

Liquid Polymer Eutectic Mixture for Integrated Extractive-Oxidative Desulfurization of Fuel Oil: An Optimization study via Response Surface Methodology

(Supplementary Informations)

Table 1. Dynamic viscosity of TBAC:PEG at different mole ratios and temperature (Standard uncertainties, u are $u(\eta) = \pm 0.32\%$ mPa.s, $u(T) = \pm 0.01$ K).

T(K)	TBAC-PEG-1-1	TBAC-PEG-1-2	TBAC-PEG-1-3	TBAC-PEG-1-4
293.15	478.007	293.610	221.273	176.233
303.15	255.113	166.337	127.560	101.630
313.15	147.737	101.090	78.833	62.827
323.15	91.530	65.457	51.968	41.446
333.15	60.098	44.699	35.936	28.721
343.15	41.422	31.744	25.946	20.820
353.15	29.717	23.449	19.397	15.629
363.15	22.073	17.874	14.937	12.113

Table 2. Solutions for optimizing EE generated by the desirability tool.

Number	Mole Ratio	Volume Ratio	Temperature	Extraction Efficiency	Desirability	
1	1.000	1.000	25.000	79.014	0.940	Selected
2	1.007	1.000	25.000	78.991	0.939	
3	1.000	1.000	25.175	78.970	0.938	
4	1.000	0.983	25.000	78.509	0.937	
5	1.000	1.000	25.398	78.913	0.937	
6	1.024	1.000	25.000	78.938	0.936	
7	1.037	1.000	25.000	78.898	0.933	
8	1.000	0.957	25.000	77.725	0.932	
9	1.051	1.000	25.000	78.858	0.931	
10	1.000	1.000	26.105	78.733	0.931	
11	1.000	1.000	26.437	78.642	0.928	
12	1.088	1.000	25.001	78.744	0.924	
13	1.096	1.000	25.000	78.722	0.923	
14	1.000	1.000	27.039	78.497	0.922	
15	1.000	1.000	27.425	78.400	0.919	
16	1.133	1.000	25.000	78.614	0.916	
17	1.000	0.876	25.000	75.116	0.916	

18	1.000	0.853	25.000	74.349	0.911
19	1.000	1.000	28.890	78.035	0.906
20	1.195	1.000	25.000	78.439	0.905
21	1.000	1.000	29.928	77.778	0.897
22	1.068	1.000	29.262	77.724	0.891
23	1.287	1.000	25.000	78.197	0.888
24	1.000	0.742	25.000	70.292	0.884
25	1.258	0.931	25.000	76.167	0.881
26	1.000	0.726	25.000	69.676	0.880
27	1.366	1.000	25.061	77.984	0.872
28	1.000	1.000	32.888	77.062	0.870
29	1.000	0.690	25.000	68.240	0.870
30	1.000	0.660	25.000	67.006	0.861
31	1.521	1.000	25.000	77.657	0.843
32	1.008	0.601	25.000	64.444	0.841
33	1.402	0.739	25.000	69.013	0.812
34	1.000	0.495	25.000	59.610	0.805
35	1.622	0.841	25.000	72.316	0.793
36	1.000	1.000	43.640	74.617	0.764
37	2.048	1.000	25.000	76.864	0.724