



2ND SOUTHERN AFRICAN HYDROGEN AND FUEL CELL CONFERENCE 2025

Pathway to industrialisation



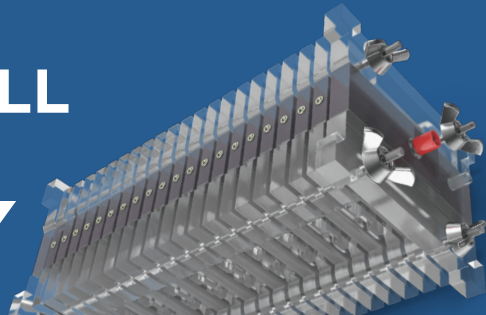
7-8 APRIL 2025 CONFERENCE
**VENUE SOUTHERN SUN ROSEBANK,
JOHANNESBURG**



SAIMM
THE SOUTHERN AFRICAN INSTITUTE
OF MINING AND METALLURGY



OF TECHNICAL EXCELLENCE



**ECSA VALIDATED CPD ACTIVITY
CREDITS = 0.1 POINTS PER HOUR ATTENDED**

FINAL PROGRAMME

Conference Day 1 - Monday 7 April 2025

- 08:00-08:30 **Registration and Early Morning Refreshments**
- 08:30-08:35 **Welcome and Opening**
B.S. Xakalashe, *Conference Chairperson*
- 08:35-08:40 **Safety Briefing**
Venue Official
- 08:40-08:55 **SAIMM Presidential Address**
E. Matinde, *SAIMM President*

Session 1: Hydrogen: Production and Storage

Session Chair: O. Barron, *Mintek, South Africa*

- 08:55-09:25 **Keynote Address: The Department of Science, Technology and Innovation (DSTI)'s role in contributing to the creation of a conducive hydrogen innovation ecosystem supported by skills development**
M. Mlilo, *Department of Science, Technology and Innovation, South Africa*
- 09:25-09:55 **Keynote Address: Pathways to reduce costs and improve efficiency for scaling hydrogen and fuel cell technologies**
L. Khotseng, *University of the Western Cape, South Africa*
- 09:55-10:15 **Advanced electrocatalysis for green hydrogen production**
Z.S.H.S. Rajan, G. Moss, J. Itota, D. Susac, R. Mohamed, *University of Cape Town, South Africa*

Poster Session

- 10:15-10:25 **Locally developed test station for water electrolysis characterisation with advanced capabilities**
A.S. Pushkarev, I.V. Pushkareva, C. Martinson, S. Mamathuntsha, H. Brink, S. Modise, A. Malakhov, D. Bessarabov, *North-West University, South Africa*
- 10:25-10:35 **Investigations of oxygen evolution reaction catalysts for proton exchange membrane water electrolyser**
M. Kozlova^{1,2}, I. Pushkareva³, D. Bessarabov³, A. Pushkarev³, *¹National Research Center Kurchatov Institute, Russia, ²National Research University, Moscow Power Engineering Institute, Russia, ³North-West University, South Africa*
- 10:35-10:55 **Mid-Morning Tea Break**

Session 1: Continue

- 10:55-11:15 **A computational approach to designing high entropy alloys for hydrogen storage**
B.S. Ramatsoma¹, E.M. Makhatha¹, D.E.P. Klenam², M.O. Bodunrin², *¹University of Johannesburg, ²University of the Witwatersrand, South Africa*
- 11:15-11:35 **Optimisation of metal hydride tanks for hydrogen storage through heat and mass transfer modelling**
B.L. Hem, A. Kolesnikov, *Tshwane University of Technology, South Africa*
- 11:35-11:55 **Design and development of metal hydride hydrogen compressors at HYSA systems based at the University of the Western Cape**
M.W. Davids, M. Lototskyy, V. Linkov, S. Pasupathi, *University of the Western Cape, South Africa*
- 11:55-13:00 **Lunch**

Session 2: Application for Hydrogen

Session Chair: Z.S.H.S. Rajan, *University of Cape Town, South Africa*

- 13:00-13:20 **Application of hydrogen as a reductant in metal production: Modelling and experimentation**
M. Khama¹, B.S. Xakalashe¹, Q.G. Reynolds^{1,2}, D. Mchabe¹, *¹Mintek, South Africa, ²University of Stellenbosch, South Africa*

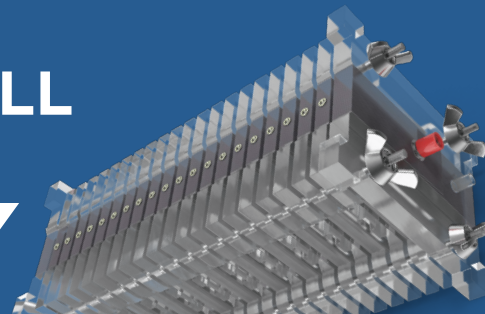
Session 3: Catalysts for Fuel Cells and Electrolysers

Session Chair: M. Khama, *Mintek, South Africa*

- 13:20-13:40 **Investigation of Pt ternary alloy catalysts as PEMFC ORR catalysts**
Z. Mseleku, T. Ngwenya, K. Tshehla, C. Gray, *Mintek, South Africa*
- 13:40-14:00 **Synthesis, characterisation and testing of ruthenium-modified iridium oxide (Ir_xRu_yO₂) catalyst in a laboratory scale proton exchange membrane water electrolyser (PEMWE)**
D. Zide^{1,2}, A. Sinto^{1,2}, S. Chidziva², T. Oosthuysen¹, T. Tawonezvi^{1,2}, S. Pasupathi², B.J. Bladergroen², *¹Cape Peninsula University of Technology, ²University of the Western Cape, South Africa*
- 14:00-15:00 **Ice Breaker Quiz**
- 15:00-16:00 **End of Conference Day 1 and Afternoon Refreshments**



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Conference Day 2 - Tuesday 8 April 2025

09:00-09:30	Registration and Early Morning Refreshments	10:50-11:10	Optimisation of hydrocarbon-based membrane electrode assembly for proton exchange membrane fuel cells B.K. Tawa, F. van Schalkwyk, D. Susac, <i>University of Cape Town, South Africa</i> (Online Presentation)
09:30-09:35	Welcome and Opening B.S. Xakalashe, <i>Conference Chairperson</i>		
09:35-09:40	Safety Briefing Venue Official	11:10-11:30	The effect of carbon-supported and -unsupported iron on reversal tolerance and anode durability U. Nyambi, H. Moydien, D. Susac, <i>University of Cape Town, South Africa</i>
Session 4: Fuel Cell Session Chair: B.S. Xakalashe, <i>Mintek, South Africa</i>		11:30-12:30	End of Conference and Lunch
09:40-10:10	Keynote Address: Development progress of high-performance, durable and low-cost fuel cell MEA solutions at HySA catalysis (UCT) F. van Schalkwyk, D. Susac, <i>University of Cape Town, South Africa</i>		
10:10-10:30	Roll-to-roll coating methods for the manufacture of PEMFC MEAs C. Felix, O. Barron, <i>Mintek, South Africa</i>		
10:30-10:50	Mid-Morning Tea Break		