Electronic Supplementary Material (ESI) for Sustainable Energy & Fuels.

Supporting Information

Portable smart highly proton conductive all inorganic gel paste electrolyte with optimum phosphorous to silicon ratio for enhanced, durable operation of fuel cell

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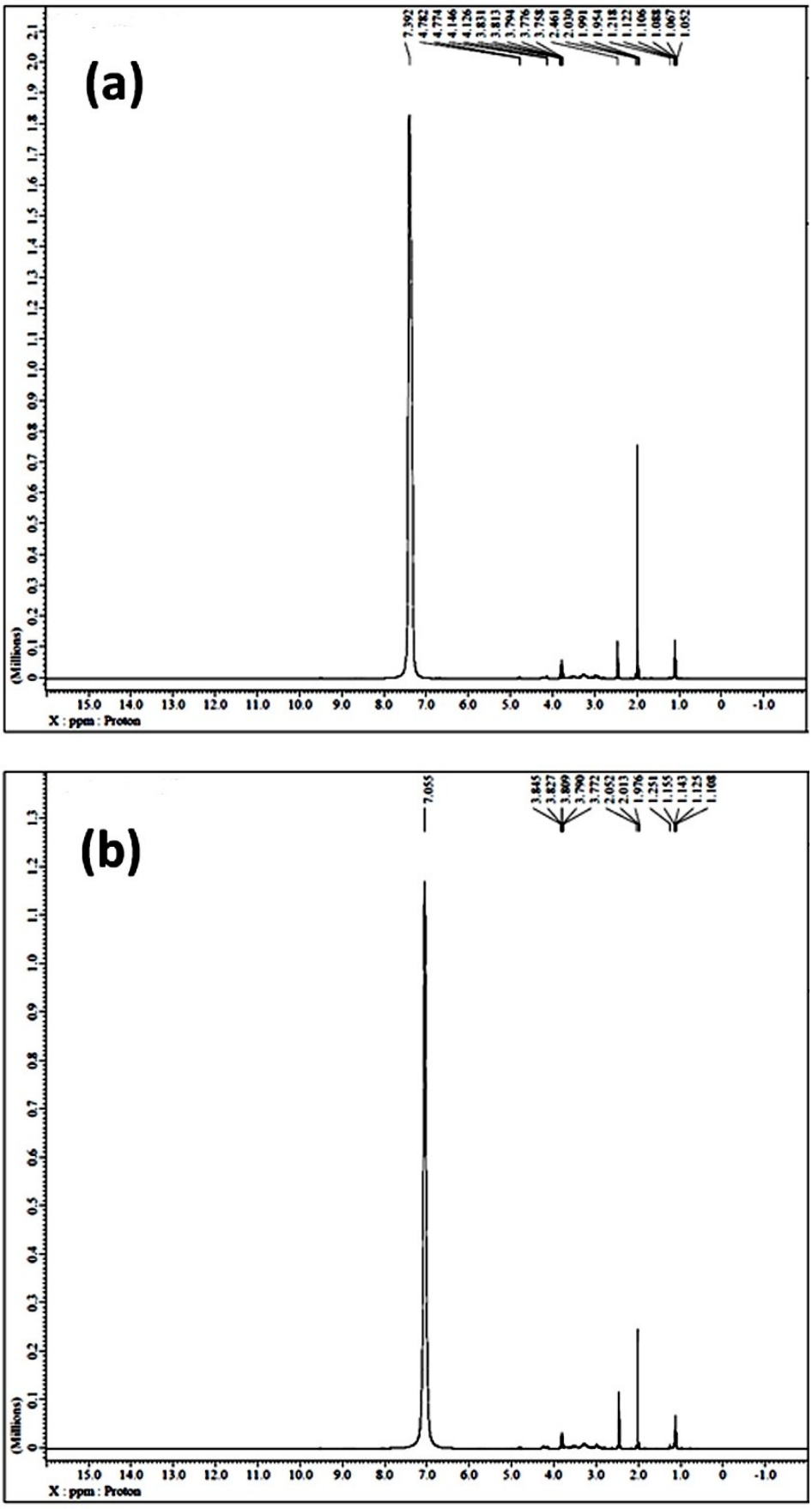


Figure S1. ^{1}H NMR spectra of (a) Gel Paste – 4 and (b) Gel Paste - 6

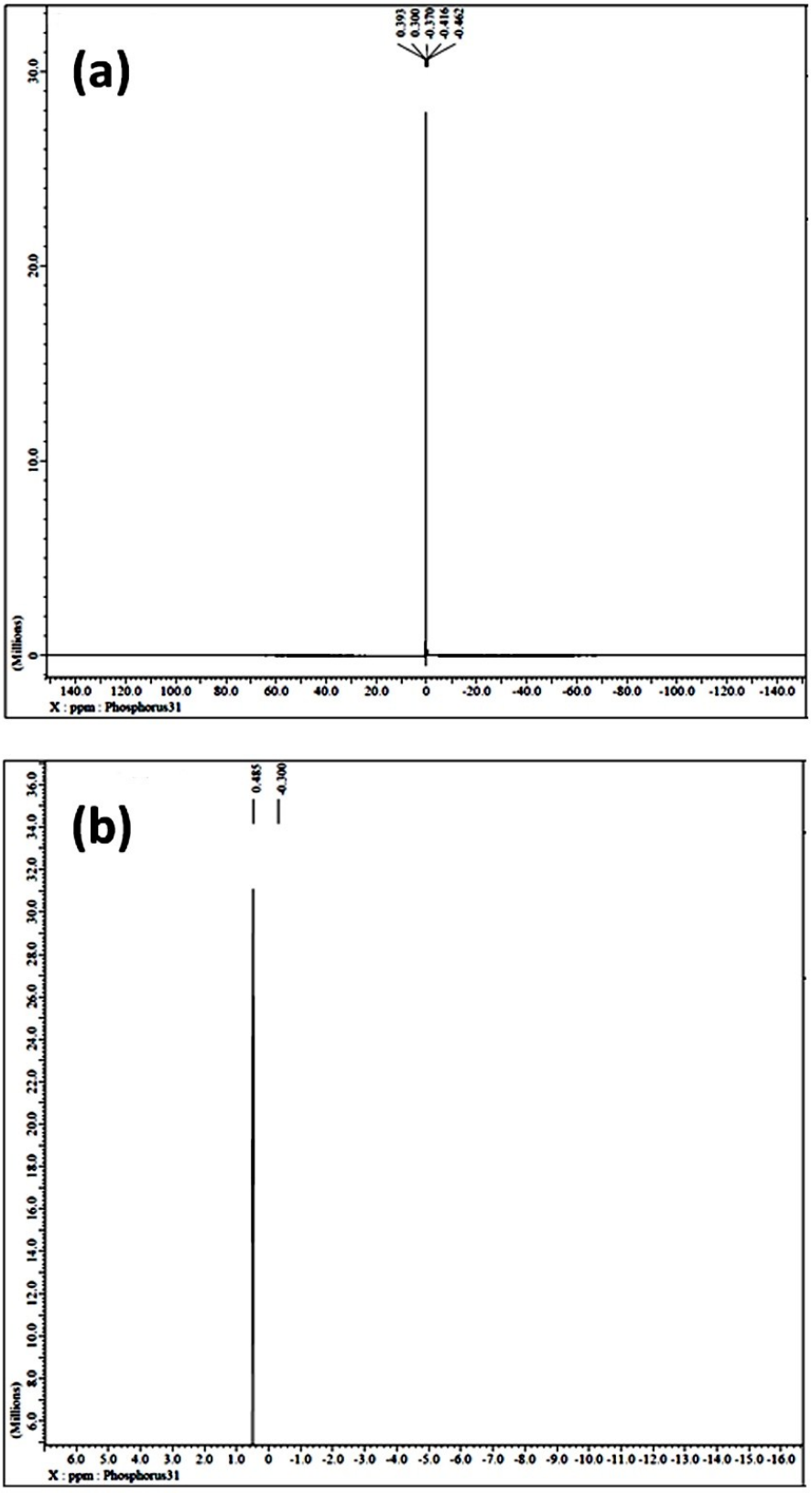


Figure S2. ^{31}P NMR spectra of (a) Gel Paste – 4 and (b) Gel Paste - 6

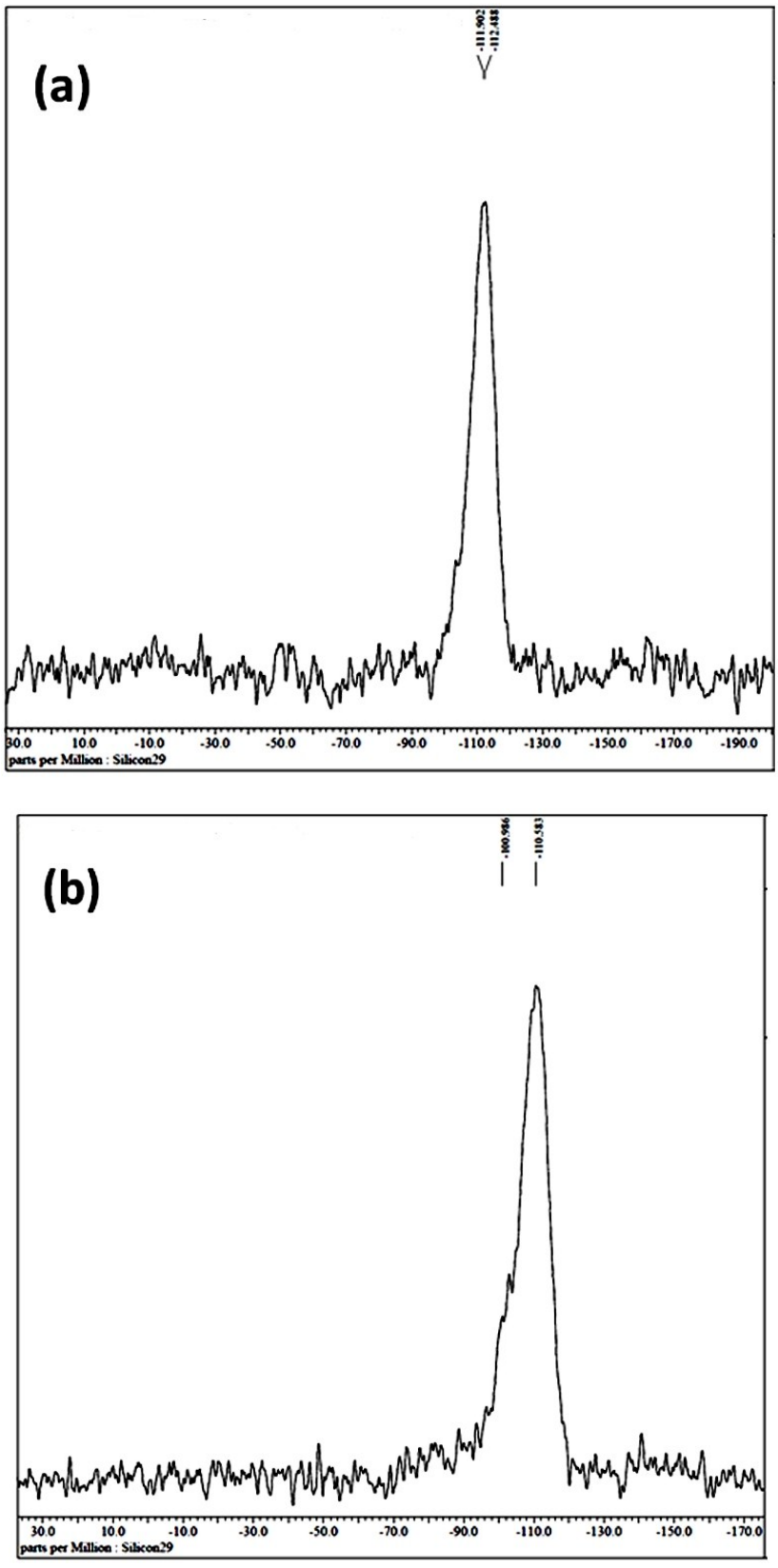
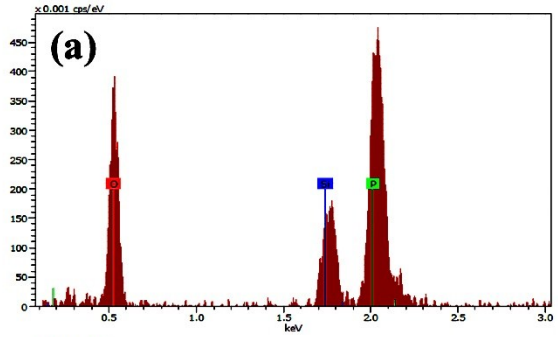
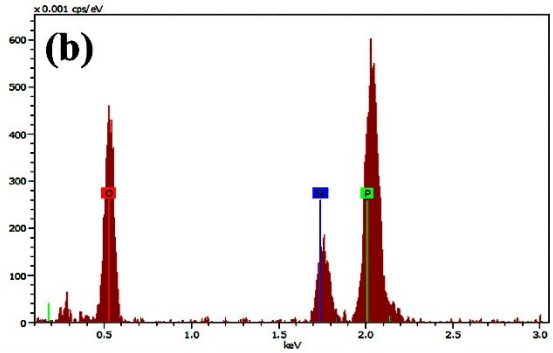
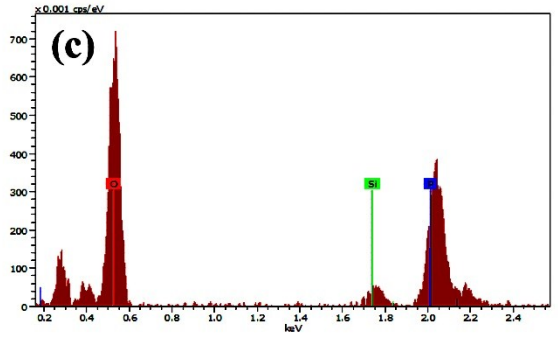


Figure S3. ^{29}Si NMR spectra of (a) Gel Paste - 4 and (b) Gel Paste - 6







(d)

Element	Gel Paste - 4		Gel Paste - 5		Gel Paste - 6	
	Weight %	Atomic %	Weight %	Atomic %	Weight %	Atomic %
Oxygen	55.73	70.45	55.83	70.62	55.95	70.79
Phosphorous	34.75	22.69	36.27	23.70	37.83	24.73
Silicon	9.53	6.86	7.90	5.69	6.22	4.48
Total	100	100	100	100	100	100

Figure S4. EDX analysis of three gel pastes

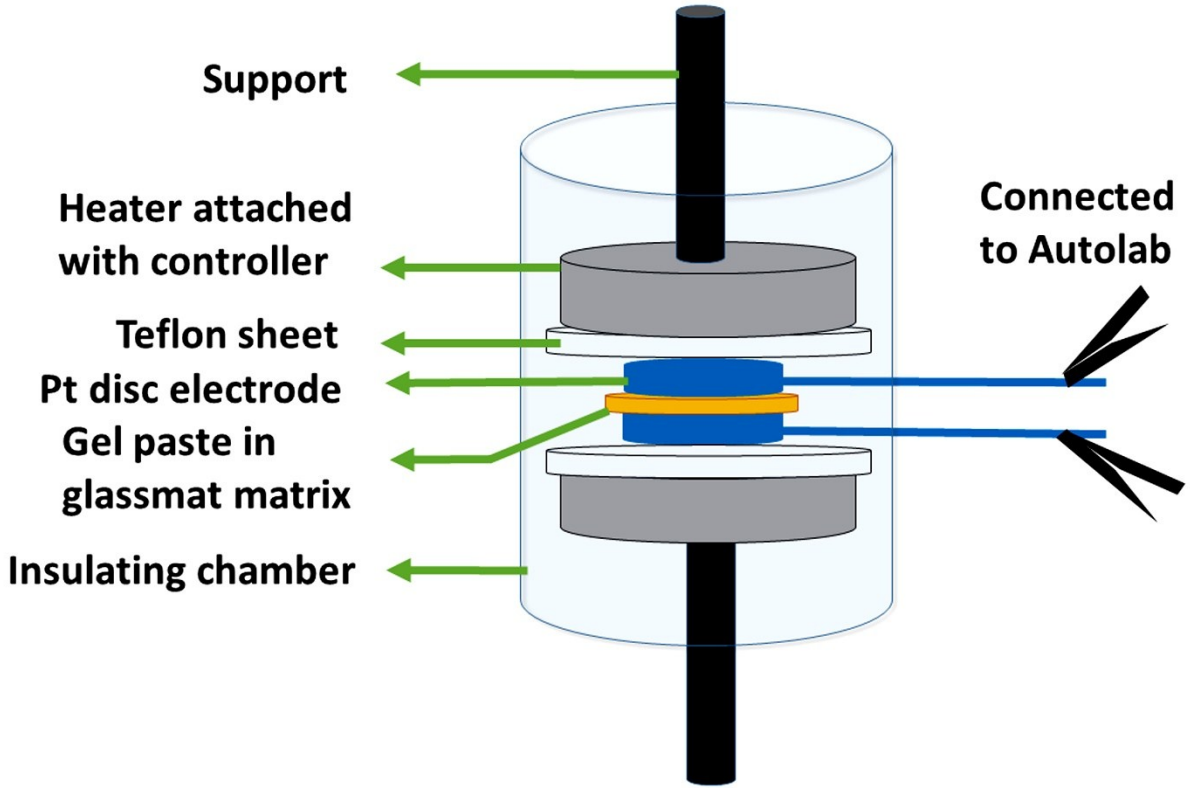


Figure S5. Proton conductivity measurement setup