Benzene	0.158	0.158	0.157	0.157	0.157	0.157	0.157	0.156
Methanol	15.300	15.232	15.163	15.095	15.026	14.958	14.890	14.821
Ethanol	13.614	13.521	13.429	13.336	13.243	13.151	13.058	12.965
Cyclohexane	0.768	0.770	0.773	0.775	0.777	0.780	0.782	0.784
Poly(DVB)-NB								
T(K)	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
CCl4	0.490	0.503	0.501	0.500	0.498	0.496	0.495	0.493
Nitromethane	4.011	3.994	3.977	3.961	3.944	3.927	3.910	3.893
DCM	3.264	3.257	3.250	3.243	3.236	3.229	3.222	3.215
TCM	4.221	4.199	4.177	4.155	4.133	4.111	4.089	4.067
Diethyl ether	7.079	6.954	6.829	6.703	6.578	6.453	6.327	6.202
THF	6.690	6.559	6.429	6.298	6.167	6.037	5.906	5.775
Ethyl Acetate	6.602	6.480	6.359	6.237	6.116	5.994	5.872	5.751
Acetone	6.938	6.855	6.772	6.688	6.605	6.521	6.438	6.355
Acetonitrile	7.916	7.825	7.734	7.642	7.551	7.460	7.369	7.278
Toluene	1.931	1.905	1.880	1.855	1.830	1.804	1.779	1.754
Benzene	0.160	0.160	0.159	0.158	0.158	0.157	0.157	0.156
Methanol	15.396	15.290	15.184	15.078	14.972	14.865	14.759	14.653
Ethanol	13.708	13.584	13.461	13.338	13.214	13.091	12.967	12.844
Cyclohexane	0.769	0.769	0.768	0.768	0.768	0.768	0.768	0.767

Poly(DVB)-DCE								
T(K)	313.15	323.15	333.15	343.15	353.15	363.15	373.15	383.15
CCl4	1.589	1.554	1.518	1.483	1.448	1.413	1.378	1.342
Nitromethane	13.495	13.108	12.722	12.336	11.949	11.563	11.176	10.790
Dichloromethane	14.688	14.568	14.448	14.328	14.208	14.088	13.968	13.848
TCM	12.915	12.628	12.342	12.056	11.770	11.484	11.197	10.911
Diethyl ether	26.676	25.464	24.253	23.041	21.830	20.618	19.407	18.195
THF	25.576	24.363	23.150	21.937	20.724	19.512	18.299	17.086
ethyl acetate	24.484	23.457	22.430	21.403	20.376	19.349	18.322	17.295
Acetone	26.633	25.493	24.354	23.214	22.075	20.936	19.796	18.657
Acetonitrile	26.631	25.491	24.352	23.212	22.073	20.934	19.794	18.655
toluene	7.278	6.882	6.486	6.090	5.694	5.298	4.902	4.506
benzene	0.518	0.507	0.496	0.485	0.474	0.463	0.452	0.441
Methanol	53.038	51.323	49.609	47.894	46.180	44.466	42.751	41.037
ethanol	36.465	34.655	32.845	31.035	29.225	27.415	25.605	23.795
cyclohexane	1.978	1.933	1.888	1.843	1.798	1.753	1.708	1.663

Poly(CDVB)-DCE				
Solvents	DGa(T)	DSa	DHa	Ta_max
n-Pentane	y = -0.0577x + 46.939	0.0577	46.939	813.50
n-Hexane	y = -0.0654x + 53.934	0.0654	53.934	824.68
n-Heptane	y = -0.0732x + 60.928	0.0732	60.928	832.35
n-Octane	y = -0.0809x + 67.923	0.0809	67.923	839.59
n-Nonane	y = -0.0887x + 74.917	0.0887	74.917	844.61
Carbon tetrachloride	y = -0.0639x + 52.973	0.0639	52.973	829.00
Nitromethane	y = -0.0501x + 42.4	0.0501	42.4	846.31
Dichloromethane	y = -0.0486x + 40.962	0.0486	40.962	842.84
Trichloromethane	y = -0.0592x + 49.875	0.0592	49.875	842.48
Diethyl ether	y = -0.0672x + 54.199	0.0672	54.199	806.53
THF	y = -0.062x + 48.886	0.062	48.886	788.48
Ethyl Acetate	y = -0.0669x + 53.494	0.0669	53.494	799.61
Acetone	y = -0.0491x + 40.834	0.0491	40.834	831.65
Acetonitrile	y = -0.0454x + 37.165	0.0454	37.165	818.61
Toluene	y = -0.0649x + 53.54	0.0649	53.54	824.96
Benzene	y = -0.0571x + 46.512	0.0571	46.512	814.57
Methanol	y = -0.0433x + 40.37	0.0433	40.37	932.33

Ethanol	y = -0.0506x + 44.688	0.0506	44.688	883.16
Cyclohexane	y = -0.0628x + 52.145	0.0628	52.145	830.33
	Poly(CDVB)-NB			
Solvents	DGa(T)	DSa	DHa	Ta_max
n-Pentane	y = -0.0583x + 47.222	0.0583	47.222	809.98
n-Hexane	y = -0.0664x + 54.347	0.0664	54.347	818.48
n-Heptane	y = -0.0744x + 61.471	0.0744	61.471	826.22
n-Octane	y = -0.0825x + 68.596	0.0825	68.596	831.47
n-Nonane	y = -0.0905x + 75.72	0.0905	75.72	836.69
Carbon tetrachloride	y = -0.065x + 53.417	0.065	53.417	821.80
Nitromethane	y = -0.0534x + 43.665	0.0534	43.665	817.70
Dichloromethane	y = -0.0514x + 42.026	0.0514	42.026	817.63
Trichloromethane	y = -0.0659x + 52.662	0.0659	52.662	799.12
Diethyl ether	y = -0.0712x + 56.043	0.0712	56.043	787.12
THF	y = -0.0653x + 50.492	0.0653	50.492	773.23
Ethyl Acetate	y = -0.0719x + 55.794	0.0719	55.794	775.99
Acetone	y = -0.0496x + 40.981	0.0496	40.981	826.23
Acetonitrile	y = -0.05x + 39.085	0.05	39.085	781.70
Toluene	y = -0.0668x + 54.388	0.0668	54.388	814.19
Benzene	y = -0.0579x + 46.838	0.0579	46.838	808.95
Methanol	y = -0.0534x + 44.404	0.0534	44.404	831.54
Ethanol	y = -0.0593x + 48.241	0.0593	48.241	813.51
Cyclohexane	y = -0.0642x + 52.748	0.0642	52.748	821.62
	Poly(DVB)-DCE			
Solvents	DGa(T)	DSa	DHa	Ta_max
n-Pentane	y = -0.0652x + 50.725	0.0652	50.725	777.99
n-Hexane	y = -0.069x + 56.142	0.069	56.142	813.65
n-Heptane	y = -0.0727x + 61.558	0.0727	61.558	846.74
n-Octane	y = -0.0765x + 66.975	0.0765	66.975	875.49
n-Nonane	y = -0.0802x + 72.392	0.0802	72.392	902.64
Carbon tetrachloride	y = -0.068x + 55.449	0.068	55.449	815.43
Nitromethane	y = -0.0607x + 47.575	0.0607	47.575	783.77
Dichloromethane	y = -0.0597x + 46.277	0.0597	46.277	775.16
Trichloromethane	y = -0.0654x + 53.266	0.0654	53.266	814.46
Diethyl ether	y = -0.075x + 58.665	0.075	58.665	782.20
THF	y = -0.073x + 54.634	0.073	54.634	748.41
Ethyl Acetate	y = -0.0748x + 57.967	0.0748	57.967	774.96

Acetone	y = -0.0633x + 47.807	0.0633	47.807	755.24
Acetonitrile	y = -0.0617x + 44.9	0.0617	44.9	727.71
Toluene	y = -0.0695x + 56.271	0.0695	56.271	809.65
Benzene	y = -0.0649x + 50.375	0.0649	50.375	776.19
Methanol	y = -0.0579x + 47.73	0.0579	47.73	824.35
Ethanol	y = -0.0635x + 51.362	0.0635	51.362	808.85
Cyclohexane	y = -0.0673x + 54.763	0.0673	54.763	813.71
	Poly(DVB)-NB			
Solvents	DGa(T)	DSa	DHa	Ta_max
n-Pentane	y = -0.063x + 50.564	0.063	50.564	802.60
n-Hexane	y = -0.0683x + 56.731	0.0683	56.731	830.61
n-Heptane	y = -0.0735x + 62.897	0.0735	62.897	855.74
n-Octane	y = -0.0788x + 69.064	0.0788	69.064	876.45
n-Nonane	y = -0.084x + 75.23	0.084	75.23	895.60
Carbon tetrachloride	y = -0.0672x + 55.925	0.0672	55.925	832.22
Nitromethane	y = -0.0576x + 46.759	0.0576	46.759	811.79
Dichloromethane	y = -0.0563x + 45.37	0.0563	45.37	805.86
Trichloromethane	y = -0.063x + 52.908	0.063	52.908	839.81
Diethyl ether	y = -0.0729x + 58.496	0.0729	58.496	802.41
THF	y = -0.0697x + 53.875	0.0697	53.875	772.96
Ethyl Acetate	y = -0.0723x + 57.615	0.0723	57.615	796.89
Acetone	y = -0.06x + 46.793	0.06	46.793	779.88
Acetonitrile	y = -0.0566x + 43.065	0.0566	43.065	760.87
Toluene	y = -0.0684x + 56.656	0.0684	56.656	828.30
Benzene	y = -0.0626x + 50.166	0.0626	50.166	801.37
Methanol	y = -0.0538x + 46.025	0.0538	46.025	855.48
Ethanol	y = -0.06x + 50.063	0.06	50.063	834.38
Cyclohexane	y = -0.0663x + 55.138	0.0663	55.138	831.64
	Poly(DVB)			
Solvents	DGa(T)	DSa	DHa	Ta_max
n-Pentane	y = -0.1119x + 68.387	0.1119	68.387	611.14
n-Hexane	y = -0.1723x + 100.11	0.1723	100.11	581.02
n-Heptane	y = -0.2264x + 128.56	0.2264	128.56	567.84
n-Octane	y = -0.3005x + 167.53	0.3005	167.53	557.50
n-Nonane	y = -0.3471x + 192.01	0.3471	192.01	553.18
Carbon tetrachloride	y = -0.1619x + 95.491	0.1619	95.491	589.81
Nitromethane	y = -0.0688x + 51.004	0.0688	51.004	741.34

Dichloromethane	y = -0.0389x + 42.13	0.0389	42.13	1083.03
Trichloromethane	y = -0.1149x + 76.78	0.1149	76.78	668.23
Diethyl ether	y = -0.203x + 117.19	0.203	117.19	577.29
THF	y = -0.1603x + 93.628	0.1603	93.628	584.08
Ethyl Acetate	y = -0.1816x + 107.68	0.1816	107.68	592.95
Acetone	y = -0.1337x + 80.073	0.1337	80.073	598.90
Acetonitrile	y = -0.1356x + 81.345	0.1356	81.345	599.89
Toluene	y = -0.1844x + 105.34	0.1844	105.34	571.26
Benzene	y = -0.1073x + 66.244	0.1073	66.244	617.37
Methanol	y = -0.1872x + 119.73	0.1872	119.73	639.58
Ethanol	y = -0.1919x + 106.16	0.1919	106.16	553.20
Cyclohexane	y = -0.1531x + 91.07	0.1531	91.07	594.84

We found that $\Delta G_a^0(T) = \Delta H_a^0 - T\,\Delta S_a^0$ is verified for all adsorbed solvents with a strong linearity of

$\Delta H_a^0 = \Delta H_a^0(\Delta S_a^0 = 0) + T_{int.}\,\Delta S_a^0$

The values of ΔH_a^0 and ΔS_a^0 are given below for n-alkanes, polar solvents and all solvents, and for the various copolymers.

Poly(CDVB)-DCE				
S(m2/g)	1317.8			
Parameters	DHa=f(DSa) (kJ/mol)	Tint.	DHa(0K)	R^2
n-alkanes	DHa = 897.68 DSa- 4.7015	897.68	-4.7015	0.9998
Polar solvents	DHa = 684.59 DSa+ 8.3187	684.59	8.3187	0.9484
All solvents	DHa = 796.82 DSa+ 2.1456	796.82	2.1456	0.974
Poly(CDVB)-NB				
S(m2/g)	1268.6			
Parameters	DHa=f(DSa) (kJ/mol)	Tint.	DHa(0K)	R^2
n-alkanes	DHa = 885.03 DSa- 4.3925	885.03	-4.3925	1
Polar solvents	DHa = 731.8 DSa+ 4.4427	731.8	4.4427	0.9668
All solvents	DHa = 839.01 DSa- 1.7511	839.01	-1.7511	0.9812
Poly(DVB)-DCE				
S(m2/g)	1379.5			
Parameters	DHa=f(DSa) (kJ/mol)	Tint.	DHa(0K)	R^2
n-alkanes	DHa = 1444.4 DSa- 43.48	1444.4	-43.48	1
Polar solvents	DHa = 751.88 DSa+ 2.2701	751.88	2.2701	0.828

All solvents	DHa = 1054.3 DSa- 17.02	1054.3	-17.02	0.858
Poly(DVB)-NB				
S(m2/g)	1236.3			
Parameters	DHa=f(DSa) (kJ/mol)	Tint.	DHa(0K)	R^2
n-alkanes	DHa = 1174.6 DSa- 23.456	1174.6	-23.456	1
Polar solvents	DHa = 777.23 DSa+ 2.1205	777.23	2.1205	0.8937
All solvents	DHa = 989.02 DSa- 10.905	989.02	-10.905	0.9371
Poly(DVB)				
S(m2/g)	775.4			
Parameters	DHa=f(DSa) (kJ/mol)	Tint.	DHa(0K)	R^2
n-alkanes	DHa = 525.67 DSa+ 9.5523	525.67	9.5523	1
Polar solvents	DHa = 477.3 DSa+ 19.177	477.3	19.177	0.969
All solvents	DHa = 501.11 DSa+ 15.607	501.11	15.607	0.9891

DHa(0K)				
Copolymer	S(m2/g)	All solvents	n-alkanes	Polar solvents
poly(DVB)	775.4	15.607	9.5523	19.177
poly(DVB)-NB	1236.3	-10.905	-23.456	2.1205
poly(CDVB)-NB	1268.6	-1.7511	-4.3925	4.4427
poly(CDVB)-DCE	1317.8	2.1456	-4.7015	8.3187
poly(DVB)-DCE	1379.5	-17.02	-43.48	2.2701
Equation DHa(0K, S)		DHa(0K) = -0.043 S + 49.071	DHa(0K) = -0.0597 S + 58.058	DHa(0K) = -0.0267 + 39.228
R^2		0.6815	0.4898	0.8204
Tint.				
Copolymer	S(m2/g)	All solvents	n-alkanes	Polar solvents
poly(DVB)	775.4	501.11	525.67	477.3
poly(DVB)-NB	1236.3	989.02	1174.6	777.23
poly(CDVB)-NB	1268.6	839.01	885.03	731.8
poly(CDVB)-DCE	1317.8	796.82	897.68	684.59
poly(DVB)-DCE	1379.5	1054.3	1444.4	751.88
Equation Tint(S)		Tint. = 0.7857 S - 103.29	Tint = 1.1504 S - 389.84	Tint = 0.4593 S + 135.47
R^2		0.7762	0.6464	0.8404

For polar adsorption parameters, I obtained the following results:

Copolymer	Equation of $\Delta H_a^p (\Delta S_a^p)$	$\Delta H_a^p (\Delta S_a^p = 0)$	R^2
Poly(DVB)	ΔH_a^p = 528.87 ΔS_a^p + 3.592	3.592	0.973
Poly(DVB)-NB	ΔH_a^p = 982.98 ΔS_a^p + 1.5715	1.5715	0.7866
Poly(CDVB)-NB	ΔH_a^p = 831.17 ΔS_a^p + 0.1779	0.1779	0.9579
Poly(CDVB)-DCE	ΔH_a^p = 950.26 ΔS_a^p + 0.7823	0.7823	0.8683
Poly(DVB)-DCE	ΔH_a^p = 934.02 ΔS_a^p + 2.5426	2.5426	0.6466
	Equation of $\Delta H_a^p (\Delta S_a^p = 0)$, in S	$\Delta H_a^p (\Delta S_a^p = 0)$ = -0.0037 S + 6.203	
	R^2	0.4353	

Copolymer	$T_{int.}^{p}$ (S) (K)
Poly(DVB)	528.87
Poly(DVB)-NB	982.98
Poly(CDVB)-NB	831.17
Poly(CDVB)-DCE	950.26
Poly(DVB)-DCE	934.02
Equations of $T_{int.}^{p}$ (S) in S	Tp int = 0.7175S - 12.318
R^2	0.8655

I studied the effect of SSA of copolymers on ΔH_a^0 and ΔS_a^0 and on ΔH_a^p and ΔS_a^p. I found the following linear equations (Table 10 for total adsorption parameters and Table 11 for polar contribution).

A deeper analysis is really welcomed.

Table 10. Results on the total adsorption parameters:

Solvents	ΔH_a^0 (S)	R^2	ΔS_a^0 (S)	R^2	$T_{int.}^{0}$ (S)	R^2
n-Pentane	DHa = -0.0351 S + 94.688	0.8990	DSa = -0.00009 S + 0.17997	0.9116	Ta = 0.335 S + 362.765	0.8795
n-Hexane	DHa = -0.0811 S + 161.26	0.9483	DSa = -0.00019 S + 0.31501	0.9460	Ta = 0.431 S + 258.410	0.9268
n-Heptane	DHa = -0.1213 S + 220.09	0.9555	DSa = -0.00028 S + 0.43523	0.9525	Ta = 0.492 S + 197.670	0.9383
n-Octane	DHa = -0.1805 S + 303.78	0.9572	DSa = -0.00040 S + 0.60264	0.9546	Ta = 0.544 S + 147.537	0.9387
n-Nonane	DHa = -0.2135 S + 353.24	0.9586	DSa = -0.00047 S + 0.70514	0.9560	Ta = 0.586 S + 113.790	0.9318
Carbon tetrachloride	DHa = -0.0743 S + 151.45	0.9461	DSa = -0.00017 S + 0.29210	0.9447	Ta = 0.420 S + 275.400	0.9261
Nitromethane	DHa = -0.0103 S + 58.593	0.5343	DSa = -0.00002 S + 0.08570	0.5955	Ta = 0.125 S + 650.441	0.5784
Dichloromethane	DHa = 0.0032 S + 39.521	0.1106	DSa = 0.00003 S + 0.01683	0.7402	Ta = -0.502 S + 1465.55	0.9482
Trichloromethane	DHa = -0.0446 S + 110.37	0.9386	DSa = -0.00009 S + 0.18492	0.9346	Ta = 0.279 S + 459.479	0.8723

Diethyl ether	DHa = -0.109 S + 199.29	0.9440	DSa = -0.00024 S + 0.38138	0.9433	Ta = 0.389 S + 286.677	0.9182
THF	DHa = -0.075 S + 149.95	0.9259	DSa = -0.00017 S + 0.28532	0.9273	Ta = 0.330 S + 338.433	0.8834
Ethyl Acetate	DHa = -0.093 S + 177.7	0.9428	DSa = -0.00020 S + 0.33100	0.9417	Ta = 0.346 S + 334.061	0.9103
Acetone	DHa = -0.0643 S + 128.23	0.8936	DSa = -0.00014 S + 0.23813	0.8977	Ta = 0.350 S + 340.405	0.7915
Acetonitrile	DHa = -0.0721 S + 135.35	0.9044	DSa = -0.00015 S + 0.24537	0.9009	Ta = 0.302 S + 376.927	0.7528
Toluene	DHa = -0.0907 S + 173.68	0.9476	DSa = -0.00021 S + 0.34336	0.9457	Ta = 0.444 S + 238.990	0.9258
Benzene	DHa = -0.0319 S + 90.142	0.8888	DSa = -0.00008 S + 0.16966	0.9051	Ta = 0.322 S + 378.553	0.8728
Methanol	DHa = -0.1354 S + 221.56	0.9382	DSa = -0.00024 S + 0.37042	0.9371	Ta = 0.399 S + 339.987	0.7938
Ethanol	DHa = -0.1038 S + 184.23	0.9355	DSa = -0.00024 S + 0.37310	0.9392	Ta = 0.509 S + 172.023	0.8929
Cyclohexane	DHa = -0.0676 S + 142	0.9448	DSa = -0.00016 S + 0.27245	0.9434	Ta = 0.410 S + 288.013	0.9232

Table 12. Results on the polar adsorption parameters:

Polar solvent	ΔH_a^p (S)	R^2	ΔS_a^p (S)	R^2	$T_{int.}^{p}$ (S)	R^2
CCl4	ΔHp=-0.0039S + 5.6613	0.9598	ΔSp=-0.0062S + 8.269	0.955	Tp=3.1031S - 1730.7	0.4959
Nitromethane	ΔHp=-0.0377S + 54.111	0.9597	ΔSp=-0.0657S + 88.519	0.9604	Tp=1.4221S - 468.08	0.6784
CH2Cl2	ΔHp=-0.0267S + 38.66	0.96	ΔSp=-0.0104S + 15.175	0.7243	Tp=-1.81S + 3985.9	0.4869
CHCl3	ΔHp=-0.0292S + 44.059	0.9403	ΔSp=-0.0441S + 62.314	0.8959	Tp=0.5132S + 346.04	0.34
Diethyl ether	ΔHp=-0.097S + 137.8	0.9554	ΔSp=-0.1954S + 268.71	0.9564	Tp=0.5716S + 90.479	0.8236
THF	ΔHp=-0.0956S + 135.65	0.9548	ΔSp=-0.1949S + 268.38	0.9556	Tp=0.4959S + 141.73	0.8471
Ethyl acetate	ΔHp=-0.0832S + 119.45	0.956	ΔSp=-0.1617S + 224.88	0.9565	Tp=0.4725S + 185.53	0.7377
Acetone	ΔHp=-0.0965S + 135.07	0.9544	ΔSp=-0.1927S + 259.4	0.9571	Tp=1.2446S - 435.1	0.9061
Acetonitrile	ΔHp=-0.0929S + 132.46	0.9575	ΔSp=-0.1779S + 243	0.9592	Tp=1.0388S - 249.18	0.6873
Toluene	ΔHp=-0.0306S + 42.776	0.9556	ΔSp=-0.0667S + 89.947	0.9565	Tp=0.9876S - 276.53	0.7823
Benzene	ΔHp=-0.0012S + 1.7854	0.9603	ΔSp=-0.0018S + 2.4957	0.9557	Tp=1.2579S - 221.98	0.5827
Methanol	ΔHp=-0.1579S + 226.15	0.959	ΔSp=-0.287S + 388.91	0.9606	Tp=1.0487S - 206.92	0.7703
Ethanol	ΔHp=-0.1358S + 195.83	0.959	ΔSp=-0.3019S + 409.45	0.9598	Tp=1.0235S - 289.74	0.8796
Cyclohexane	ΔHp=-0.0046S + 6.8982	0.9586	ΔSp=-0.0079S + 10.507	0.9475	Tp=2.7555S - 1459.8	0.516