VA Application Note No. V - 130

Title:	**Determination of aluminum in the ppb range in aqueous eluates of filter layers (Solochrome violet RS method)**

Summary:	The concentration of Al is determined by adsorptive stripping voltammetry at the HMDE. The method is suitable for Al in concentrations in the range of 0.1 ppb to approx. 40 ppb Al^{3+}. Pb^{2+} ions do not interfere up to a concentration ratio Pb:Al = 10:1. Due to the slow complex formation of Al with solochrome violet RS the measuring solution was heated to 40°C for 10 min prior to the determination. For standard addition a solution of Al with solochrome violet RS complex was used. All reagents have to be added in the order as listed below.

Sample:	standard solution
Sample preparation:	none

Analysis of Al^{3+}

Acetate buffer pH 4.6	c(acetic acid) = 2 mol/L c(ammonia) = 1 mol/L
SVRS solution	c(SVRS) = 0.002 mol/L in water *SVRS: Solochrome Violet RS, Mordant Violet 5, Acid Alizarin Violett N, Acid Chrome Violet K, CAS: 2092-55-9* *Recommended: Sigma-Aldrich Cat.No.: 211001*
Measuring solution	10 mL (diluted) sample + 100 µL SVRS solution + 500 µL acetate buffer → if necessary adjust pH to 4.6 with NaOH or HNO_3
Working electrode (WE)	**MME** (Multi Mode Electrode) 6.1246.020
Auxiliary electrode (AE)	**Pt** 6.0343.000
Reference electrode (RE)	Ag/AgCl/KCl (3 mol/L): 6.0728.020 + 6.1245.010

Parameters

Working electrode	HMDE
Stirrer speed	2000 rpm
Mode	DP
Purge time	300 s
Deposition potential	-0.3
Deposition time	0 - 90 s (depending on the concentration)

	Equilibration time	5 s
	Pulse amplitude	50 mV
	Start potential	-0.25 V
	End potential	-0.6 V
	Voltage step	4 mV
	Voltage step time	0.4 s
	Sweep rate	10 mV/s
	Peak potential Al	-380 mV

Results:	Fe
	26 µg/L

Determination of Al