

Supplementary Information

Fast Determination of Iodine Number of Biodiesel Using Capillary Zone Electrophoresis with Multi- and Single-Point Calibration

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Table S1. Optimization of the BGE by Peakmaster 5.3 simulation

BGE composition		Ionic strength / (mmol L ⁻¹)	Buffer capacity / (mmol L ⁻¹)	Γ EMD	EMD		pH
HCl / (mmol L ⁻¹)	6-Aminocaproic acid ^a / (mmol L ⁻¹)				NO ₃ ⁻	S ₂ O ₃ ²⁻	
10.00	20.00	10.00	11.86	0.0633	0.646	-0.556	4.42
10.00	30.00	10.00	15.83	0.0629	0.641	-0.554	4.71
10.00	40.00	10.00	17.83	0.0629	0.640	-0.555	4.89
10.00	50.00	10.00	19.07	0.0627	0.639	-0.556	5.02
10.00	60.00	10.00	19.89	0.0626	0.639	-0.556	5.12
10.00	70.00	10.00	20.48	0.0626	0.638	-0.556	5.19
10.00	80.00	10.00	20.92	0.0626	0.638	-0.556	5.26
10.00	90.00	10.00	21.27	0.0626	0.638	-0.556	5.32
10.00	100.00	10.00	21.54	0.0625	0.638	-0.556	5.37

^aPeakmaster master data shows 6-aminocaproic acid as e-aminocaproic acid. BGE: background electrolyte; EMD: electromigration dispersion.

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Table S2. Linearity evaluation for MPC and experimental values for F_{exp} and r^2 calculation. The SPC was developed using the response factor (equation 2)

MPC ^a	SPC ^a	Common values for both calibration modes			
		1 st replicate	2 nd replicate	3 rd replicate	Average response
$C_i / (\text{mg L}^{-1})$	$\frac{C_i}{C_{\text{NO}_3^-}}$	$\frac{Ar_i}{Ar_{\text{NO}_3^-}}$	$\frac{Ar_i}{Ar_{\text{NO}_3^-}}$	$\frac{Ar_i}{Ar_{\text{NO}_3^-}}$	$\frac{\overline{Ar}_i}{\overline{Ar}_{\text{NO}_3^-}}$
10.000	0.200	0.127	0.138	0.138	0.134
20.000	0.400	0.251	0.260	0.256	0.256
30.000	0.600	0.365	0.378	0.379	0.374
40.000	0.800	0.486	0.512	0.517	0.505
60.000	1.200	0.747	0.760	0.768	0.759
70.000	1.400	0.861	0.885	0.892	0.879
90.000	1.800	1.126	1.115	1.145	1.129

^aFor multi-point calibration (MPC) and single-point calibration (SPC): $F_{\text{calculated}} = 0.296$; $F_{(0.05,5,14)} = F_{\text{critical}}=2.958$. C_i and $C_{\text{NO}_3^-}$: concentration of Γ or NO_3^- for a specific calibration level, respectively; Ar_i and $Ar_{\text{NO}_3^-}$: peak areas of Γ and NO_3^- for a specific calibration level, respectively.