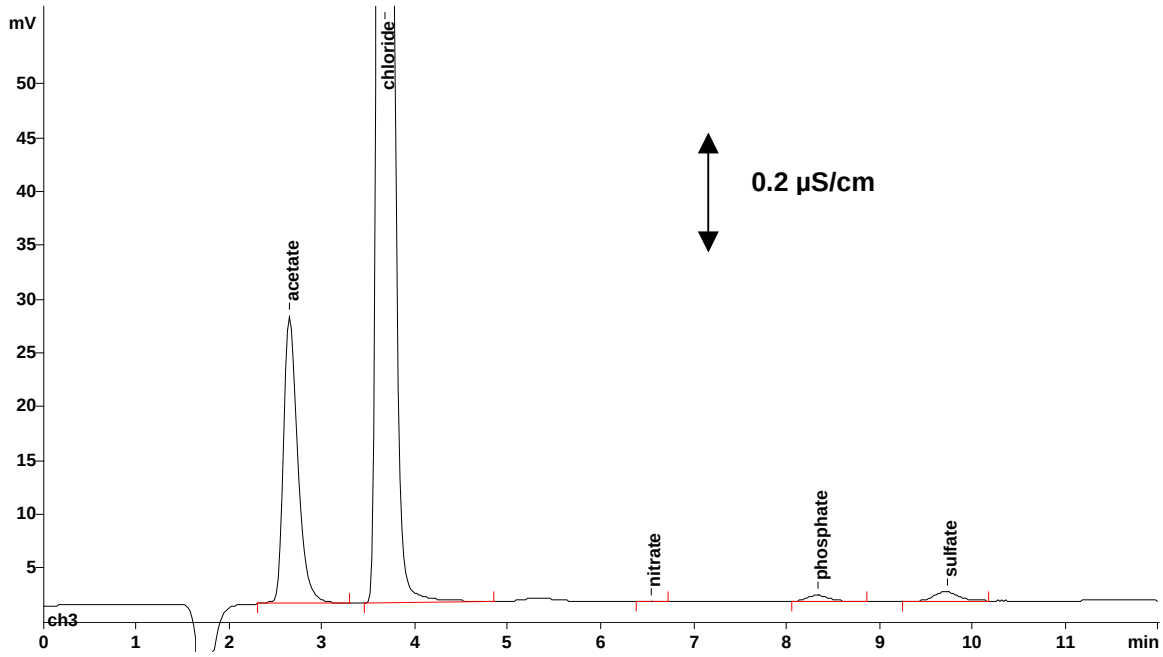
IC Application Note No. S-183

Title:	**Advanced inline dialysis setup for Ion Chromatography**

***Summary*:**	Determination of acetate, chloride, nitrate, phosphate and sulfate in mayonnaise using anion chromatography with conductivity detection after chemical suppression and advanced dialysis as inline sample preparation.

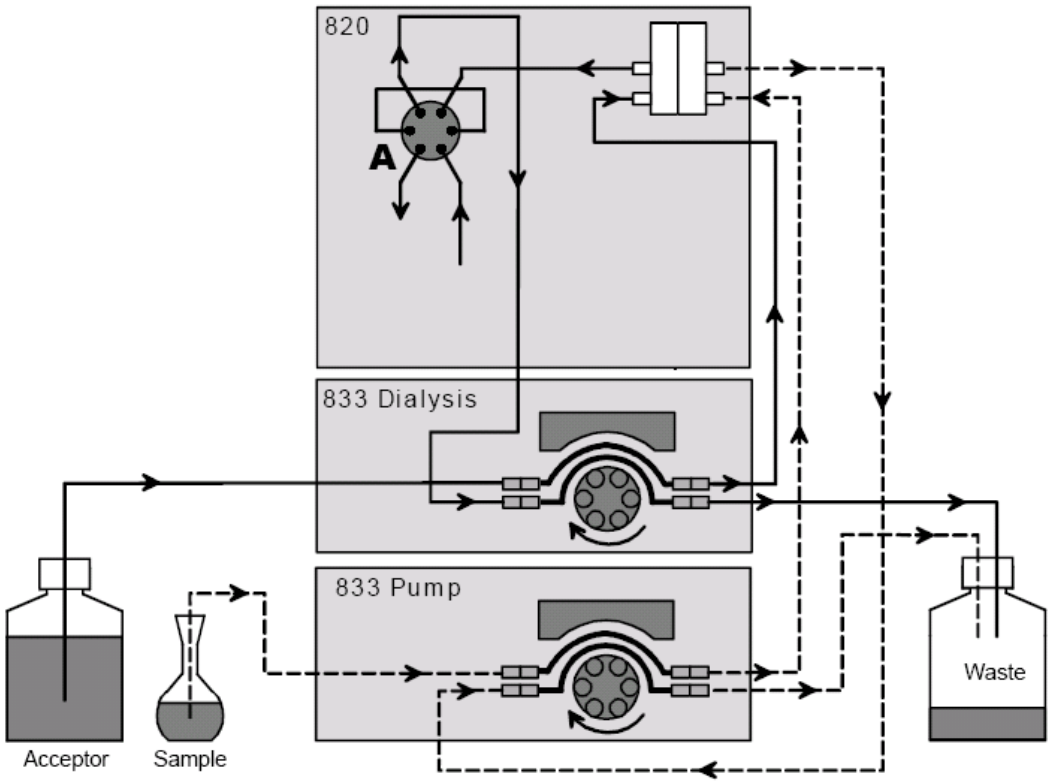
Sample:	Mayonnaise
Sample Preparation:	0.5 g dissolved in 100 g ultrapure water, injection after inline dialysis

Column:	6.1006.510 Metrosep A Supp 5 – 100
Eluent:	3.2 mmol/L sodium carbonate 1.0 mmol/L sodium hydrogen carbonate
Suppressor:	Metrohm Suppressor Module (MSM, 50 mmol/L H_2SO_4)
Flow:	0.7 mL/min
Injection Volume:	20 µL after inline dialysis



Results:	Acetate g/L	Chloride g/L	Nitrate	Phosphate mg/L	Sulfate mg/L
	9.012	**7.186**	**n.q.**	**68.3**	**44.6**

Advanced Dialysis Setup:



Advanced inline dialysis compared to the former setup

Old System:

Table with RSD of 40 injections of 5 ppm anions:

Ion	Mean	StdDev	RSD%	Recov.
Fluoride	5.105	0.084	1.6	102.1
Chloride	5.196	0.084	1.6	103.9
Nitrite	5.260	0.077	1.5	105.2
Bromide	5.203	0.067	1.3	104.1
Nitrate	5.139	0.076	1.5	102.8
Phosphate	4.737	0.168	3.5	94.8
Sulfate	4.868	0.114	2.3	97.4

New System:

Table with RSD of 40 injections of 5 ppm anions:

Ion	Mean	StdDev	RSD%	Recov.
Fluoride	4.900	0.040	0.8	98.0
Chloride	4.936	0.041	0.8	98.7
Nitrite	5.029	0.044	0.9	100.6
Bromide	4.968	0.047	1.0	99.4
Nitrate	4.920	0.028	0.6	98.4
Phosphate	4.847	0.066	1.4	96.9
Sulfate	4.847	0.057	1.2	96.9

Table with carry over of the old and new system:

Ion	old system in %	new system in %
Fluoride	0.22	0.12
Chloride	0.25	0.14
Nitrite	0.12	0.08
Nitrate	0.21	0.01
Phosphate	0.25	0
Sulfate	0.34	0.25

Comment:
After an injection of a 5 ppm standard, a blank (ultrapure water) was injected. This was done 5 times to calculate the carry over.

Old system:
Stopped flow achieved by means of a 6 port valve.