Supplement of J. Sens. Sens. Syst., 9, 383–389, 2020
https://doi.org/10.5194/jsss-9-383-2020-supplement

JSSS Journal of Sensors and Sensor Systems Open Access

Supplement of

Glass electrode half-cells for measuring unified pH in ethanol–water mixtures

Agnes Heering et al.

Correspondence to: Frank Bastkowski (frank.bastkowski@ptb.de)

Supplement

B

Buffer pH	$pH_{abs}^{H_2O}$	ΔpH
9.00	8.99	1.98 1.98 5.04 5.03
7.00	7.00	3.03 3.03
4.01	3.97	
	s = 0.01	

C

Buffer pH	$pH_{abs}^{H_2O}$	ΔpH
9.00	8.98	1.96 1.99 4.99 5.05
7.00	7.00	3.01 3.05
4.01	3.97	
	s = 0.03	

D

Buffer pH	$pH_{abs}^{H_2O}$	ΔpH
9.00	8.99	2.00 1.97 5.04 5.02
7.00	7.00	3.04 3.03
4.01	3.96	
	s = 0.01	

Combined electrodes

Buffer pH	$pH_{abs}^{H_2O}$	ΔpH
9.00	9.02	2.02 2.05 5.05 5.07
7.00	7.00	3.03 3.05
4.01	3.96	
	s = 0.02	

Figure S 1: pH ladder with aqueous standard buffers. Buffer pH 7 was used as an anchor value (see Method section) and [N_{2225}][NTf_2] was used as salt bridge. Measured with a pair of half-cells B, C, D, and combined electrodes.

10

A

Solution	$pH_{abs}^{H_2O}$	$\Delta pH_{abs}^{H_2O}$
EtOH	8.93	
80% EtOH	8.23	0.71
50% EtOH	7.48	0.80
pH 7.00	7.00	0.37
pH 4.01	4.01	3.05
s =	0.05	

B

Solution	$pH_{abs}^{H_2O}$	$\Delta pH_{abs}^{H_2O}$
EtOH	8.86	
80% EtOH	8.20	0.69
50% EtOH	7.43	0.79
pH 7.00	7.00	0.40
pH 4.01	4.01	3.05
s =	0.03	

C

Solution	$pH_{abs}^{H_2O}$	$\Delta pH_{abs}^{H_2O}$
EtOH	8.92	
80% EtOH	8.23	0.69
50% EtOH	7.45	0.79
pH 7.00	7.00	0.40
pH 4.01	4.01	3.05
s =	0.05	

D

Solution	$pH_{abs}^{H_2O}$	$\Delta pH_{abs}^{H_2O}$
EtOH	8.88	
80% EtOH	8.19	0.68
50% EtOH	7.44	0.75
pH 7.00	7.00	0.40
pH 4.01	4.01	3.03
s =	0.03	

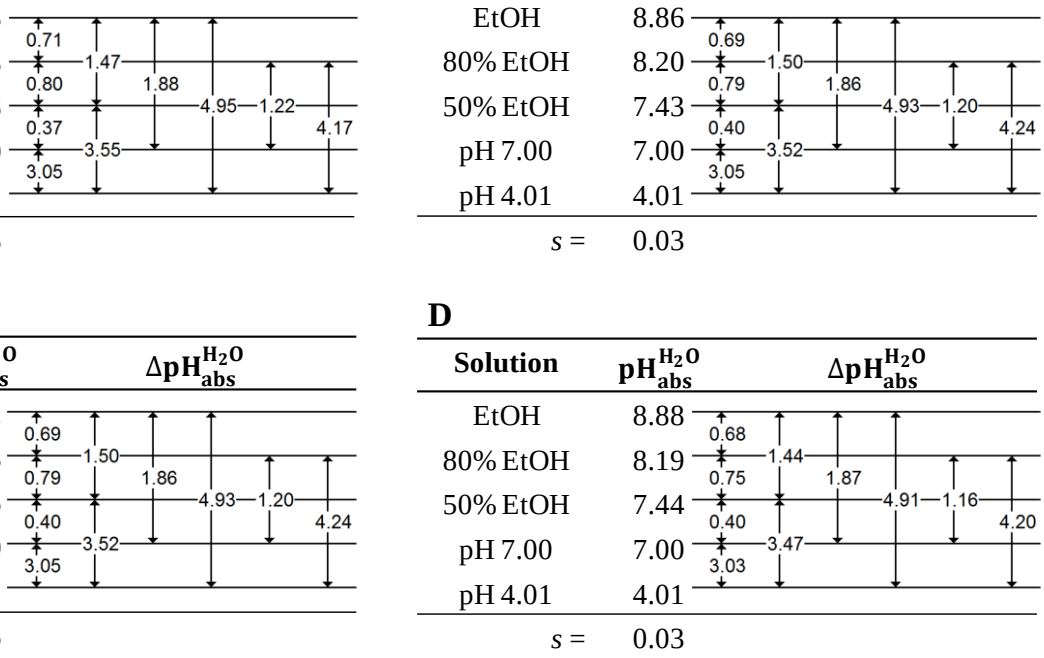

Figure S 2: pH ladder with 10 mM ammonium formate in ethanol-water mixtures. Buffer pH 7 and pH 4 were used as anchor values and [N_{2225}][NTf_2] was used as salt bridge. Measured with electrode pairs A, B, C and D.