

Supporting Information

The effect of guest cations on proton conduction of LTA zeolite

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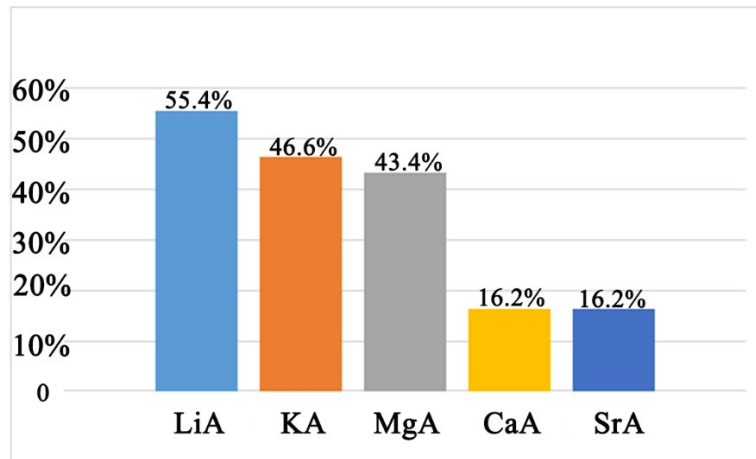


Fig. S1 The mol ratio of Na/Al in ion-exchanged zeolites.

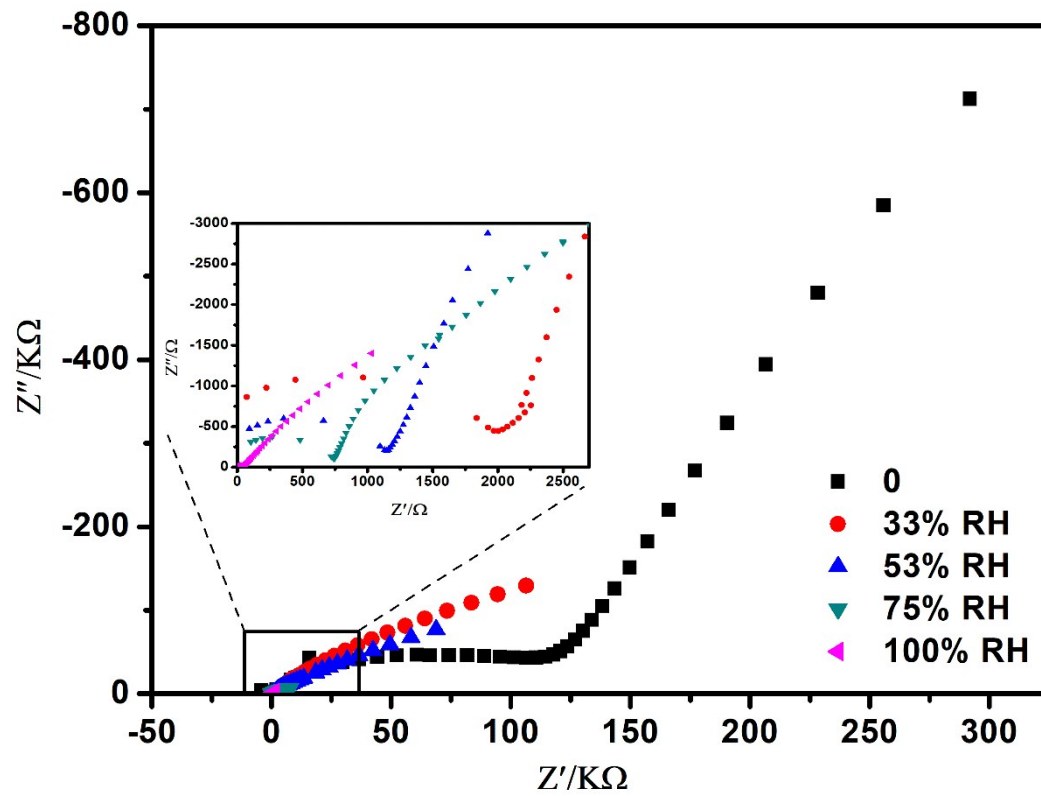


Fig. S2 A.c impedance plots of humidity-dependent of NaA zeolite at room temperature.

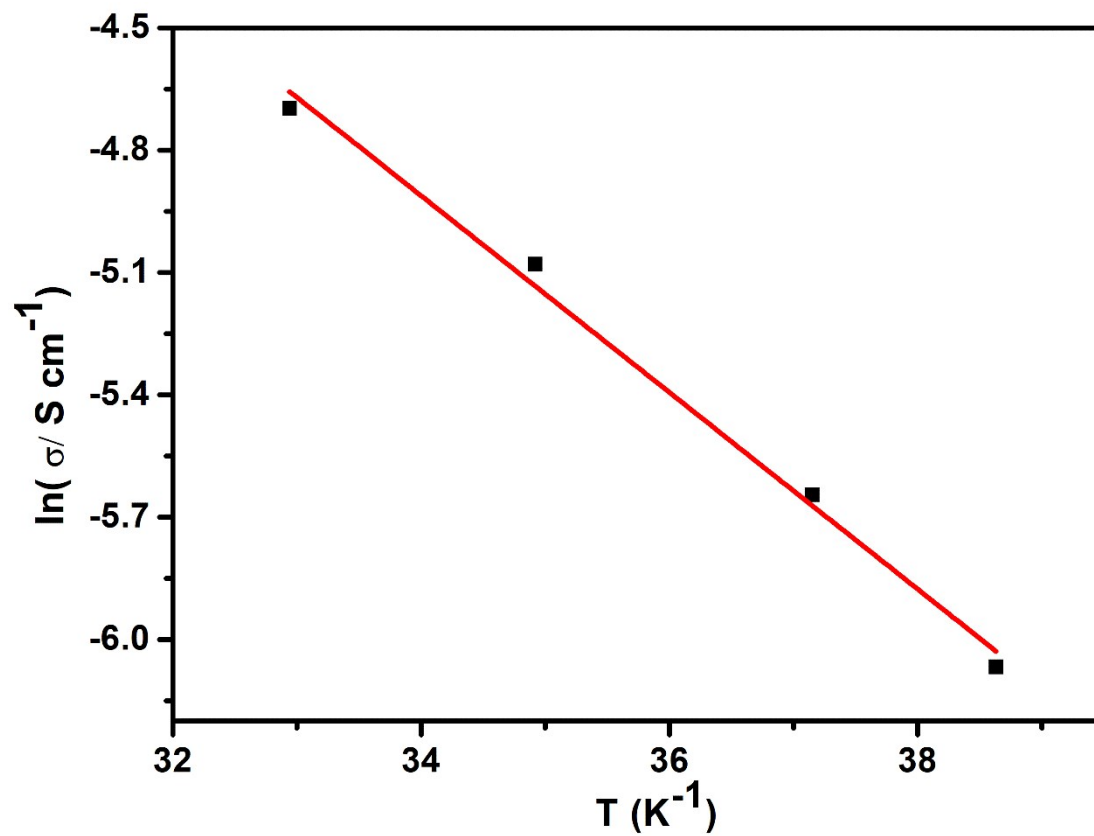


Fig. S3 The fitting curve of E_a ($E_a=0.24$ eV) by Arrhenius equation.

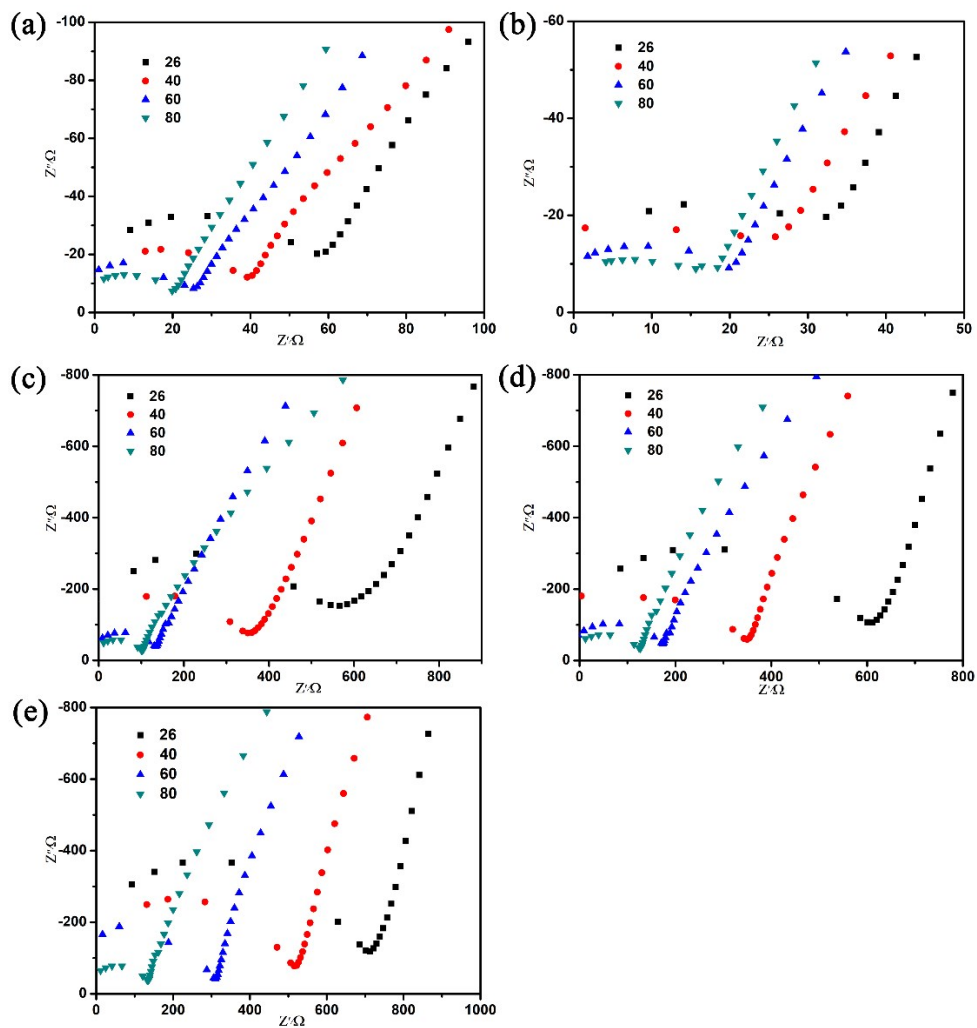


Fig. S4 A.c impedance plots of zeolites at different temperature under 100% RH (a) LiA, (b) KA, (c) MgA, (d) CaA and (e) SrA.

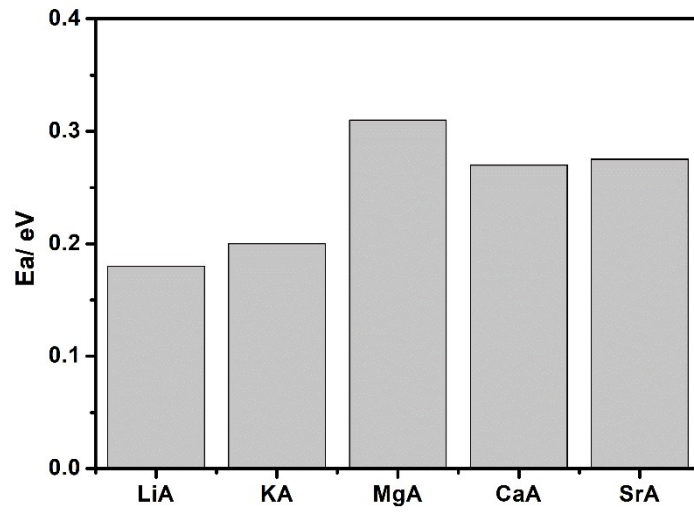


Fig. S5 The Ea of ion-exchanged zeolites (a) LiA, (b) KA, (c) MgA, (d) CaA and (e) SrA.

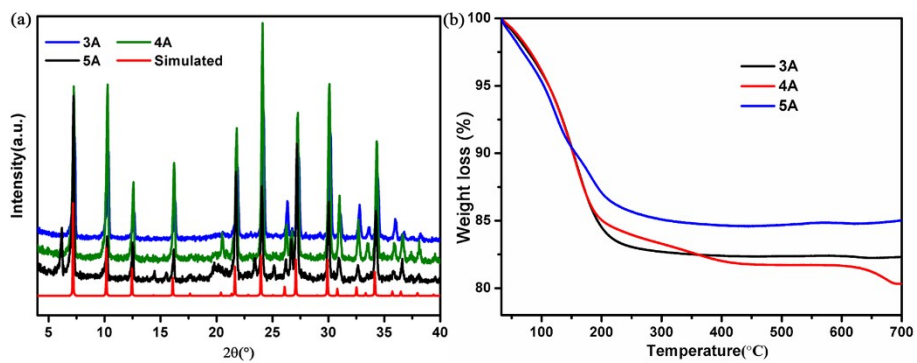


Fig. S6 (a) PXRD and (b) TG of the commercial zeolites of 3A, 4A and 5A.

Table S1. Comparison of proton conductivities of some reported MOFs.

Material	Proton conductivity (S cm ⁻¹)	Temperature (°C) and RH	Activation energy (eV)
[Fe(ox)(H ₂ O) ₂] [1]	1.3 × 10 ⁻³	25 °C, 98% RH	0.37
(NH ₄) ₂ (H ₂ adp)[Zn ₂ (ox) ₃] [2]	0.8 × 10 ⁻²	25 °C, 98% RH	0.63
(N ₂ H ₅)[CeEu(ox) ₄ (N ₂ H ₅)]·4H ₂ O [3]	3.42 × 10 ⁻³	25 °C, 100% RH	0.10
Zr ₆ O ₄ (OH) ₆ (p-BDC) ₅ (UiO-66-6) [4]	6.93 × 10 ⁻³	25 °C, 100% RH	0.22
Im@MOF-808 [5]	3.45 × 10 ⁻²	65 °C, 99% RH	0.25
Mg ₂ (H ₂ O) ₄ (H ₂ DBDP)·H ₂ O (PCMOF10) [6]	3.55 × 10 ⁻²	70 °C, 98% RH	0.40
This work	9.12 × 10 ⁻³	80 °C, 100% RH	0.24

Reference

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