

INDIAN INSTITUTE OF TECHNOLOGY KANPUR
Department of Chemical Engineering
PG Research Lab

Standard Operating Procedure
Multichannel Voltammetry Analyser
Autolab 302 and Automac M101 (Except FRA)

Pre-requisite

- A. Fix Proper Stand(s) for required Electrode.
- B. Select (N2 Purging / Normal) Vessel(s) and make ready
- C. Fill 3M KCl Solution in Reference Electrode.
- D. Fix Reference and Counter Electrodes along with Dummy cell
- E. Select (Pt Rod Electrode/Pt wire Electrode) and fix Working Electrode; use Crocodile Clip if necessary.

1. Startup Procedure

- 1.1 Switch on UPS, Computer, and Booster (if required)
- 1.2 Switch on Autolab 302n (Left Push Button)
- 1.3 Switch on Cell (Right Push Button)
- 1.4 Open Nova 1.11 Software
- 1.5 Click on Tools>Database manager> {Create Date folder}

2. Operation and Data Acquisition

2.1 *Linear Sweep Voltammetry*

- 2.1.1 Set Step potential
 - Start potential
 - Stop Potential
 - Scan Rate Values

- 2.1.2 Click Start

2.2 *Cyclic Voltammetry*

- 2.2.1 Set Step potential
 - Start potential
 - Stop Potential
 - Scan Rate Values
 - No of Cycles (if required no of cycle= n, value should be 2n)

- 2.2.2 Click Start

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2.3 ***Frequency Response Analyzer (FRA)***

2.3.1 Menu>Set up View> FRA Impedance Potentiostat

2.3.2 Command > Change File Name

2.3.3 Option> FRA Frequency Scan Editor window opens

Set Highest Current

Lowest Current

Potential (According to Cell)

Frequency Step and Wave type

FRA Scan Range – First applied and Last Applied Frequency

Select all and replace and click OK

2.3.4 Click Start

2.4 ***Differential Pulse Voltammetry (DPV)***

2.4.1 Set Initial Potential

End Potential

Step potential

Modulation Time

2.4.2 Click Start

2.5 ***Chronoamperometry***

2.5.1 Set potential

Record signal

Duration

2.5.2 Enable rest of Record Signals

2.5.3 Click Start

3. **Shutdown procedure**

3.1 Copy data saved in CD

3.2 Switch off Cell, Instrument and Computer

3.3 Clean Vessel, holder, lid and stand including working area

3.4 Clean Electrode(s), Dip Counter Electrode(s) in 2% HNO₃

3.5 Dip Reference Electrode in 3M KCl solution