Supporting Information

Interfacial Mass Transfer in Water - Toluene Systems

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Table S1. Starting compositions for mass transfer experiments where the transferring component was added to either the aqueous or both phases at T = 298.15 K and p = 0.1 MPa[a]

		water-rich phase			toluene-rich phase		
Transferring component i	Injection phase	w_{water}	$w_{toluene}$	w_i	w_{water}	$w_{toluene}$	w_i
acetone	aqueous	0.8868	0.0008	0.1124	0.0004	0.9996	0.0000
acetone	both	0.9424	0.0005	0.0571	0.0003	0.9316	0.0681
ethanol	aqueous	0.8840	0.0006	0.1154	0.0004	0.9996	0.0000
ethanol	both	0.9403	0.0007	0.0590	0.0004	0.9323	0.0673
tetrahydrofuran	aqueous	0.8854	0.0006	0.1140	0.0006	0.9994	0.0000
tetrahydrofuran	both	0.9400	0.0005	0.0595	0.0006	0.9317	0.0677
acetonitrile	aqueous	0.8873	0.0004	0.1123	0.0005	0.9995	0.0000
acetonitrile	both	0.9403	0.0005	0.0592	0.0003	0.9330	0.0667

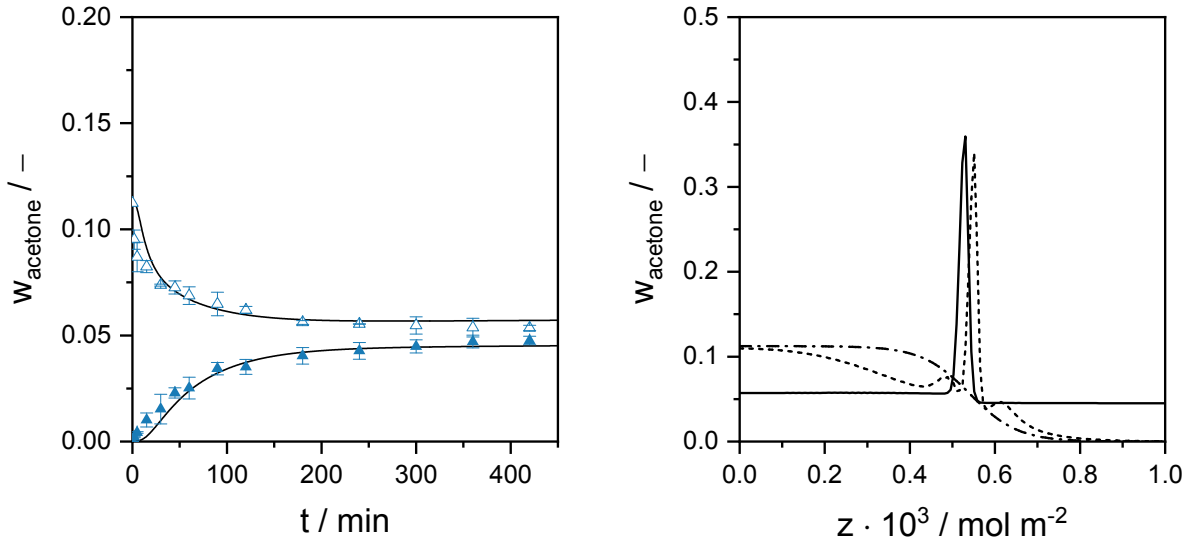

Figure S1. Interfacial mass transfer of acetone in the system water + toluene + acetone at T = 298.15 K. Acetone was injected in the aqueous phase at t = 0 min. Left: Development of the bulk phase composition over time: ▲, weight fraction of acetone in toluene-rich phase; △, weight fraction of acetone in water-rich phase; lines are calculated by instationary DGT. Right: Concentration profile across the interface calculated by instationary DGT: dash-dotted line, t = 0 min; dotted line, t = 5 min; straight line, t = 450 min.

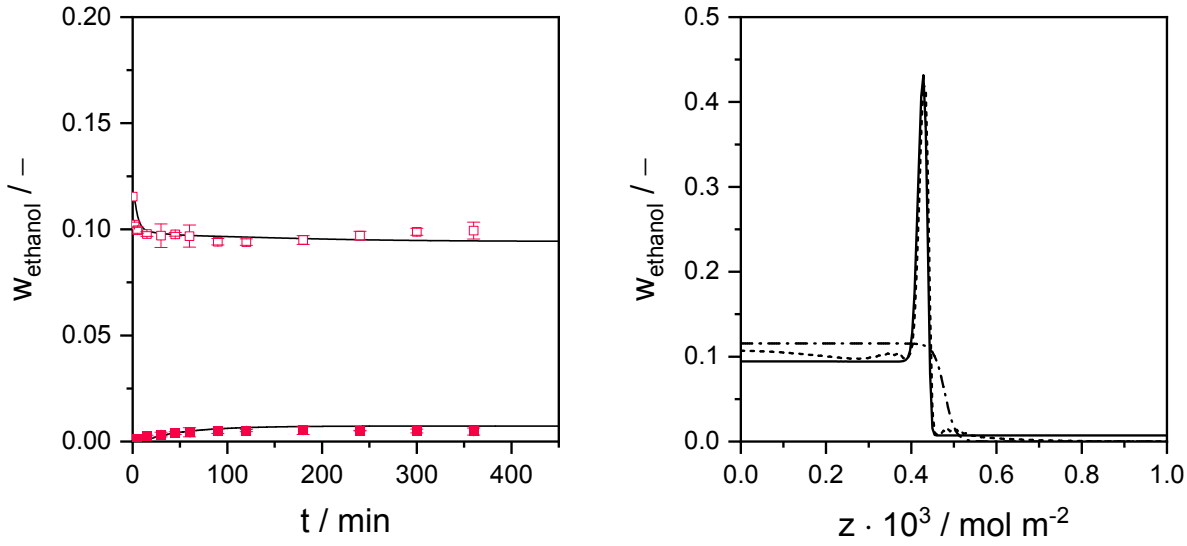

Figure S2. Interfacial mass transfer of ethanol in the system water + toluene + ethanol T = 298.15 K. Left: Ethanol was injected in the aqueous phase at t = 0 min. Development of the bulk phase composition over time: ■, weight fraction of ethanol in toluene-rich phase; □, weight fraction of ethanol in water-rich phase; lines are calculated by instationary DGT. Right: Concentration profile across the interface calculated by instationary DGT: dash-dotted line, t = 0 min; dotted line, t = 5 min; straight line, t = 450 min.

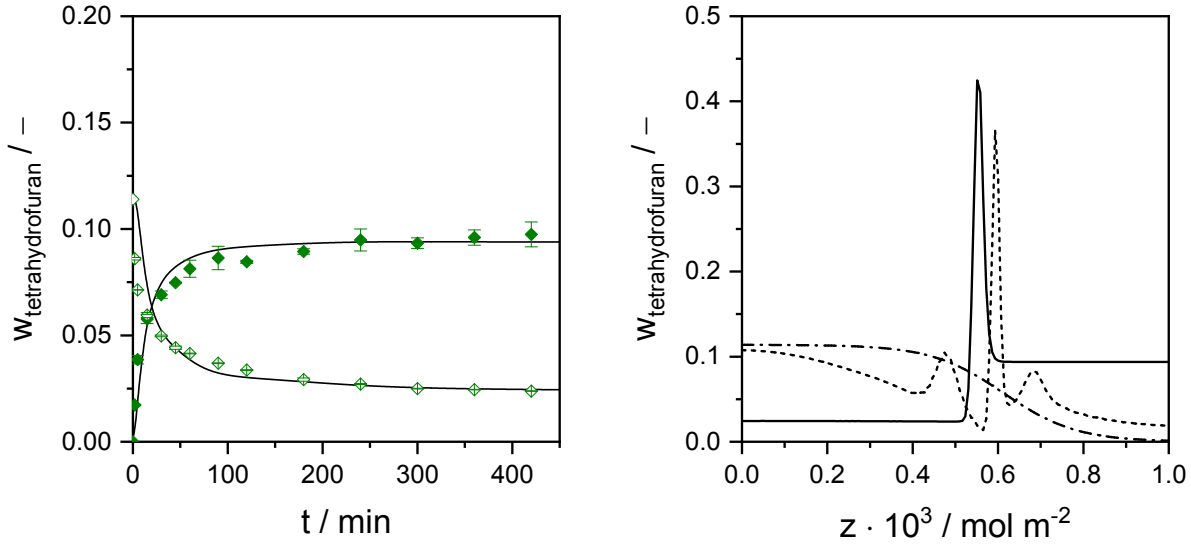

Figure S3. Interfacial mass transfer of tetrahydrofuran in the system water + toluene + tetrahydrofuran T = 298.15 K. Tetrahydrofuran was injected in the aqueous phase at t = 0 min. Left: Development of the bulk phase composition over time: ♦, weight fraction of tetrahydrofuran in toluene-rich phase; ◇, weight fraction of tetrahydrofuran in water-rich phase; lines are calculated by instationary DGT. Right: Concentration profile across the interface calculated by instationary DGT: dash-dotted line, t = 0 min; dotted line, t = 5 min; straight line, t = 450 min.

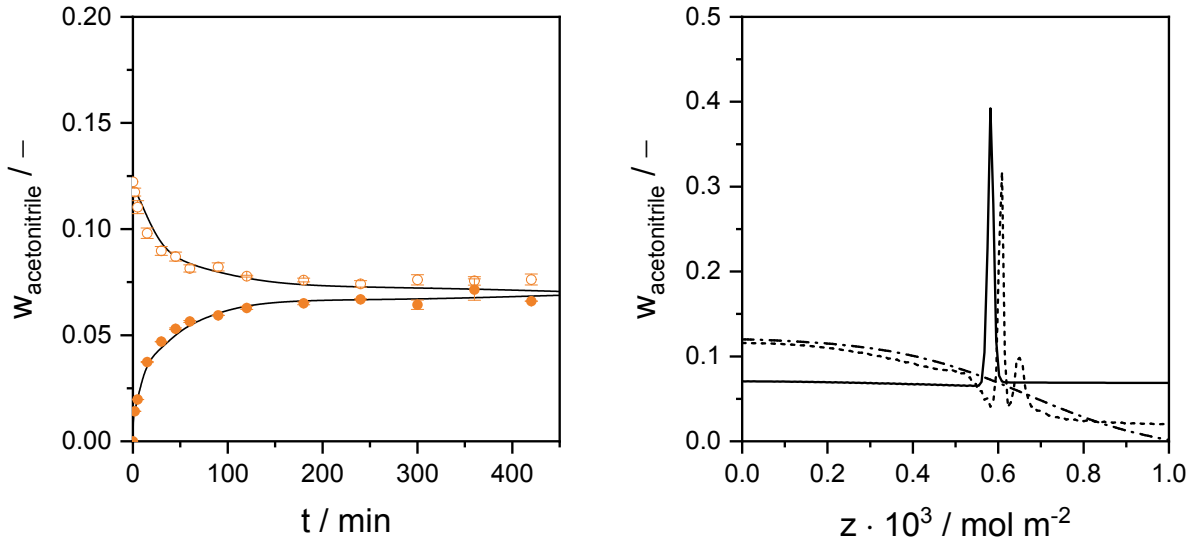

Figure S4. Interfacial mass transfer of acetonitrile in the system water + toluene + acetonitrile T = 298.15 K. Acetonitrile was injected in the aqueous phase at t = 0 min. Left: Development of the bulk phase composition over time: ●, weight fraction of acetonitrile in toluene-rich phase; ○, weight fraction of acetonitrile in water-rich phase; lines are calculated by instationary DGT. Right: Concentration profile across the interface calculated by instationary DGT: dash-dotted line, t = 0 min; dotted line, t = 5 min; straight line, t = 450 min.

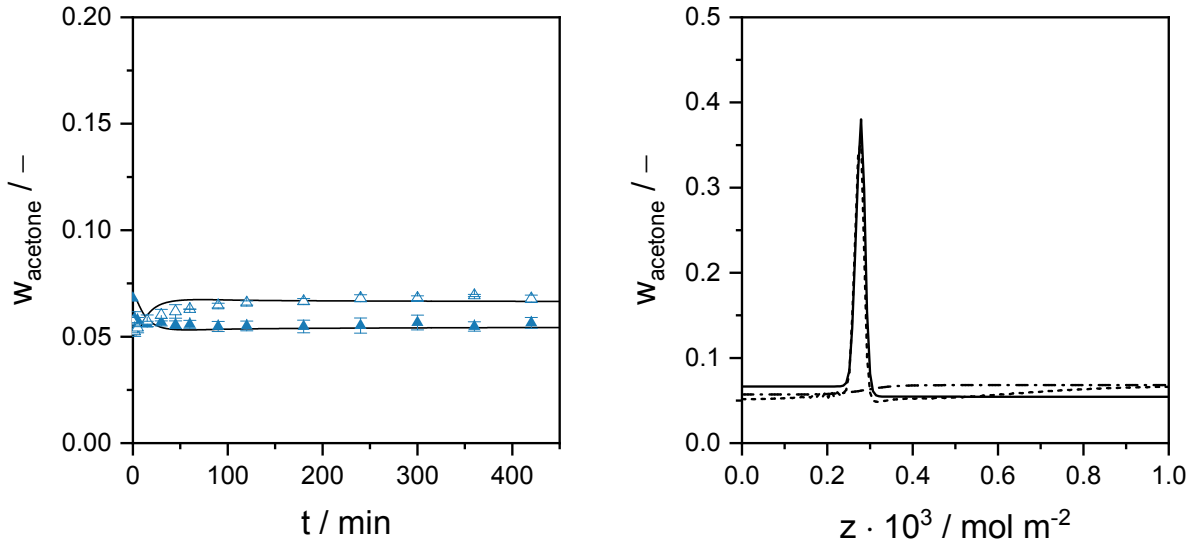

Figure S5. Interfacial mass transfer of acetone in the system water + toluene + acetone at T = 298.15 K. Acetone was injected into both phases at t = 0 min. Left: Development of the bulk phase composition over time: ▲, weight fraction of acetone in toluene-rich phase; △, weight fraction of acetone in water-rich phase; lines are calculated by instationary DGT. Right: Concentration profile across the interface calculated by instationary DGT: dash-dotted line, t = 0 min; dotted line, t = 5 min; straight line, t = 450 min.

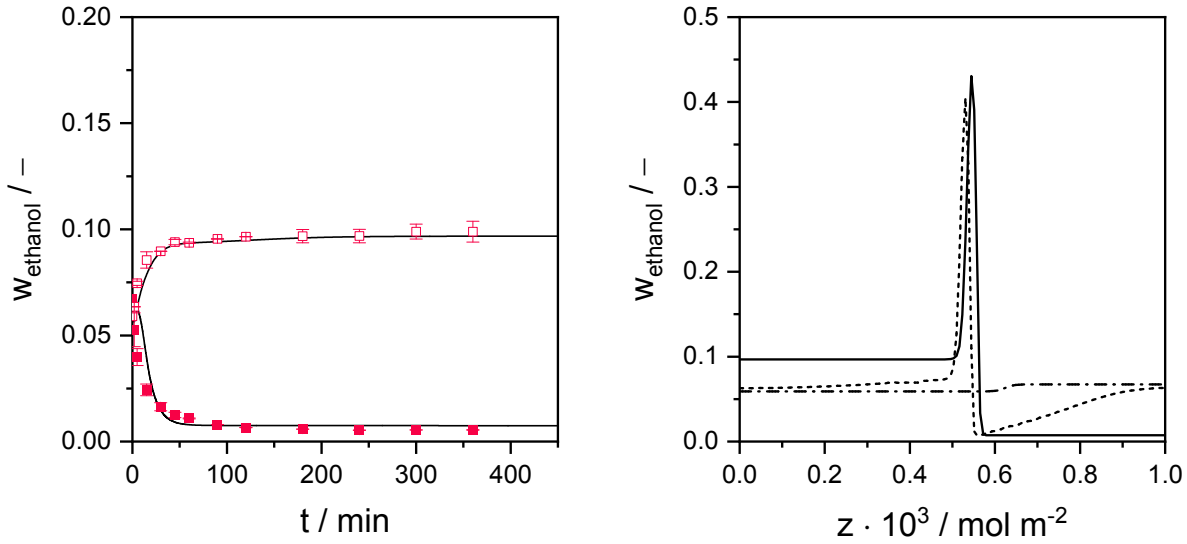

Figure S6. Interfacial mass transfer of ethanol in the system water + toluene + ethanol T = 298.15 K. Ethanol was injected into both phases at t = 0 min. Left: Development of the bulk phase composition over time: ■, weight fraction of ethanol in toluene-rich phase; □, weight fraction of ethanol in water-rich phase; lines are calculated by instationary DGT. Right: Concentration profile across the interface calculated by instationary DGT: dash-dotted line, t = 0 min; dotted line, t = 5 min; straight line, t = 450 min.

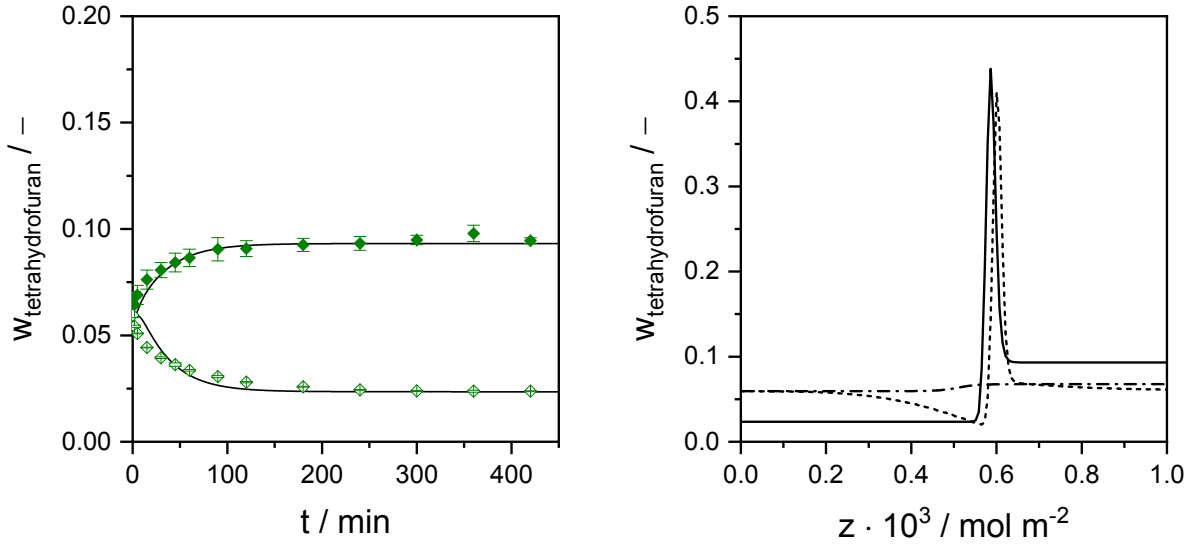

Figure S7. Interfacial mass transfer of tetrahydrofuran in the system water + toluene + tetrahydrofuran T = 298.15 K. Tetrahydrofuran was injected into both phases at t = 0 min. Left: Development of the bulk phase composition over time: ♦, weight fraction of tetrahydrofuran in toluene-rich phase; ◇, weight fraction of tetrahydrofuran in water-rich phase; lines are calculated by instationary DGT. Right: Concentration profile across the interface calculated by instationary DGT: dash-dotted line, t = 0 min; dotted line, t = 5 min; straight line, t = 450 min.

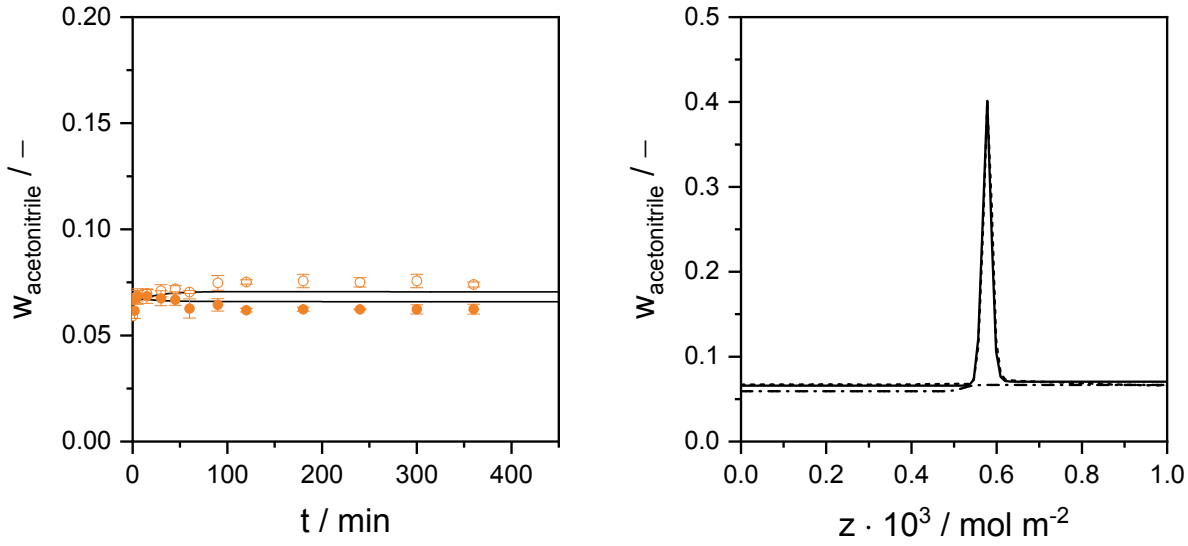

Figure S8. Interfacial mass transfer of acetonitrile in the system water + toluene + acetonitrile T = 298.15 K. Acetonitrile was injected into both phases at t = 0 min. Left: Development of the bulk phase composition over time: ●, weight fraction of acetonitrile in toluene-rich phase; ○, weight fraction of acetonitrile in water-rich phase; lines are calculated by instationary DGT. Right: Concentration profile across the interface calculated by instationary DGT: dash-dotted line, t = 0 min; dotted line, t = 5 min; straight line, t = 450 min.