

Ionic Liquid-Laden Zn-MOF-74-Based Solid-State Electrolyte for Sodium Batteries

Alexander Mirandona-Olaeta ^{1,2}, Eider Goikolea ², Senentxu Lanceros-Mendez ^{1,3},
Arkaitz Fidalgo-Marijuan ^{1,2,*} and Idoia Ruiz de Larramendi ^{2,*}

¹ BCMaterials, Basque Center for Materials, Applications and Nanostructures, Bld. Martina Casiano, 3rd. Floor, UPV/EHU Science Park, 48940 Leioa, Spain

² Department of Organic and Inorganic Chemistry, Universidad del País Vasco (UPV/EHU), Barrio Sarriena s/n, 48940 Leioa, Spain

³ IKERBASQUE, Basque Foundation for Science, 48009 Bilbao, Spain

* Correspondence: arkaitz.fidalgo@bcmaterials.net (A.F.-M.); idoia.ruizdelarramendi@ehu.eus (I.R.d.L.)

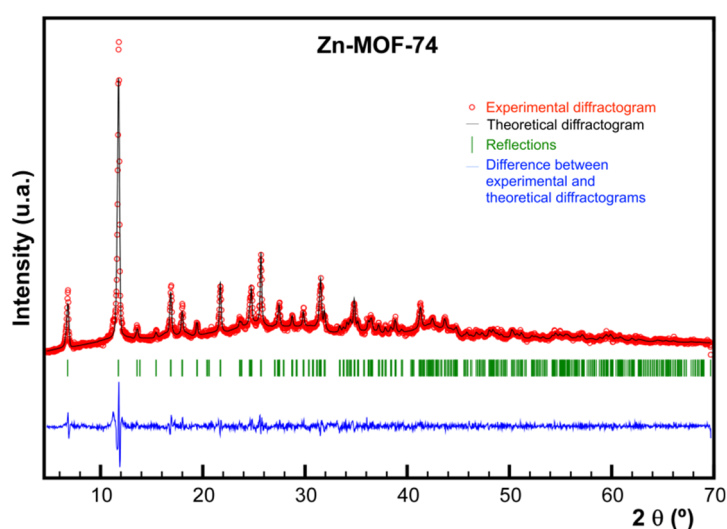


Figure S1. Observed, calculated and difference X-ray powder diffraction patterns for Zn-MOF-74.

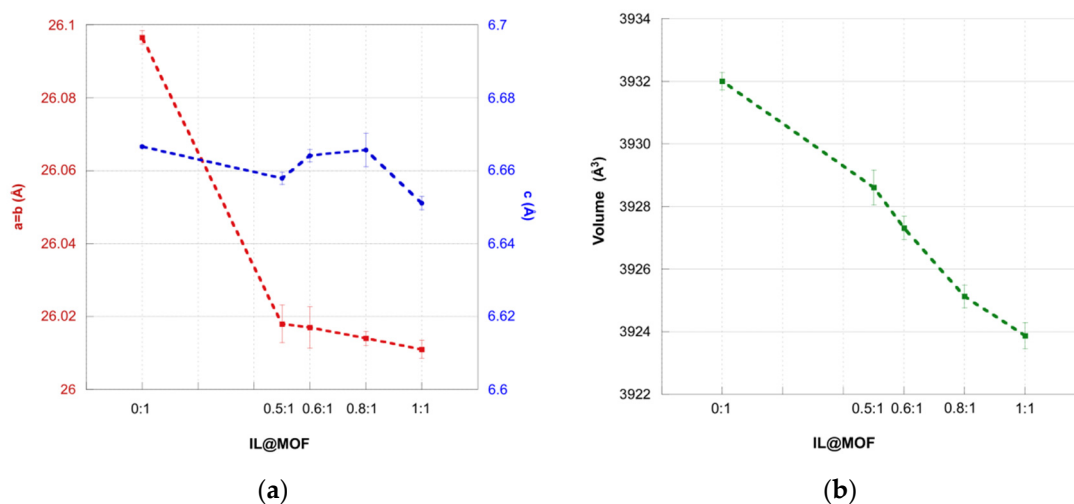


Figure S2. (a) Variation of cell parameters as a function of the amount of ionic liquid inserted, (b) Variation of the volume as a function of the quantity of IL inserted.

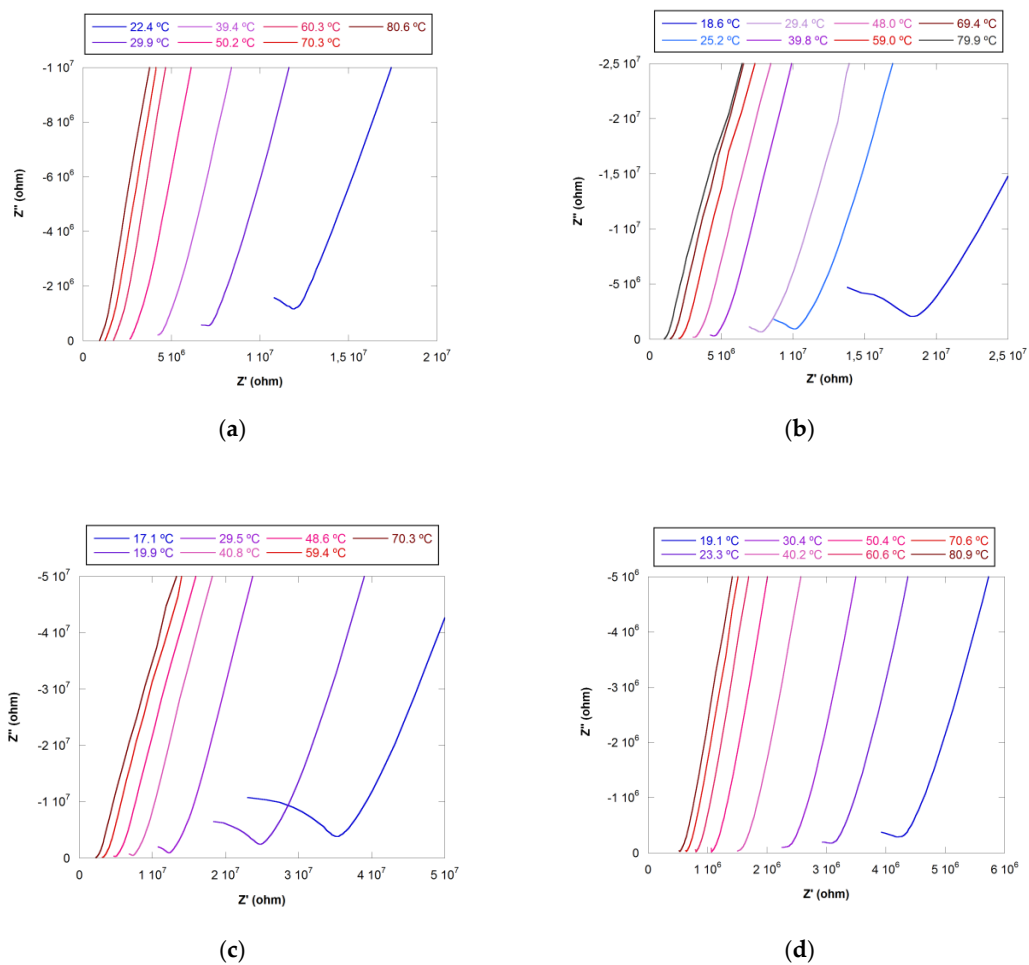


Figure S3. EIS spectra of different samples: (a) IL@MOF, (b) IL_{0.8}@MOF, (c) IL_{0.6}@MOF, (d) IL_{0.5}@MOF.

Table S1. Parameters corresponding to the decomposition stages for each sample.

	MOF	IL@MOF	IL _{0.8} @MOF	IL _{0.6} @MOF	IL _{0.5} @MOF
Water %	10	13	17	18	19
Zn-MOF-74 %	44	54	48	47	46

Table S2. Decomposition temperature range of Zn-MOF-74.

	MOF	IL@MOF	IL _{0.8} @MOF	IL _{0.6} @MOF	IL _{0.5} @MOF
T ₁ (°C)	275	300	295	290	285
T ₂ (°C)	380	435	440	450	445

Table S3. Adsorption fitting parameters of Zn-MOF-74 and IL_{0.5}@MOF.

	S _{BET} (m ² ·g ⁻¹)	ΔP/ΔP ₀	R ²	S _{micro} (m ² ·g ⁻¹)	S _{ext} (m ² ·g ⁻¹)	V _{micro} (cm ³ ·g ⁻¹)	V _T (cm ³ ·g ⁻¹)
Zn-MOF-74	1123	0.007-0.06	0.9992	1045	77	0.384	0.469
IL _{0.5} @MOF	62	0.068-0.23	0.991	0	62	0	0,126