

Encapsulated amino acid-based ionic liquid for CO₂ separation membranes

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3 Pages, 2 Figures and 2 Tables

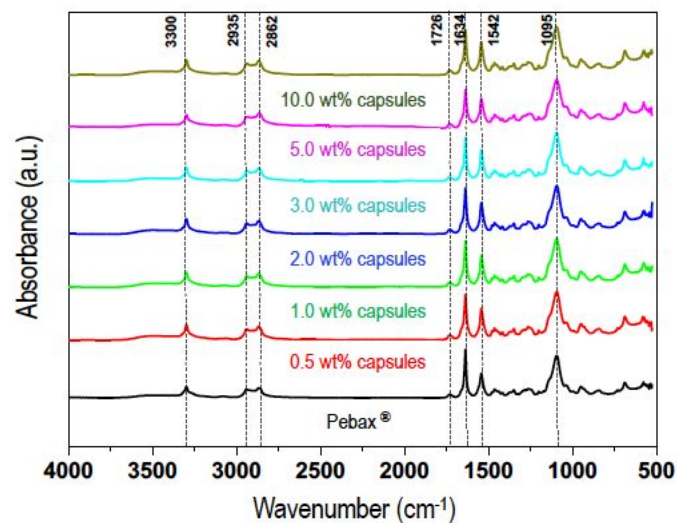


Figure S1. FTIR spectra of Pebax[®]1657 films with different concentrations of capsules containing amino acid-based ionic liquids.

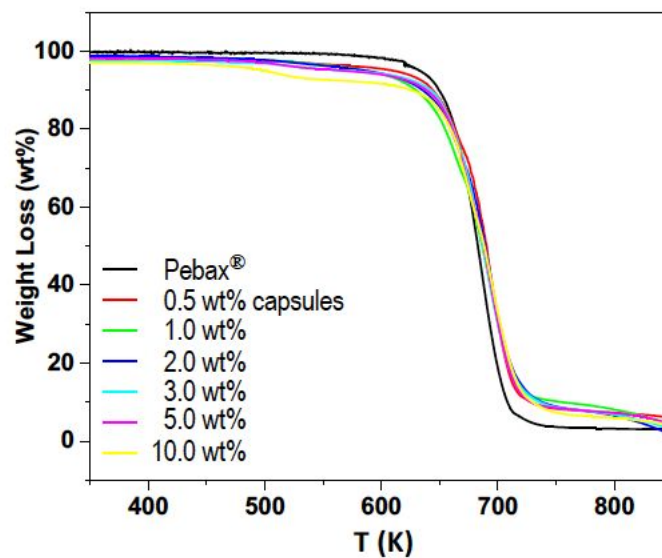


Figure S2. TGA curves of Pebax[®] and composite membranes prepared in this work.

Table S1. Single gas permeability and selectivity of Pebax®1657 with encapsulated ionic liquid tested under 2 bar and 35°C.

Membrane	Permeability (Barrer)					Selectivity					
	H ₂	N ₂	CH ₄	O ₂	CO ₂	H ₂ /N ₂	CO ₂ /H ₂	H ₂ /CH ₄	CO ₂ /CH ₄	CO ₂ /N ₂	O ₂ /N ₂
Pebax®1657	12	2.1	6.4	5.4	103	5.9	8.3	1.9	16.0	48.8	2.6
0.5 wt% capsules	18	2.8	7.6	7.0	127	6.3	7.2	2.3	16.8	44.6	2.4
1 wt% capsules	31	5.6	14.4	13.1	242	5.5	7.9	2.1	16.8	43.5	2.4
3 wt% capsules	18	5.5	14.2	10.5	180	3.2	10.2	1.3	12.7	32.7	1.9

Table S2. CO₂ and N₂ single gas permeability, selectivity, solubility, and diffusivity.

Membrane	P Barrer			D (10 ⁻⁸ cm ² /s)		S (10 ⁻² cm ³ /cm ³ cmHg)		D _{CO₂}/D_{N₂}}	S _{CO₂}/S_{N₂}}
	N ₂	CO ₂	CO ₂ /N ₂	N ₂	CO ₂	N ₂	CO ₂		
Pebax®1657	2.1	103	49	3.3	54	0.6	2	16	3
0.5 wt% capsules	2.9	127	45	3.7	41	0.8	3	11	4
1 wt% capsules	5.6	242	44	4.2	13	1.3	19	3	14
3 wt% capsules	5.5	180	33	0.2	0.2	29	800	1	27