

ELECTROCHEMISTRY

Rotating Disc Electrode (RDE)

By Thabo Nkaki

ELECTROCHEMISTRY

☐ Three Electrode Setup:

- Working (WE) - *black*
- Reference (RE) - *white*
- Counter (CE) - *green*



ELECTROCHEMISTRY

❖ Voltammetric methods employed:

- Cyclic voltammetry
- Linear sweep voltammetry
- EIS
- Spectroelectrochemistry



ROTATING DISC ELECTRODE

❖ Working (WE)



ROTATING DISC ELECTRODE

❖ Three electrode setup:

- Working (WE)
- Reference (RE)
- Counter (CE)

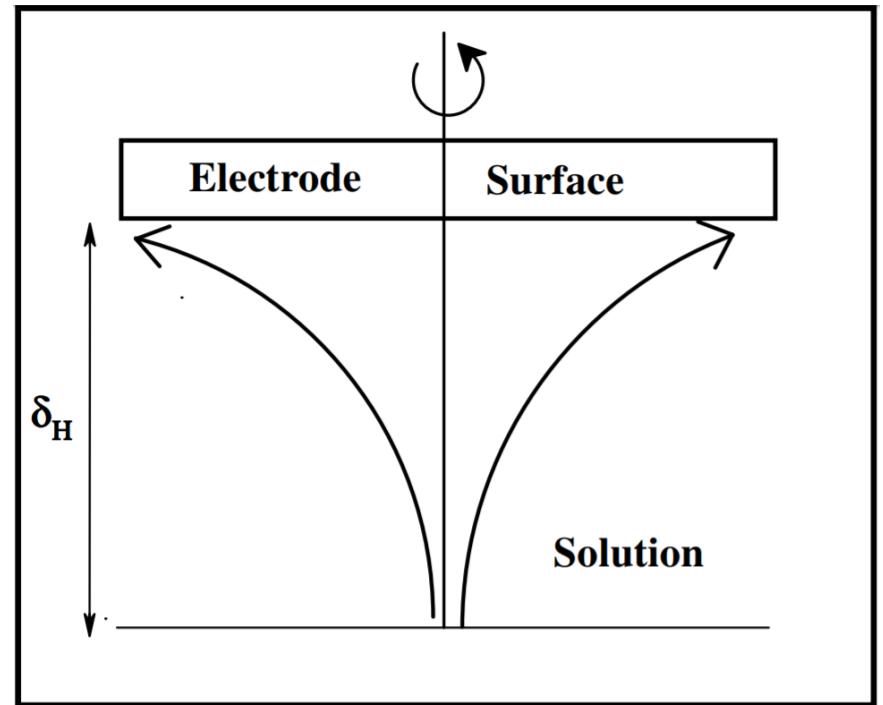


ROTATING DISC ELECTRODE

❖ Study methods:

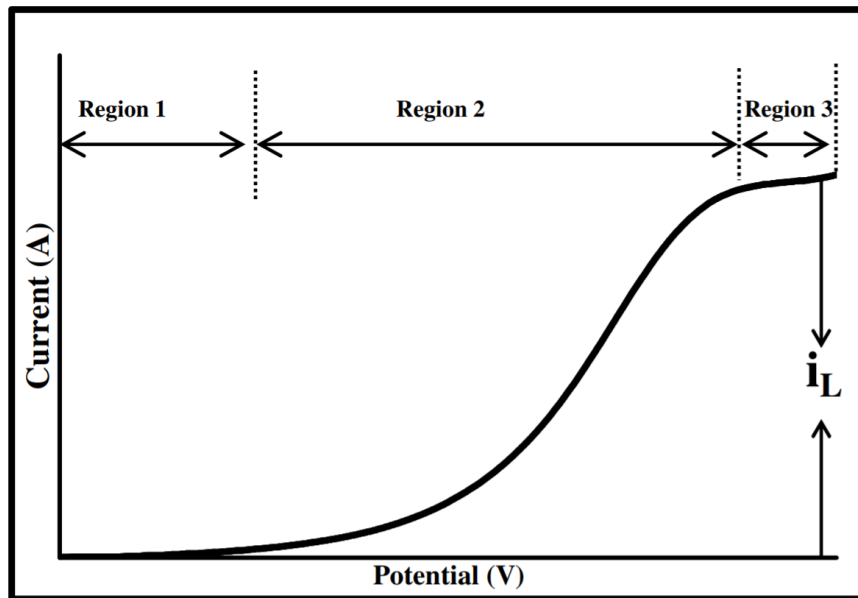
Hydrodynamics -

- Study electrode reaction kinetics

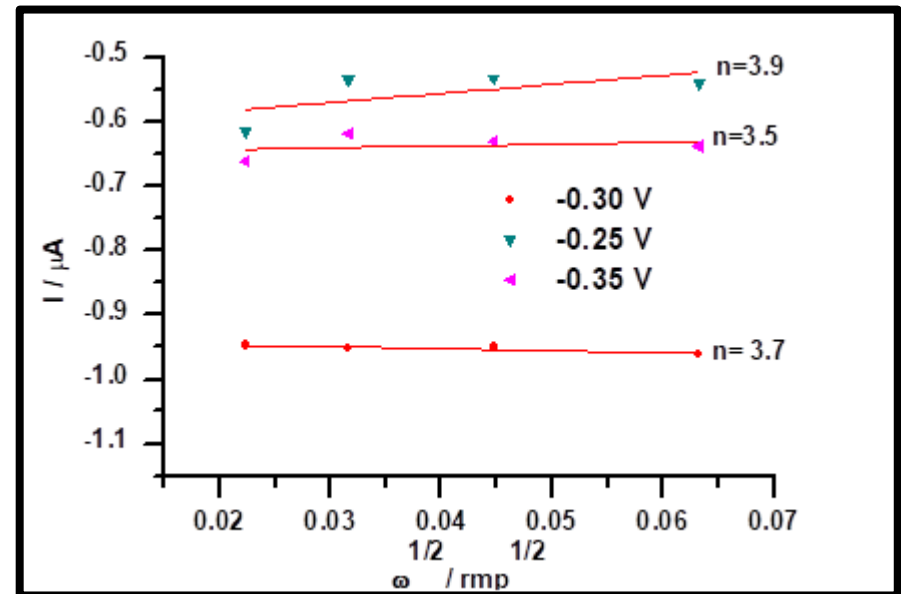


ROTATING DISC ELECTRODE

❖ Getting information out-



$$i_L = 0.62nFAD^{2/3}\omega^{1/2}v^{-1/6}C$$



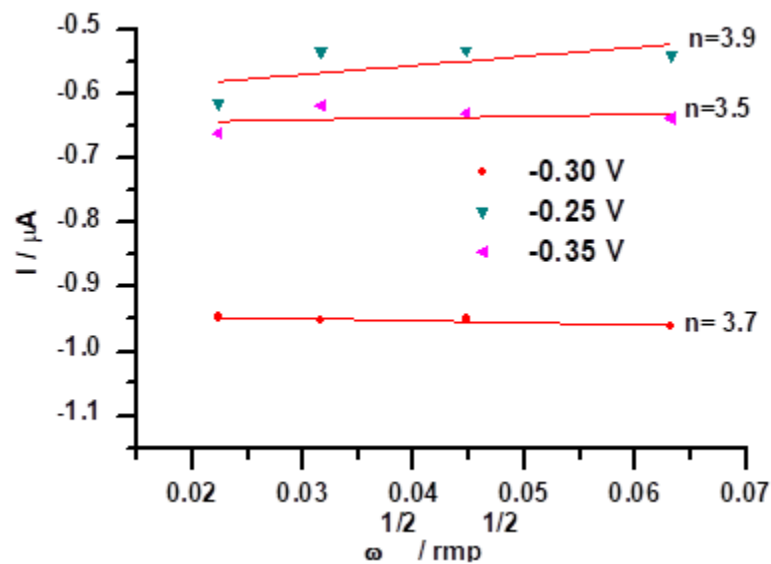
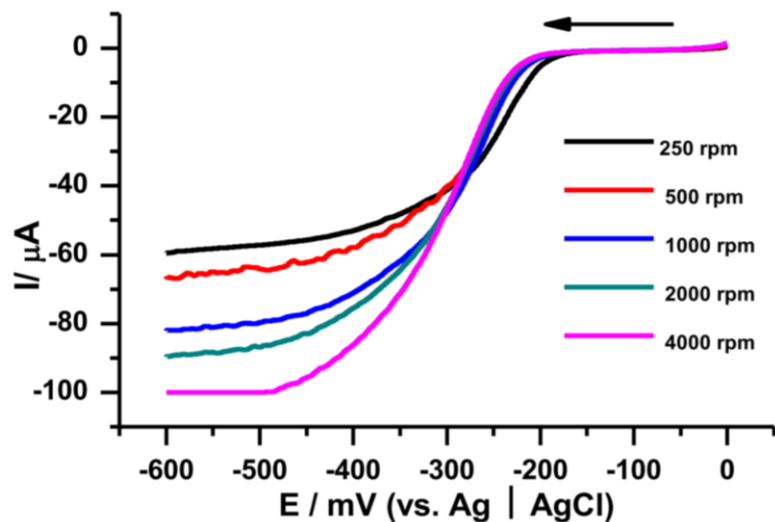
ROTATING DISC ELECTRODE

❖ Main applications –

- Finding number of electrons transferred (Levich equation)
- Reaction kinetics (Tafel plots and equation)

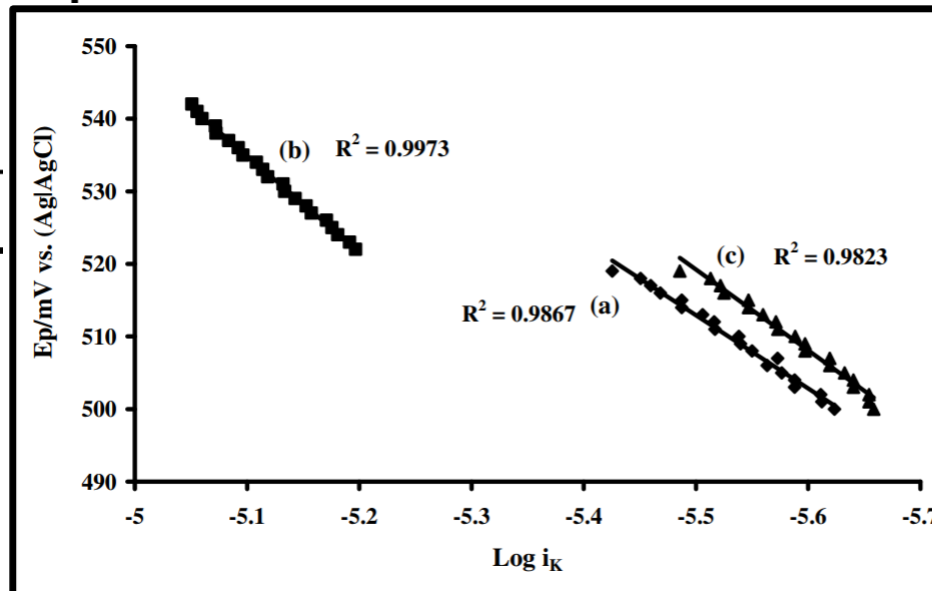
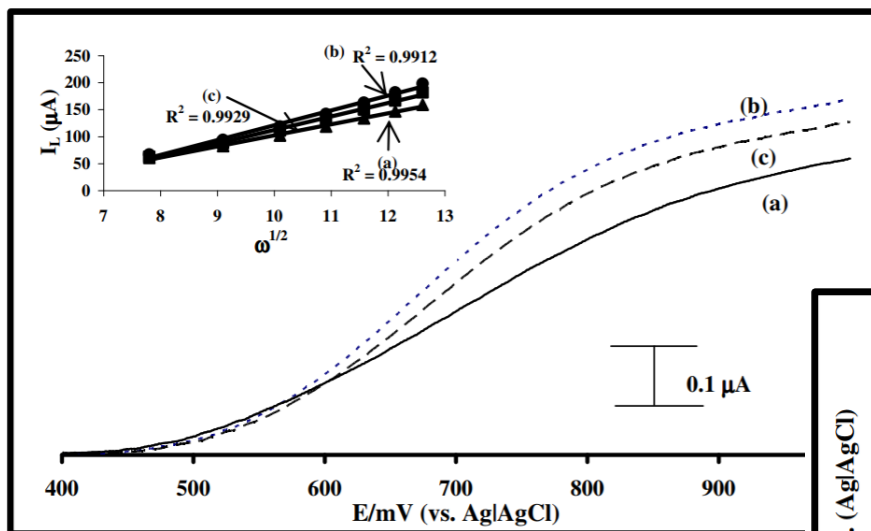
RDE EXAMPLES

Lekhetho



RDE EXAMPLES

Dr Nombona



CONCLUSION

Thank you