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# **Electronic Supplementary Material (ESI)**

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### SAPO-34 Templated by Dipropylamine and Diisopropylamine: Synthesis and Catalytic Performance in the Methanol to Olefins (MTO) Reaction

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#### 1 XRD



**Figure S1** Powder XRD patterns of the as-synthesized samples (shown in Table 1) 1(a), 2(b), 3(c), 4(d), 8(e), 9 (f), 10 (g), 11 (h) and R1 (i)



**Figure S2** Powder XRD patterns of the as-synthesized samples for DPA and DIPA system with shortened crystallization time [3 h (DPA-3h and DIPA-3h) or 12 h (DPA-12h and DIPA-12h)]; gel composition R:  $Al_2O_3$ :  $P_2O_5$ :  $SiO_2$ :  $H_2O= 3.0$ : 1.2: 0.9: 0.5: 40 (R=DPA or DIPA).

**2 SEM** 



Figure S3 SEM image of the as-synthesized crystals of sample 4.



Figure S4 SEM image of the as-synthesized crystals of sample 10.



Figure S5 SEM image of the as-synthesized crystals of sample R1.

## 3<sup>27</sup>Al MAS NMR



Figure S6<sup>27</sup>Al MAS NMR of the calcined samples 4 (a), 10 (b) and R1 (c).

## 4<sup>31</sup>P MAS NMR



**Figure S7** <sup>31</sup>P MAS NMR of the calcined samples 4 (a), 10 (b) and R1 (c).

#### **5 MTO results**

Sample	Lifetime <sup>a</sup>	Selectivity (wt%)								
	(min)	CH <sub>4</sub>	$C_2H_4$	$C_2H_6$	$C_3H_6$	$C_3H_8$	$C_{4}^{-}+C_{4}^{\circ}$	$C_5^{+}$	$C_{2}H_{4}+C_{3}H_{6}$	$C_2^{=}/C_3^{=}$
4	89	1.2	43.0	1.0	38.4	2.2	11.0	3.2	81.4	1.1
10	208	1.2	51.2	0.7	36.0	0.8	7.8	2.3	87.2	1.4
R1	123	1.5	42	0.9	38.4	2.6	11.3	3.4	80.4	1.1

Table S1 The MTO reaction results on the samples

 $^{a}$  The catalyst lifetime is defined as the reaction duration with >99% methanol conversion.