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SUPPLEMENTARY MATERIAL TO
**Volumetric, viscometric and optical study of molecular
interactions in binary mixtures of diethyl malonate
with ketones at 303.15, 308.15 and 313.15 K**

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TABLE I-S. Comparison of experimental densities, ρ , viscosities, η , and refractive indices, n_D , of the pure components with the available literature values at 303.15, 308.15 and 313.15 K

Liquid	<i>T</i> / K	ρ / g cm ⁻³		η / mPa s		n_D	
		Exp.	Lit. ^a	Exp.	Lit.	Exp.	Lit.
Diethyl Malonate	303.15	1.0443	1.0446 ⁴³	1.728	1.721 ¹⁷	1.4095	1.4097 ⁴³
	308.15	1.0387	1.0388 ¹⁴	1.570	1.602 ¹⁴	1.4076	1.4085 ¹⁴
	313.15	1.0336	–	1.456	–	1.4055	–
Acetophenone	303.15	1.0199	1.0194 ⁴⁴	1.518	1.511 ⁴³	1.5294	1.5297 ⁴³
	308.15	1.0169	1.0172 ⁴³	1.378	–	1.5270	–
	313.15	1.0135	1.0139 ⁴³	1.291	–	1.5250	–
Cyclopentanone	303.15	0.9385	0.9390 ⁴³	0.999	0.995 ⁴³	1.4335	–
	308.15	0.9339	–	0.927	–	1.4310	–
	313.15	0.9290	–	0.865	–	1.4290	–
Cyclohexanone	303.15	0.9377	0.9376 ⁴³	1.816	1.810 ⁴³	1.4465	1.4463 ⁴⁵
	308.15	0.9328	–	1.657	1.635 ⁴⁵	1.4440	1.4439 ⁴⁵
	313.15	0.9282	–	1.542	–	1.4420	–
3-Pentanone	303.15	0.8057	0.8054 ⁴³	0.429	0.424 ⁴³	1.3879	1.3878 ⁴³
	308.15	0.8017	–	0.397	–	1.3857	–
	313.15	0.7977	–	0.388	0.380 ⁴³	1.3835	–

^aReference numbers relate to the Reference list in the original paper: *J. Serb. Chem. Soc.* 77 (4) (2012) 507–521

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TABLE II-S. Values of the density (ρ), excess volume (V^E), viscosity (η), and refractive index (n_D) for the binary liquid mixtures

x_1	$\rho / \text{g cm}^{-3}$	$V^E / \text{cm}^3 \text{ mol}^{-1}$	$\eta / \text{mPa s}$	n_D
Diethyl malonate (1) + acetophenone (2)				
$T = 303.15 \text{ K}$				
0.0000	1.0199	–	1.518	1.5294
0.0812	1.0222	0.026	1.564	1.5166
0.1401	1.0239	0.032	1.587	1.5078
0.2516	1.0269	0.053	1.626	1.4921
0.3486	1.0294	0.066	1.655	1.4793
0.4322	1.0315	0.070	1.677	1.4689
0.5248	1.0337	0.078	1.697	1.4579
0.6335	1.0363	0.067	1.714	1.4456
0.7384	1.0387	0.053	1.727	1.4345
0.8256	1.0406	0.042	1.732	1.4257
0.9278	1.0427	0.032	1.738	1.4160
1.0000	1.0443	–	1.728	1.4095
$T = 308.15 \text{ K}$				
0.0000	1.0169	–	1.378	1.5270
0.0812	1.0189	0.030	1.412	1.5143
0.1401	1.0204	0.039	1.430	1.5056
0.2516	1.0230	0.068	1.461	1.4900
0.3486	1.0253	0.072	1.487	1.4773
0.4322	1.0271	0.086	1.506	1.4669
0.5248	1.0291	0.089	1.524	1.4560
0.6335	1.0314	0.083	1.540	1.4438
0.7384	1.0336	0.062	1.550	1.4327
0.8256	1.0353	0.052	1.559	1.4239
0.9278	1.0373	0.025	1.567	1.4142
1.0000	1.0387	–	1.570	1.4076
$T = 313.15 \text{ K}$				
0.0000	1.0135	–	1.291	1.5250
0.0812	1.0153	0.034	1.315	1.5123
0.1401	1.0166	0.052	1.334	1.5035
0.2516	1.0190	0.080	1.363	1.4880
0.3486	1.0210	0.099	1.384	1.4753
0.4322	1.0227	0.108	1.400	1.4649
0.5248	1.0245	0.117	1.416	1.4540
0.6335	1.0267	0.101	1.430	1.4418
0.7384	1.0287	0.087	1.440	1.4306
0.8256	1.0304	0.058	1.446	1.4218
0.9278	1.0323	0.025	1.454	1.4121
1.0000	1.0336	–	1.456	1.4055

TABLE II-S. Continued

x_1	$\rho / \text{g cm}^{-3}$	$V^E / \text{cm}^3 \text{ mol}^{-1}$	$\eta / \text{mPa s}$	n_D
Diethyl malonate (1) + cyclopentanone(2)				
$T = 303.15 \text{ K}$				
0.0000	0.9385	–	0.999	1.4335
0.0758	0.9514	0.012	1.061	1.4294
0.1566	0.9637	0.032	1.125	1.4257
0.2437	0.9756	0.054	1.193	1.4223
0.3678	0.9906	0.078	1.288	1.4180
0.4601	1.0006	0.079	1.356	1.4157
0.5678	1.0111	0.078	1.433	1.4137
0.6456	1.0180	0.077	1.487	1.4127
0.7598	1.0273	0.067	1.565	1.4116
0.8459	1.0338	0.044	1.624	1.4108
0.9215	1.0391	0.026	1.675	1.4101
1.0000	1.0443	–	1.728	1.4095
$T = 308.15 \text{ K}$				
0.0000	0.9339	–	0.927	1.4310
0.0758	0.9467	0.010	0.981	1.4273
0.1566	0.9589	0.029	1.038	1.4240
0.2437	0.9708	0.039	1.098	1.4207
0.3678	0.9857	0.057	1.180	1.4169
0.4601	0.9955	0.070	1.240	1.4147
0.5678	1.0059	0.068	1.307	1.4126
0.6456	1.0128	0.059	1.355	1.4114
0.7598	1.0220	0.049	1.425	1.4101
0.8459	1.0284	0.031	1.477	1.4092
0.9215	1.0336	0.019	1.524	1.4084
1.0000	1.0387	–	1.570	1.4076
$T = 313.15 \text{ K}$				
0.0000	0.9290	–	0.865	1.4290
0.0758	0.9418	0.008	0.913	1.4256
0.1566	0.9540	0.024	0.964	1.4223
0.2437	0.9659	0.031	1.018	1.4193
0.3678	0.9808	0.045	1.094	1.4157
0.4601	0.9906	0.055	1.150	1.4135
0.5678	1.0010	0.051	1.213	1.4113
0.6456	1.0079	0.039	1.257	1.4100
0.7598	1.0171	0.026	1.321	1.4084
0.8459	1.0234	0.019	1.369	1.4073
0.9215	1.0286	0.006	1.412	1.4064
1.0000	1.0336	–	1.456	1.4055

TABLE II-S. Continued

x_1	$\rho / \text{g cm}^{-3}$	$V^E / \text{cm}^3 \text{ mol}^{-1}$	$\eta / \text{mPa s}$	n_D
Diethyl malonate (1) + cyclohexanone (2)				
$T = 303.15 \text{ K}$				
0.0000	0.9377	–	1.816	1.4465
0.0713	0.9490	–0.059	1.790	1.4422
0.1285	0.9572	–0.065	1.760	1.4389
0.2155	0.9684	–0.013	1.727	1.4340
0.3058	0.9789	0.075	1.694	1.4294
0.4070	0.9899	0.157	1.665	1.4251
0.5085	1.0003	0.211	1.631	1.4214
0.6055	1.0099	0.211	1.625	1.4185
0.7125	1.0201	0.162	1.635	1.4157
0.8065	1.0286	0.098	1.667	1.4136
0.9118	1.0375	0.029	1.706	1.4114
1.0000	1.0443	–	1.728	1.4095
$T = 308.15 \text{ K}$				
0.0000	0.9328	–	1.657	1.4440
0.0713	0.9440	–0.056	1.623	1.4401
0.1285	0.9520	–0.045	1.591	1.4370
0.2155	0.9631	0.012	1.553	1.4325
0.3058	0.9735	0.104	1.515	1.4281
0.4070	0.9844	0.191	1.487	1.4238
0.5085	0.9949	0.224	1.458	1.4201
0.6055	1.0045	0.216	1.454	1.4170
0.7125	1.0146	0.171	1.465	1.4141
0.8065	1.0230	0.113	1.497	1.4119
0.9118	1.0319	0.035	1.533	1.4095
1.0000	1.0387	–	1.570	1.4076
$T = 313.15 \text{ K}$				
0.0000	0.9282	–	1.542	1.4420
0.0713	0.9392	–0.040	1.495	1.4380
0.1285	0.9471	–0.020	1.463	1.4348
0.2155	0.9582	0.031	1.423	1.4304
0.3058	0.9686	0.118	1.386	1.4263
0.4070	0.9795	0.199	1.352	1.4222
0.5085	0.9899	0.239	1.333	1.4185
0.6055	0.9994	0.239	1.330	1.4154
0.7125	1.0095	0.188	1.341	1.4124
0.8065	1.0179	0.125	1.371	1.4100
0.9118	1.0267	0.055	1.406	1.4075
1.0000	1.0336	–	1.456	1.4055

TABLE II-S. Continued

x_1	$\rho / \text{g cm}^{-3}$	$V^E / \text{cm}^3 \text{ mol}^{-1}$	$\eta / \text{mPa s}$	n_D
Diethyl malonate (1) + 3-pentanone (2)				
$T = 303.15 \text{ K}$				
0.0000	0.8057	–	0.429	1.3879
0.0736	0.8302	–0.011	0.488	1.3903
0.1356	0.8497	–0.022	0.535	1.3923
0.2458	0.8820	–0.037	0.633	1.3956
0.3326	0.9055	–0.044	0.725	1.3979
0.4124	0.9258	–0.053	0.814	1.3998
0.5158	0.9503	–0.051	0.940	1.4020
0.6256	0.9744	–0.046	1.094	1.4041
0.7456	0.9987	–0.034	1.273	1.4061
0.8626	1.0206	–0.021	1.475	1.4078
0.9415	1.0345	–0.015	1.627	1.4088
1.0000	1.0443	–	1.728	1.4095
$T = 308.15 \text{ K}$				
0.0000	0.8017	–	0.397	1.3857
0.0736	0.8261	–0.019	0.450	1.3884
0.1356	0.8456	–0.046	0.493	1.3905
0.2458	0.8777	–0.063	0.580	1.3939
0.3326	0.9011	–0.078	0.658	1.3962
0.4124	0.9212	–0.078	0.742	1.3981
0.5158	0.9456	–0.085	0.859	1.4003
0.6256	0.9695	–0.076	0.999	1.4023
0.7456	0.9936	–0.060	1.162	1.4043
0.8626	1.0153	–0.040	1.341	1.4060
0.9415	1.0290	–0.020	1.478	1.4070
1.0000	1.0387	–	1.570	1.4076
$T = 313.15 \text{ K}$				
0.0000	0.7977	–	0.388	1.3835
0.0736	0.8220	–0.021	0.437	1.3863
0.1356	0.8414	–0.047	0.477	1.3886
0.2458	0.8735	–0.085	0.560	1.3921
0.3326	0.8968	–0.101	0.633	1.3945
0.4124	0.9169	–0.114	0.708	1.3965
0.5158	0.9411	–0.110	0.812	1.3987
0.6256	0.9649	–0.103	0.938	1.4007
0.7456	0.9889	–0.088	1.089	1.4025
0.8626	1.0104	–0.054	1.250	1.4041
0.9415	1.0240	–0.028	1.375	1.4049
1.0000	1.0336	–	1.456	1.4055