

Supplementary Information for:

Circulatory osmotic desalination by mild temperature gradient based on lower critical solution temperature (LCST) phase transition materials

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Fig. S1 Synthetic schemes of (a) *n*Bu-TAEA and (b) *n*Bu-PEI.

Fig. S1a

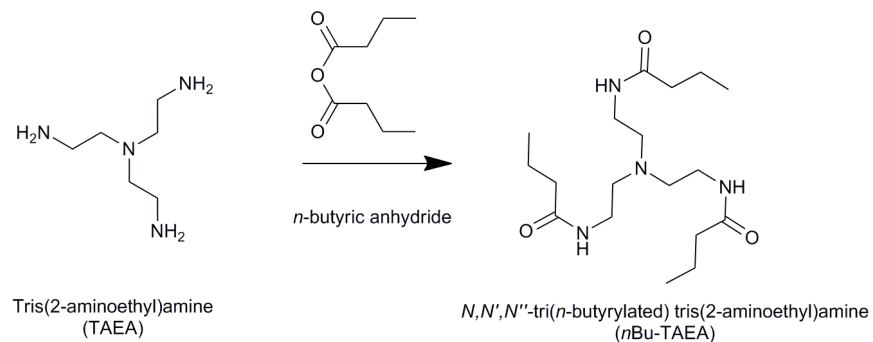


Fig. S1b

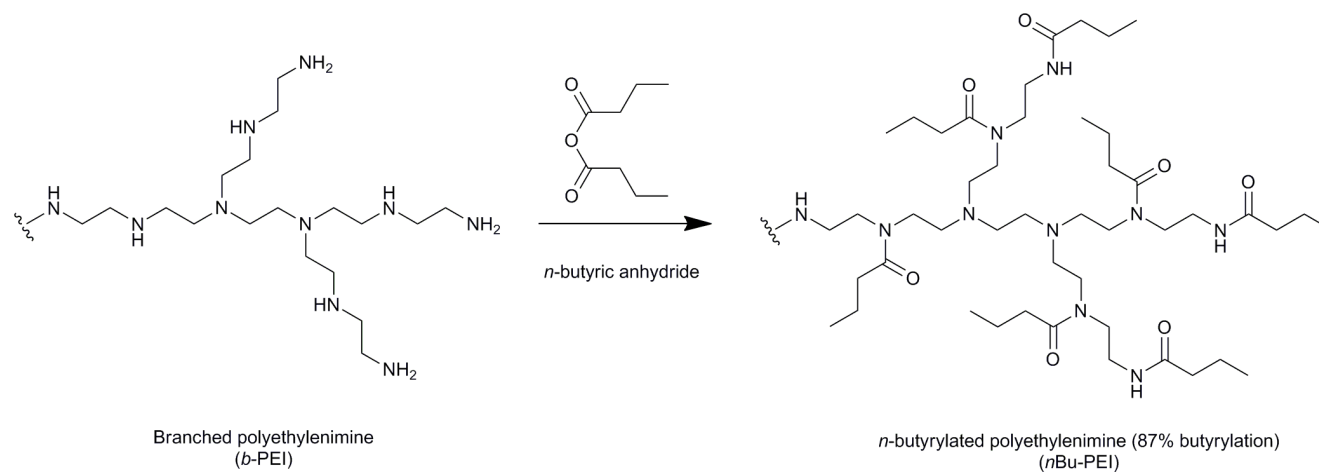


Fig. S2 $^1\text{H-NMR}$ spectra of (a) *n*Bu-TAEA and (b) *n*Bu-PEI in CD_3OD .

Fig. S2a

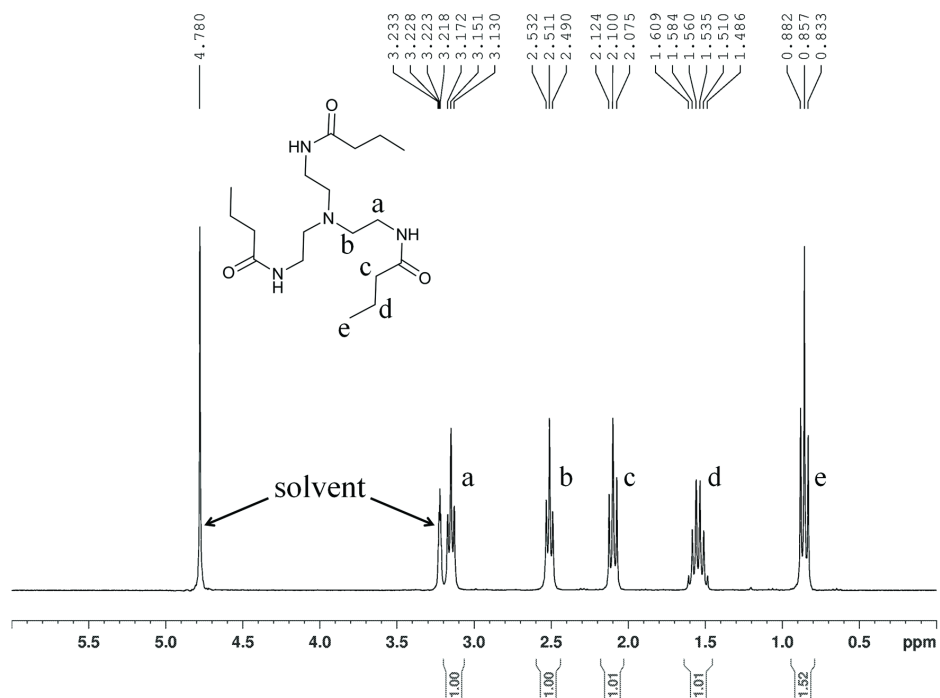


Fig. S2b

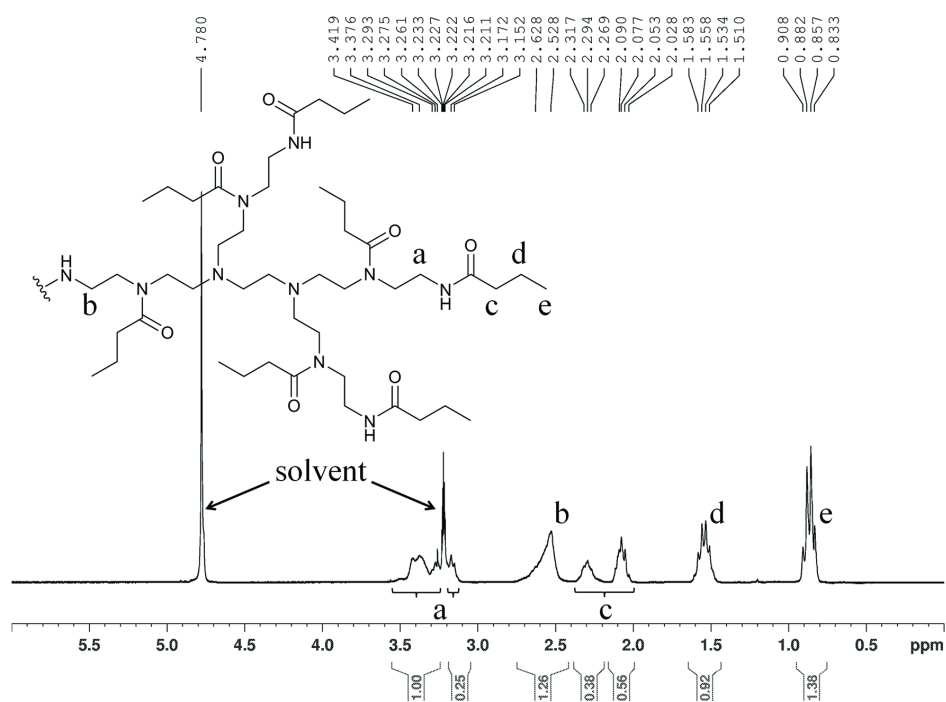


Fig. S3a LCST phase transition of *n*Bu-TAEA and *n*Bu-PEI.^a

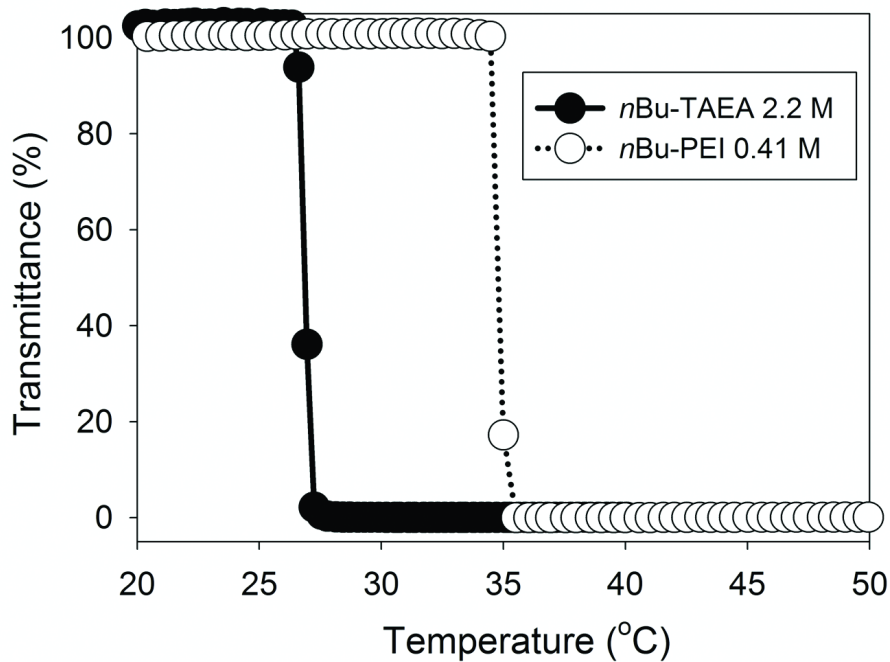
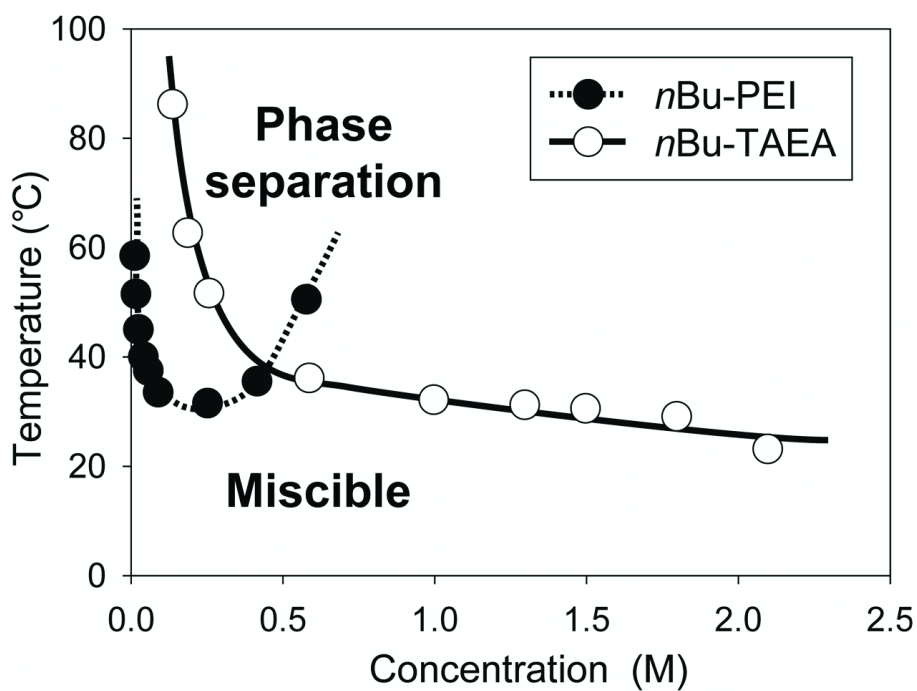


Fig. S3b Molarity-temperature phase diagrams of *n*Bu-TAEA and *n*Bu-PEI.^a



^aThe molarity was calculated based on the density at 25°C.

Fig. S4a Osmolality of *n*Bu-TAEA

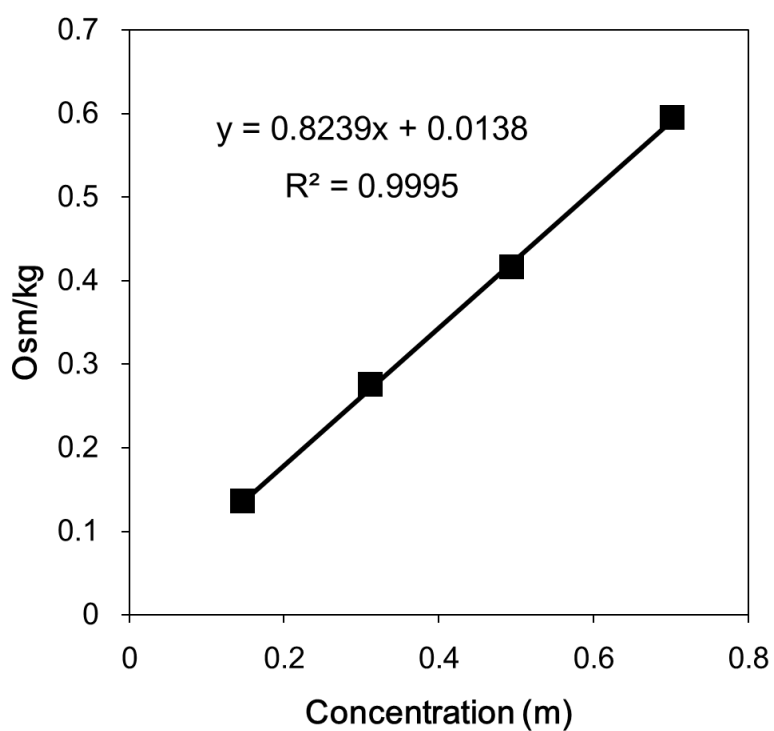


Fig. S4b Osmolality of *n*Bu-PEI

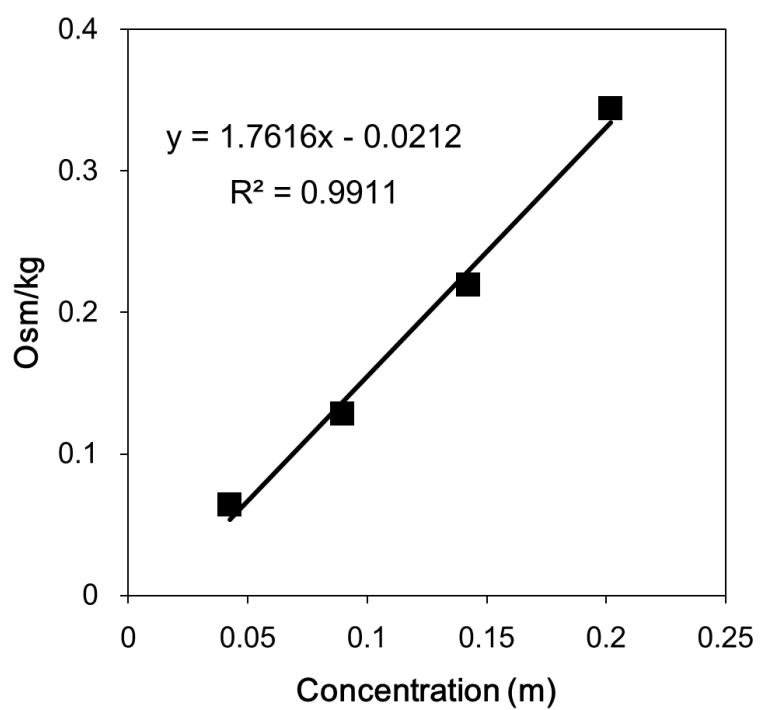


Fig. S5 A video file showing the circulatory desalination based on *n*Bu-TAEA. (File format: .WMV) The video recorded during 13 hours was compressed in 7.6 seconds.