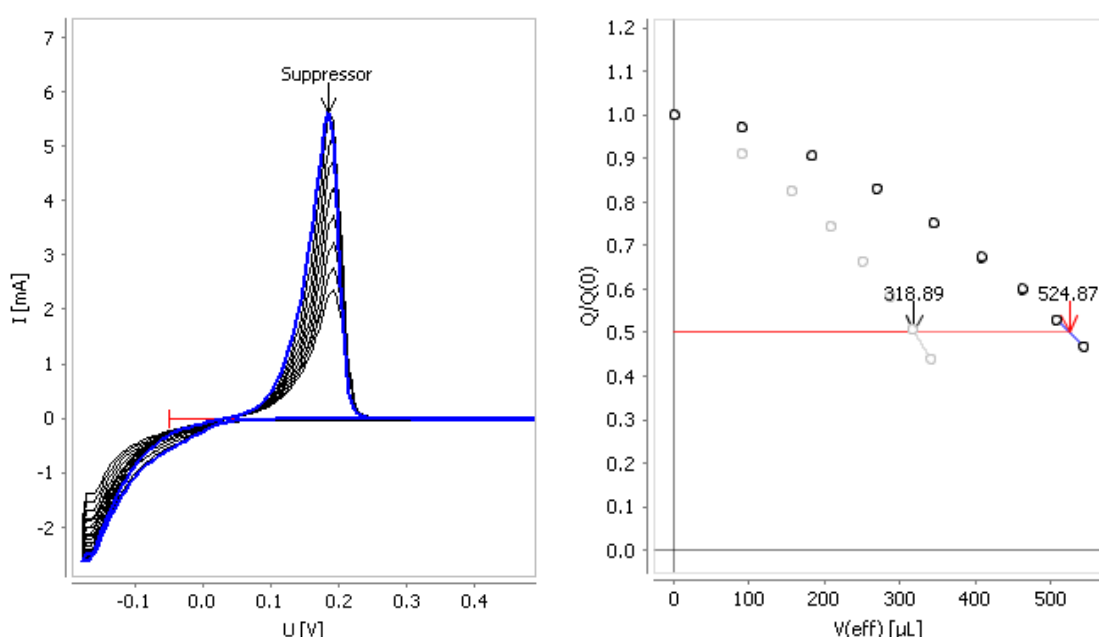


# Determination of suppressor in acid copper baths by smartDT



The determination of suppressor with dilution titration (DT) involves numerous additions with standard solution or sample to reach the evaluation ratio. Usually fixed, equidistant addition volumes are used. With smartDT, variable addition volumes are used that are automatically calculated by the software. At the beginning, the volumes are bigger. Towards the evaluation ratio, the addition volume becomes smaller to guarantee a good accuracy of the result. The operator defines the first and the smallest addition volume to be used. All volumes in between are calculated by the software considering the progress of the determination. Using smartDT with intelligent addition volumes, the determination of suppressor can be significantly accelerated with the same or even better accuracy than with the classic DT. The time saving per determination is between 20 and 40%.

# Method description

## Sample

Acid copper baths

## Instruments

894 Professional CVS semiautomated, viva



## Electrodes

Driving axle	6.1204.510
Platinum electrode tip 2 mm	6.1204.610
LL Ag/AgCl/KCl (3 mol/L) reference electrode. Bridge electrolyte c(KNO <sub>3</sub> ) = 1 mol/L	6.0728.130 6.1245.010
Separate Pt rod electrode	6.0343.100

## Solutions

VMS	$\beta(\text{CuSO}_4 \cdot 5\text{H}_2\text{O}) = 60 \text{ g/L}$ $\sigma(\text{H}_2\text{SO}_4) = 130 \text{ mL/L}$ $\beta(\text{Cl}^-) = 50 \text{ mg/L}$
Calibration standard	$\sigma(\text{suppressor}) = 5 \text{ mL/L}$
Check standard	$\sigma(\text{suppressor}) = 3 \text{ mL/L}$

## Parameters

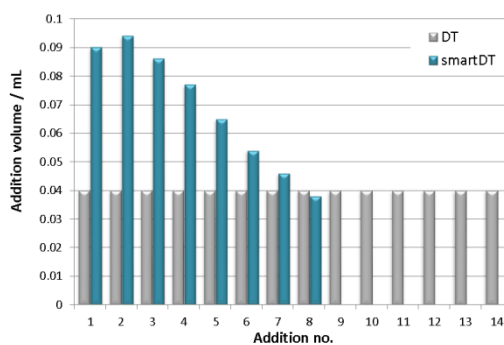
Electrode	RDE
Measuring mode	CVS
Stirring speed	2500 min <sup>-1</sup>
Hydrodynamic measurement	Yes
<i>Sweep</i>	
Start potential	1.625 V
First vertex potential	-0.175 V
Second vertex potential	1.625 V
Sweep rate	0.1 V/s
Substance	Suppressor

Peak potential	0.2 V
Baseline	Horizontal
Calibration method	DT (dilution titration)
Evaluation ratio	0.5

## Comparison of results

Suppressor	Classic DT	smartDT
Check standard	3.02 mL/L	3.04 mL/L
Recovery	100.7%	101.3%

## Comparison of number and volume of additions



## Comparison of estimated analysis time

	Classic DT	smartDT
No. of additions	14	8
Initial preparation	7 min	7 min
DT to stop criterium	28 min	16 min
Total analysis time	35 min	23 min
Time saving	--	34%

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