

## **Electronic Supplementary materials**

### **Fabrication of a two-membrane configured electrodialytic methanesulfonic acid generator for ion chromatography**

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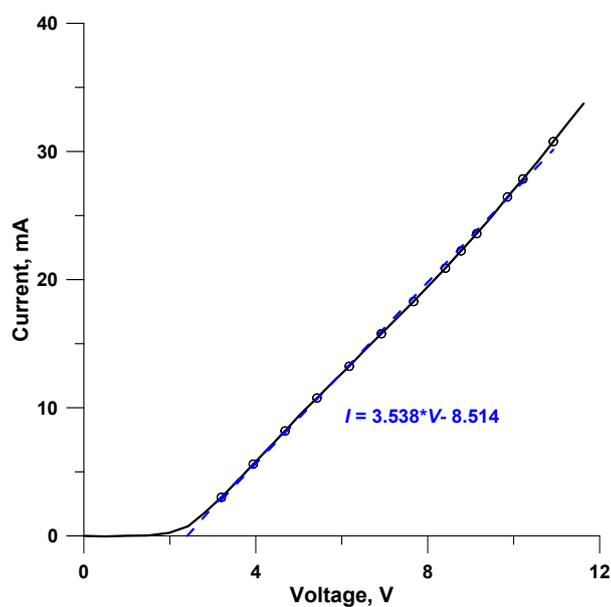
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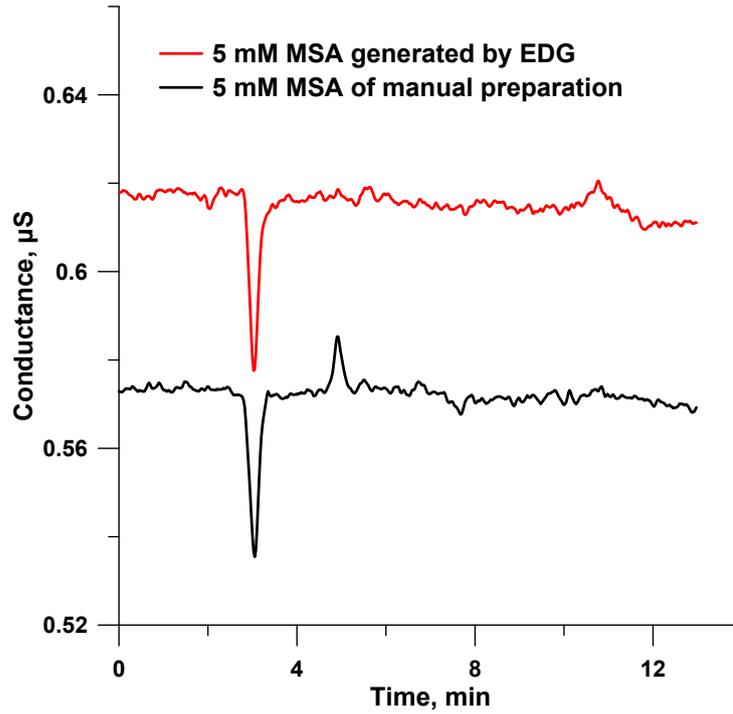
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### ***Reagents and materials***

Analyte solutions were prepared in the form of either sodium or potassium salts. Typically, these were analytical grade chemicals, used as received. Milli-Q ultra-pure water was used throughout with a specific resistance of 18.3 MΩ•cm. BPM and anion exchange membrane (AEM) were from Asahi Glass Public Corp., respectively.



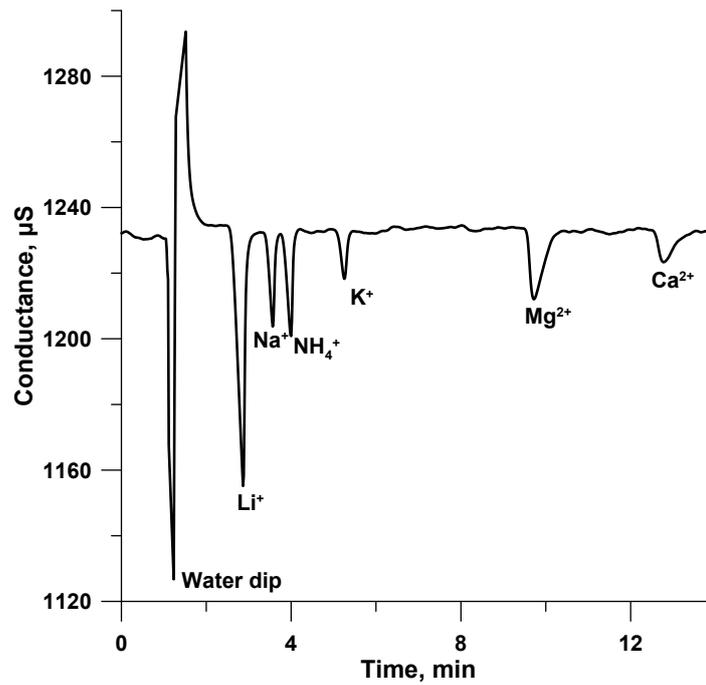
**SI-Fig. 1** current-voltage curve of MSA EDG



**SI-Fig. 2** Purity test of MSA eluents

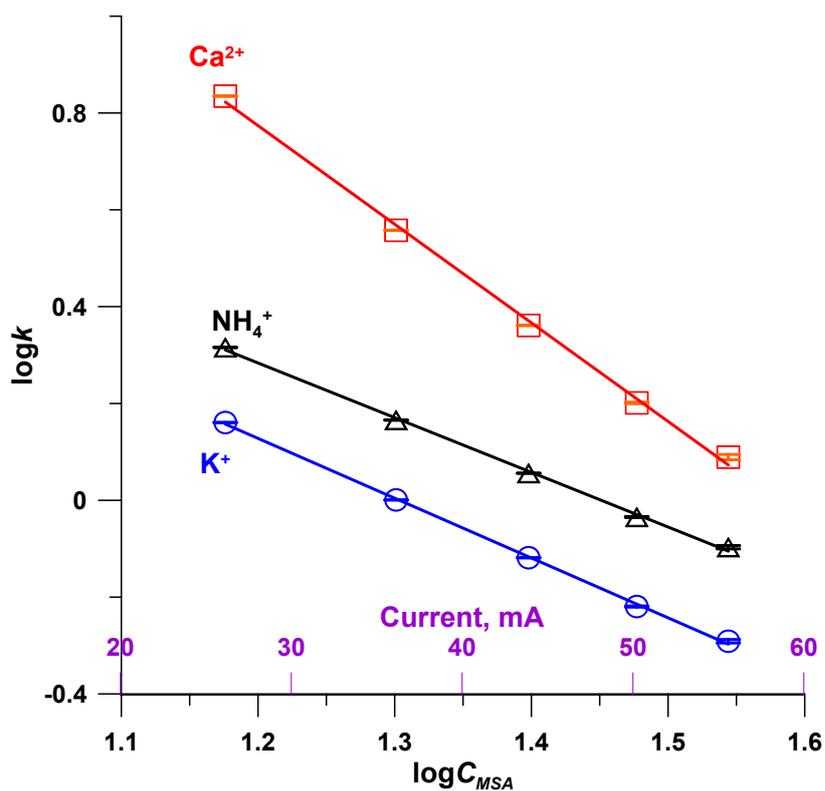
Conditions: isocratic mode, MSA concentration, 25 mM; Flow rate, 0.8 mL/min; Column, Dionex CS12A (4.0 mm i.d. × 250 mm length); Injection volume, 20  $\mu$ L; Column temperature, 30 °C; Suppression current, 55 mA.

Noted: the background level of the eluent generated by EDG was deliberately offset, aiming to show clearly.



**SI-Fig. 3** Chromatogram obtained of the IC system under the unsuppressed mode

Conditions: isocratic mode, MSA concentration, 4 mM; Flow rate, 1.0 mL/min; Column, Shodex YS-50; Injection volume, 20 µL; Column temperature, 40 °C; Non suppressed detection; Analytes (with concentrations of 20 ppm) identified from left to right: lithium; sodium; ammonium; potassium; magnesium; calcium.



**SI-Fig. 4** Retention dependent on MSA concentration generated by EDG  
 Conditions: isocratic mode, MSA concentration, 15 to 35 mM; Flow rate, 0.8 mL/min; Column, Dionex CS12A (4.0 mm i.d. × 250 mm length); Injection volume, 20 μL; Column temperature, 30 °C; Suppressed detection; Analytes' concentration, 5 ppm.