



The Mini Rotating Disc Electrode Developed in Company BVT Technologies, a.s.

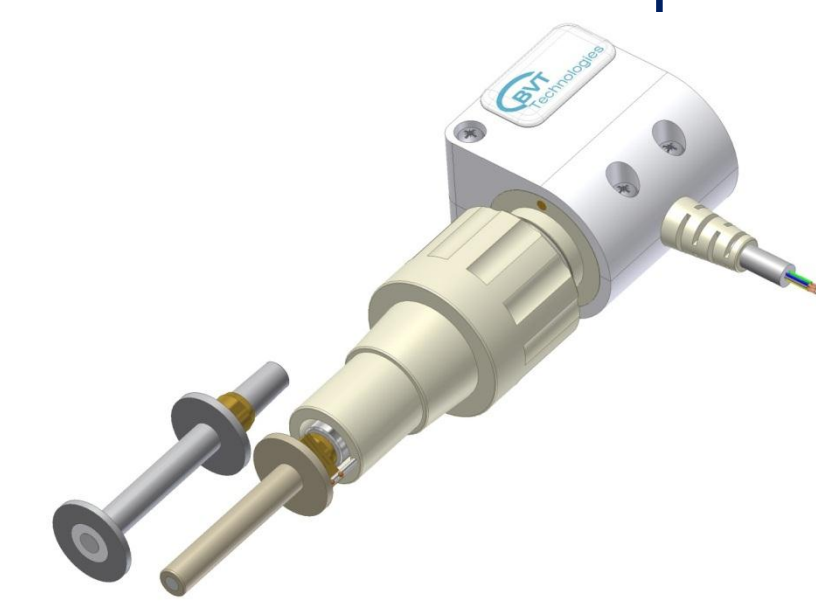
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Introduction

A rotating disc electrode (RDE) is one of the best methods to obtain efficient mass transport in a highly reproducible manner. The main advantage of RDE consists of possibility to control the mass transport by rotation speed. Classical RDE involve a platinum wire within glass tubing sealed in the plastic body of the RDE. The shape of the insulating mantle has an important role for the RDE function. BVT Technologies, a.s. developed mini RDE as disposable insert where the active surface is made by screen-printing.

Device advantages

- Small size, low liquid volumes
- Low price of whole set and disposable electrodes too
- Easy connection and operation trough USB connection to PC
- Can by connected to any potentiostat



Mini RDE device BVT Technologies, a.s., Czech Republic

Consumables for Mini Rotating Disk Electrode



1RDE.W1 – Pt wire in PEEK



2RDE.W – Screen printed electrode

Type	Technique	Material	Material of WE	Diameter of WE
1RDE.W	Wire in glass	PEEK	Pt	2 mm
2RDE.W	Screen printed electrode	Novodur	Pt, Au, Cu, GC	2,5 mm

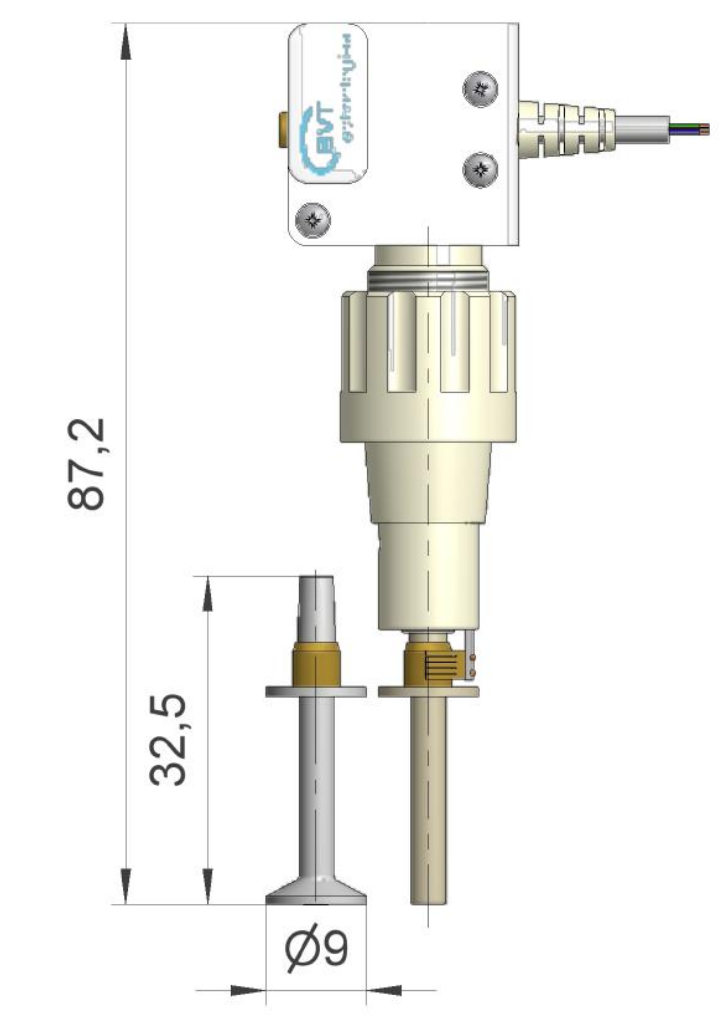
Parameters of accessories

Mini RDE

Rotational speed: 10 – 2500 rpm

Glass cell TC4

Length: 45 mm
 Height: 50 mm
 Width: 45 mm
 Volume: 3 – 20 ml
 Optimal volume: 3 – 5 ml



Experiment

Method

Cyclic voltammetry

Instruments

Potentiostat, E-corder 465 + SW Echem (eDAQ)
 WE – 2RDE.W2 + SW Motor Driver v 2.0 (BVT Technologies, a.s.)
 REF – RCE (BVT Technologies, a.s.)
 AUX – AC4.W1 (BVT Technologies, a.s.)
 Cell – TC4 (BVT Technologies, a.s.)

Chemicals

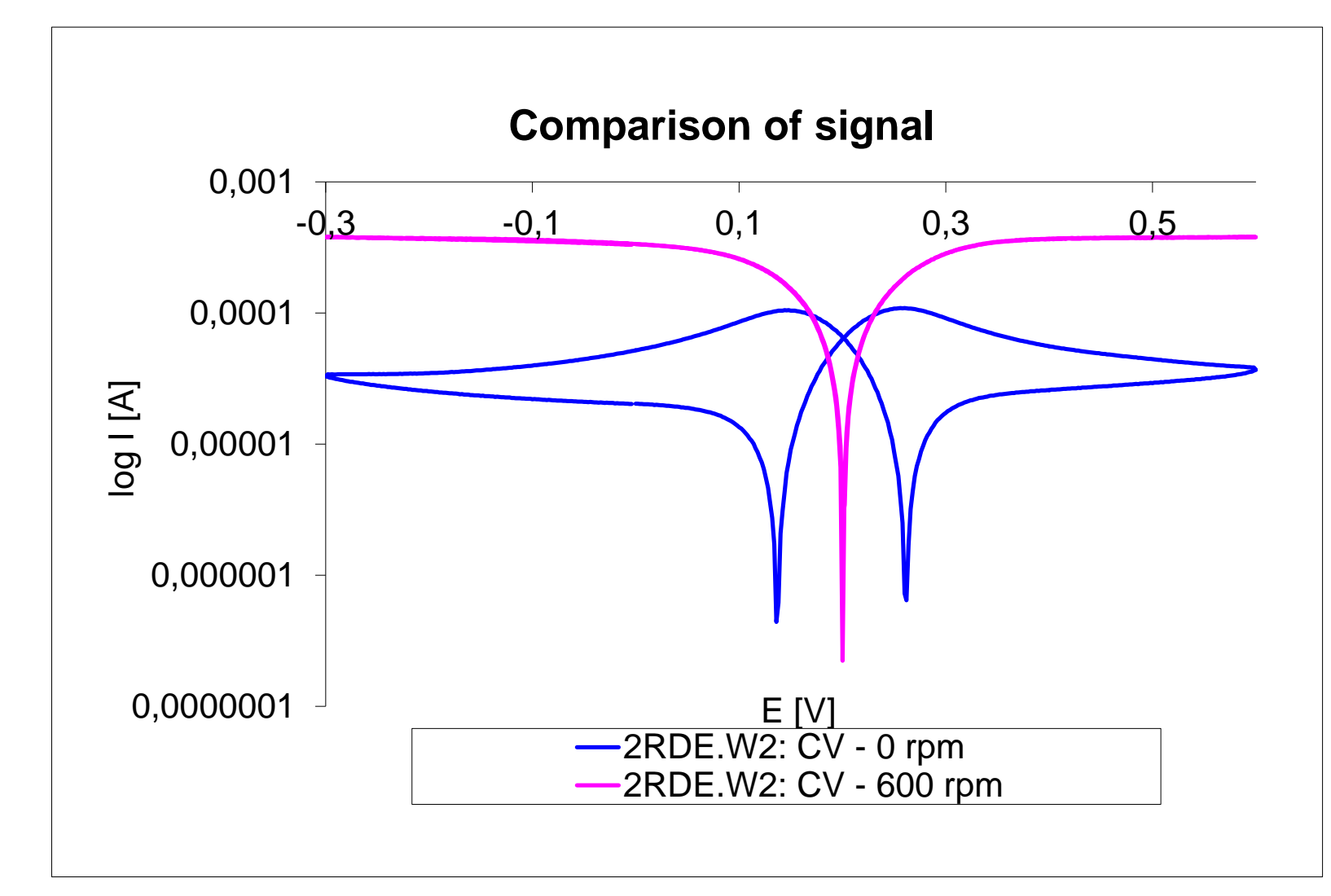
Ferro ferricyanide 0,01 M

Measurement parameters

E_{Max} [mV]	E_{Min} [mV]	Scan rate [mV/s]	Number of scan	I_{Max} [μ A]	Rotation[rpm]
1500	-1500	100	3	500	0
1500	-1500	100	3	500	600

Results

Comparison of measured cyclic voltamograms for rotation speed 0 and 600 rpm. Voltamogram is transform to logarithmic scale. The rotation improving mass transfer between bulk and electrode surface.



Acknowledgement

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Reference

Krejci J., Sejnohova R., Hanák V., and Vranova H.(2011). Screen printed electrodes improve mass transfer, New Perspectives in Biosensors Technology and Applications, Pier Andrea Serra (Ed.), ISBN: 978-953-307-448-1, InTech, Available from: <http://www.intechopen.com/articles/show/title/screen-printed-electrodes-improve-mass-transfer>