

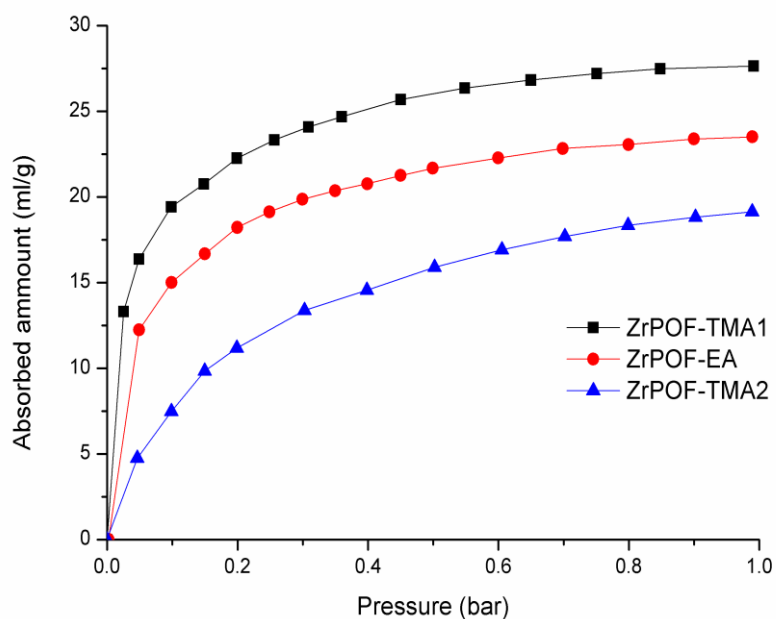
## Supporting Information

### Ionothermal synthesis of two open-framework zirconium phosphates and their gas adsorption properties

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**Table S1** Synthetic details and reaction results under hydrothermal conditions

Run	Mass of reagents added (g) (molar ratio of reagents)					T (°C), Time (h)	Product
	ZrOCl <sub>2</sub> ·8H <sub>2</sub> O	H <sub>3</sub> PO <sub>4</sub>	HF	H <sub>2</sub> O	TMACl		
1	0.25 (1.0)	0.09 (1.0)	0.016 (1.0)	1.4 (100)	0.151 (2.0)	180,72	ZrPOF-TMA2
2	0.25 (1.0)	0.09 (1.0)	0.032 (2.0)	1.4 (100)	0.151 (2.0)	180,72	ZrPOF-TMA2
3	0.25 (1.0)	0.18 (2.0)	0.016 (1.0)	1.4 (100)	0.151 (2.0)	180,72	ZrPOF-TMA2
4	0.25 (1.0)	0.18 (2.0)	0.032 (2.0)	1.4 (100)	0.151 (2.0)	180,72	ZrPOF-TMA2
5	0.25 (1.0)	0.18 (2.0)	0.048 (3.0)	1.4 (100)	0.151 (2.0)	180,72	ZrPOF-TMA2
6	0.25 (1.0)	0.18 (2.0)	0.064 (4.0)	1.4 (100)	0.151 (2.0)	180,72	no solid
7	0.25 (1.0)	0.27 (3.0)	0.032 (2.0)	1.4 (100)	0.227 (3.0)	180,72	ZrPOF-TMA2
8	0.25 (1.0)	0.36 (4.0)	0.032 (2.0)	1.4 (100)	0.227 (3.0)	180,72	ZrPOF-TMA2 + α-ZrP
9	0.25 (1.0)	0.45 (5.0)	0.016 (1.0)	1.4 (100)	0.151 (2.0)	180,72	α-ZrP
10	0.25 (1.0)	0.72 (8.0)	0.032 (2.0)	1.4 (100)	0.151 (2.0)	180,72	α-ZrP
11	0.25 (1.0)	0.90 (10.0)	0.016 (1.0)	1.4 (100)	0.227 (3.0)	180,72	α-ZrP



**Figure S1.** Adsorption isotherm of CO<sub>2</sub> on three different zirconium phosphate materials at 273K