

Structural Elucidation of NASICON ($\text{Na}_3\text{Al}_2\text{P}_3\text{O}_{12}$) Based Glass Electrolyte Materials: Effective Influence of Boron and Gallium

Amarnath R. Allu^{a,#,*}, Sathravada Balaji^{a,#}, Kavya I^b, Chaithanya Hareendran^b, T.G. Ajithkumar^b, Kaushik Biswas^a, K. Annapurna^{a,*}

^a Glass division, CSIR-Central Glass and Ceramic Research Institute, 700032, Kolkata, India

^b Central NMR Facility, CSIR-National Chemical Laboratory, 411008, Pune, India

*: Corresponding author Tel.: +91–33–23223421; Fax: +91–33–24730957.

E-mail address: aareddy@cgcri.res.in; (A. R. Allu)

annapurnak@cgcri.res.in; (K. Annapurna)

These authors contributed equally

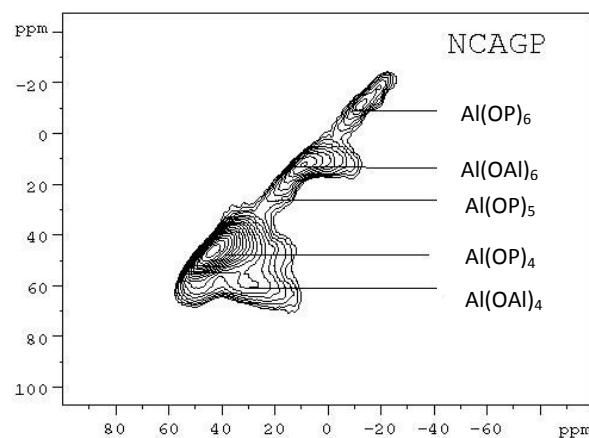
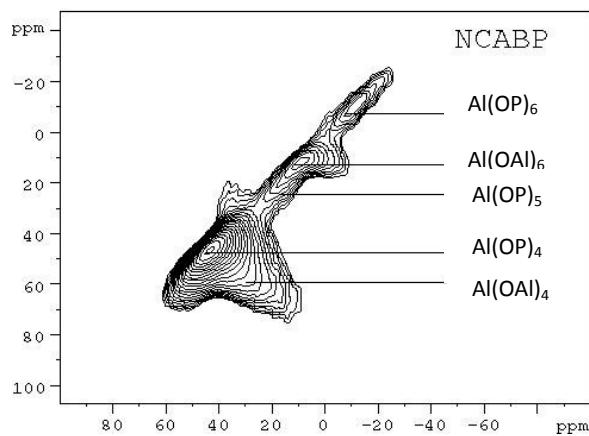
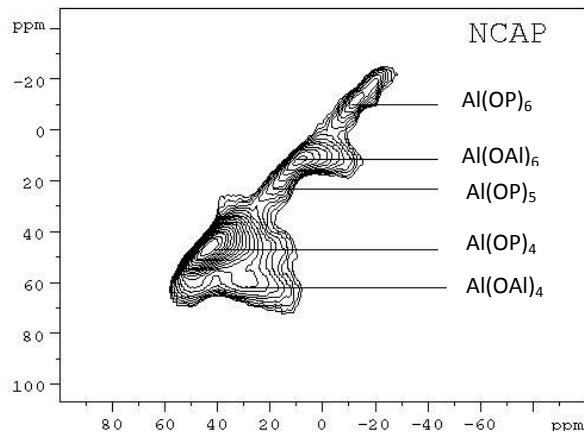
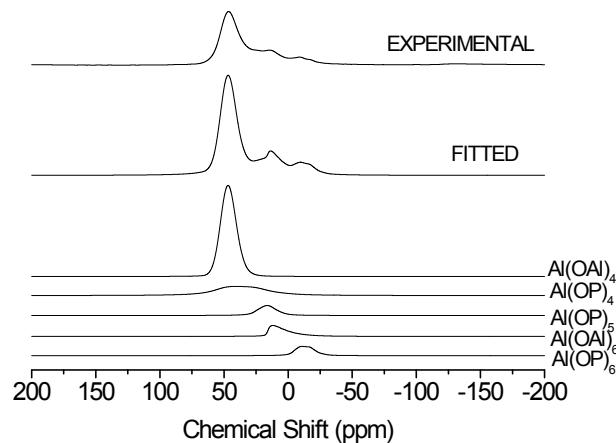
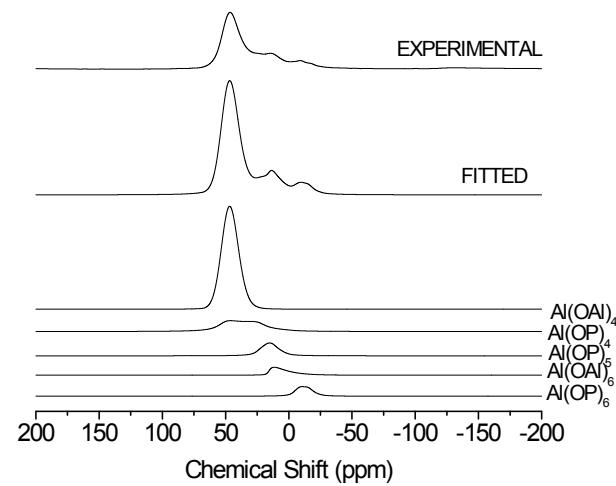


Figure S1. ^{27}Al 3Q MAS NMR spectra.

NCAP



NCABP



NCAGP

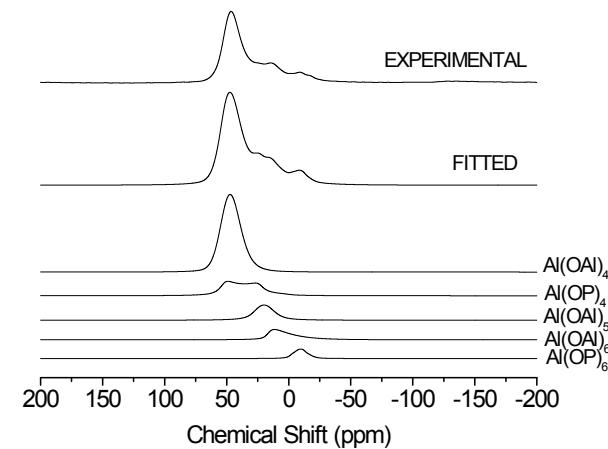


Figure S2: Deconvolution of ^{27}Al MAS-NMR spectra.

Impedance analysis:

Equivalent Circuit:



R1: Series resistance

R2: Charge transfer resistance

W1: Warburg resistance

CPE1: Constant Phase Element, used to describe the double layer capacitance at Ag/electrolyte(NASICON glass) interface (for n=1, CPE1 describes an ideal capacitor and for n=0, CPE1 describes an ideal resistor)

Table S1: Fitted values for the equivalent circuit.

	R1 (Ohm)	R2 (Ohm)	W1 (Ohm)	CPE1 (Farad)	n
NCAP	73106	7.48 e6	1.81 e7	4.29 e-11	0.7758
NCAGP	201330	1.03 e7	2.15 e7	4.42 e-11	0.7761
NCABP	26966	1.60 e7	1.23 e7	4.26 e-11	0.7791