Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Table.1.

Membrane separator	No.	Thickness	M_p	M_{BUOH}	Volume	P（%）	$\bar{P}$（%）
PVDF	1	112	0.0107	0.0279	28.501	74.51	
	2	95	0.0061	0.0211	24.175	76.60	74.97
	3	140	0.0115	0.0328	35.626	73.81	
PVDF/Al_2O_3	1	167	0.0207	0.0401	42.496	56.36	
	2	116	0.0157	0.0289	29.518	55.21	55.84
	3	111	0.0151	0.0279	28.246	55.95	
PP	1	40	0.0059	0.009	10.178	37.60	
	2	40	0.06	0.0092	10.178	38.81	39.22
	3	40	0.0059	0.0093	10.178	41.24	

M_p and M_{BUOH} represent the masses of membrane before and after the n-butanol absorption, respectively.

Supplementary Table. 2.

Membrane separator	No.	W_0	W	EU（%）	$\bar{EU}$（%）
PVDF	1	0.0077	0.039	406.49	405.14
	2	0.0074	0.0362	389.19	
	3	0.0076	0.0395	419.74	
$PVDF/Al_2O_3$	1	0.0168	0.0428	154.76	152.43
	2	0.0166	0.0408	145.78	
	3	0.0178	0.0457	156.74	
PP	1	0.0108	0.0173	60.1	62.9
	2	0.0121	0.02	67.6	
	3	0.0114	0.0184	61	

W_0 and W represent the masses of the dry membrane and wet electrolyte-filled membrane, respectively.