Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information for: Critical Fluctuations in Liquid-Liquid Extraction Organic Phases Controlled by Extractant and Diluent Molecular Structure

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Table S1: The concentrations and volume fractions (φ_E) for each mixture are provided for reference.

Extractant	conc. [mol/L]	vol. frac., φ_E
DMDBPMA	0.30	0.10
DMDBPMA	0.60	0.20
DMDBPMA	0.90	0.30
DMDBPMA	1.20	0.40
DMDBPMA	1.50	0.50
DMDBPMA	1.79	0.60
DMDBPMA	2.09	0.70
DMDBPMA	2.39	0.80
DMDBPMA	2.69	0.90
DMDBPMA	2.99	1.00
DMDBTDMA	0.20	0.10
DMDBTDMA	0.30	0.15
DMDBTDMA	0.40	0.19
DMDBTDMA	0.50	0.24
DMDBTDMA	0.60	0.29
DMDBTDMA	0.80	0.39
DMDBTDMA	1.00	0.48
DMDBTDMA	1.66	0.80
DMDBTDMA	2.07	1.00

Table S2: Compositions for the molecular dynamics simulations are given in concentration, extractant mole fraction χ_{M}, and extractant volume fraction φ_{E}, along with the number of DMDBPMA and dodecane molecules and periodic box sizes.

DMDBPMA				*n*-Dodecane	Simulation box
conc. [mol/L]	χ_{M}	φ_E	num.	num.	length [Å]
0.25	0.06	0.08	151	2430	98.9
0.54	0.13	0.18	325	2174	99.1
1.25	0.33	0.42	753	1545	99.4
3.03	1.00	1.00	1825	0	100.6

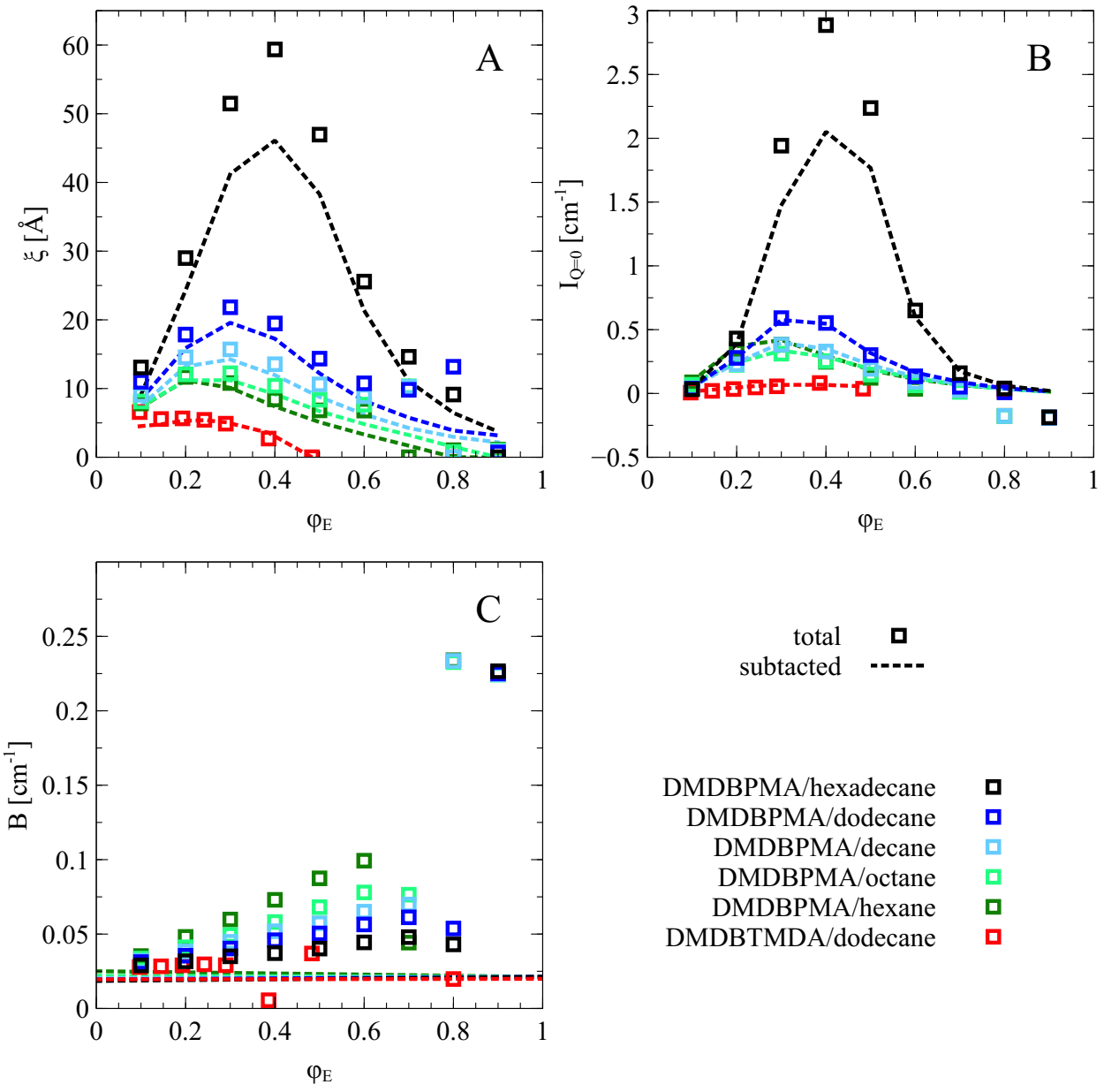

Figure S1: Comparison of ξ (panel A) and $I_{Q=0}$ (panel B) from both fitting methods (equation 1 with squares and equation 2 with dotted lines) for each mixture. Panel C shows the fitted B parameter (equation 1, squares) compared to the weighted average of $I_{Q=0}$ for the pure components (dotted lines).