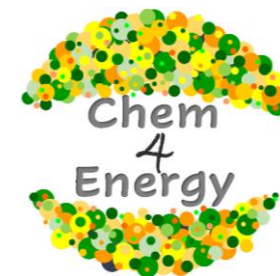


**Chem4Energy Annual Conference**  
**Materials and Processes for a Sustainable Energy Future**  
**Monday 7 – Friday 11 April 2025**



*Conference Programme (may be subject to amendment)*

**Monday 7 April 2025**

13:00 – 13:30	<i>Registration</i>	
13:30 – 13:40	<b>Welcome and Opening</b>	Prof Nora de Leeuw University of Leeds, UK; Utrecht University, The Netherlands
13:40 – 13:50	<i>Chair's comments</i>	<i>Professor Veikko Uahengo</i>
14:00 – 14:45	<b>Introductory Lecture</b>	<b>Professor Anicia Peters, CEO</b> <b>National Commission on Research, Science and Technology,</b> <b>Namibia</b>
14:45 – 15:15	<i>Refreshment Break</i>	
15:15 – 16:00	<b>Keynote</b> Extraction of critical minerals from copper-nickel concentrate: The role of coordination chemistry in the hydrometallurgical process	<b>Professor James Darkwa, University of Johannesburg, South Africa</b>
16:00 – 16:20	Photocatalytic H <sub>2</sub> evolution by hydrothermally synthesized NaBH <sub>4</sub> - spiked ZnS nanostructures	Theopolina Amakali, University of Namibia
16:20 – 16:40	Ruthenium <i>fcc</i> surfaces and nanoparticles for hydrogen production	Dr Marietjie Ungerer, University of Leeds, UK
16:40 – 17:00	Photocatalytic Hydrogen Production via Cobalt Phthalocyanine Incorporated with Metal-Organic Framework	Dr Sheriff Balogun, University of Limpopo, South Africa
17:00 – 17:20	Synthesis of Ni-Al LDHs by Co-Precipitation method: Their role in hydrogen production	Meameno-Etuna Tweufilwa, University of Namibia
17:30	<i>Close of session</i>	

**Tuesday 8 April 2025**

08:30 – 08:40	<i>Chair's comments</i>	<i>Professor Cornie van Sittert</i>
08:40 – 09:25	<b>Keynote</b> Current challenges in catalytic science to achieve a net zero world	<b>Professor Graham Hutchings, Cardiff University, UK</b>
09:25 – 09:45	DFT study of oxidative addition to mononuclear gold(I) complexes for sustainable energy	Zinhle Mtshali, University of Stellenbosch, South Africa
09:45 – 10:10	LDHs catalysts for SCR of reduction of NH <sub>3</sub> to NO and NO <sub>2</sub>	Dr Ateeq Rahman, University of Namibia
10:10 – 10:30	Computational and experimental studies of single atom alloy catalysts for NH <sub>3</sub> synthesis	Geofrey Njovu, University of Oxford, UK
10:30 – 11:00	<i>Refreshment break</i>	
11:00 – 11:20	Investigation into support influence on rWGS activity of Fe <sub>3</sub> Ni catalysts using metal oxide-overlayered alpha-Al <sub>2</sub> O <sub>3</sub> supports	Professor Nico Fischer, University of Cape Town, South Africa
11:20 – 11:40	Photocatalytic activities of aluminium-doped zinc oxide thin films via aqueous spray method	Dr Philipus Hishimone, University of Namibia
11:40 – 12:00	Novel amino acid-based surfactants with intrinsic luminescence for UV down-conversion and enhanced solar energy efficiency	Dr Etienne Wiese, North-West University, South Africa
12:00 – 13:15	<i>Lunch</i>	
13:15 – 13:25	<i>Chair's comments</i>	<i>Dr Marietjie Ungerer</i>
13:25 – 14:10	<b>Keynote</b> Density functional theory study of catalytic materials in metal-air batteries	<b>Professor Khomotso Maenetja, University of Limpopo, South Africa</b>
14:10 – 14:30	Theoretical investigation of optoelectronic properties of Ru-dyes for solar cell application	Dr Willem Pendukeni Nashidengo, University of Namibia
14:30 – 14:50	Improving Pd-based alloy catalysts for CO <sub>2</sub> hydrogenation with DFT and AI analysis	Dr Igor Kowalec, Cardiff University, UK

**Tuesday 8 April 2025 continued**

14:50 – 15:10	<b>To be confirmed</b> Exchange-correlation functionals' compatibility for the properties of NaAlP <sub>2</sub> O <sub>7</sub> solid electrolyte material: A DFT study	Mamabolo Mashaole Stuart, University of Limpopo
15:10 – 15:40	<i>Refreshment Break</i>	
15:40 – 16:00	Structure prediction of energy materials: Results obtained on a supercomputer and a Quantum Annealer Computer	Professor Scott Woodley, University College London, UK
16:00 – 16:20	Computational modelling of carbon dioxide sequestration by zeolites or cerium dioxide	Professor Georgi N. Vayssilov, University of Sofia, Bulgaria
16:20 – 16:40	Exploring the impact of spin coupling on properties of Manganese Oxide Cathode Materials: A DFT study	Mogau Kgasago, University of Limpopo, South Africa
16:45 – 18:30	<b>Poster Session</b>	
18:30	<i>Close of Session</i>	

**Wednesday 9 April 2025**

08:30 – 08:40	<i>Chair's comments</i>	<i>Professor Richard Catlow</i>
08:40 – 09:25	<b>Keynote</b> The development of advanced fuel cell supports with improved cathode durability	<b>Dr Thelma Ngwenya, Mintek, South Africa</b>
09:25 – 09:45	Highly photocatalytic Cu-doped TiO <sub>2</sub> thin films fabricated by the aqueous spray method	Klaudia Mwatile, University of Namibia
09:45 – 10:10	Metal-organic framework modified carbon nanotubes for hydrogen production from formic acid	Dina Thole, University of Limpopo, South Africa
10:10 – 10:30	Chicken eggshells as heterogeneous catalyst for biodiesel production from E.spicatum seeds oil	Hilaria Hakwenye, University of Namibia
10:30 – 11:00	<i>Refreshment break</i>	

### Wednesday 9 April 2025 continued

11:00 – 11:20	Materials design for better catalysis: how simulation can inform the production of more sustainable fuels	Dr Matthew Quesne, University of Leeds, UK
11:20 – 11:40	Efficient formic acid dehydrogenation mediated by novel pyridyl-formamidine ligated Ru(II) complexes	Professor Andrew Swarts, University of the Witwatersrand, South Africa
11:40 – 12:00	Amide-rich NaH as a highly active catalyst for ammonia synthesis	Dr Michael Higham, University College London, UK
12:00 – 13:15	<i>Lunch</i>	
13:15 – 13:25	<i>Chair's comments</i>	<i>Professor Likius Daniel</i>
13:25 – 14:10	<b>Keynote</b> Energetics and chemistry at the reactive electrocatalyst-liquid interface	<b>Professor Jan-Philipp Hofmann, Technical University of Darmstadt, Germany</b>
14:10 – 14:30	Perchlorate fusion–hydrothermal synthesis of Nano-Crystalline IrO <sub>2</sub> : Leveraging stability and oxygen evolution activity	Dr Rhiyaad Mohamed, University of Cape Town, South Africa
14:30 – 14:50	Experimental investigation on electrical discharges as an ignition source for Ammonia/Hydrogen/Air mixtures	Ndapanda Musole, University of Namibia
14:50 – 15:10	<b>To be confirmed</b> Preparation of Pd@PANI/MIL-101 (Cr) composite for photocatalytic hydrogen production by recycling palladium ions	Ramollo Khaleke Veronicah, University of Limpopo
15:10 – 15:40	<i>Refreshment Break</i>	
15:40 – 16:00	Alkaline water electrolysis: Electrocatalyst and binder innovations	Dr Anzel Falch, University of the Witwatersrand, South Africa
16:00 – 16:20	OER catalysts (IrM oxides) are characterized for green hydrogen production via PEM water electrolysis	Dr Shawn Gouws, Nelson Mandela University, South Africa
16:20 – 16:40	Photocatalytic activities of aluminium-doped zinc oxide thin films via aqueous spray method	Wilka Titus, University of Namibia
16:45	<i>Close of Session</i>	
18:00	<i>Optional dinner</i>	<i>TBC</i>

**Thursday 10 April 2025**

08:30 – 08:40	<i>Chair's comments</i>	<i>Professor Scott Woodley</i>
08:40 – 09:25	<b>Keynote</b> Modelling defects in oxides and nitrides	<b>Professor Richard Catlow, University College London</b>
09:25 – 09:45	DFT study of the mechanism of water splitting on CuWO <sub>4</sub> surface	Xuan Chu, University of Leeds, UK
09:45 – 10:10	Optimization of biomass-derived activated charcoal supporting TiO <sub>2</sub> nanoparticles as a potential photocatalyst	Justine Auene, University of Namibia
10:10 – 10:30	<b>To be confirmed</b> First principles study of hydrogen adsorption on Fe <sub>2</sub> CrSi (110) surface	Dr David Tshwane, Council for Scientific & Industrial Research, South Africa
10:30 – 11:00	<i>Refreshment break</i>	
11:00 – 11:20	Percolation Threshold for the Photocatalytic Degradation of MB using unprecedentedly high concentrations of metallic silver nanoparticles in a ZnO thin film	Professor Likius Daniel, University of Namibia
11:20 – 11:40	<b>To be confirmed</b> Exploring the potential of Ti <sub>40</sub> V <sub>30</sub> Cr <sub>20</sub> Fe <sub>5</sub> Al <sub>5</sub> high entropy alloy for hydrogen storage capability	Jacqueline Tau, Council for Scientific & Industrial Research, South Africa
11:40 – 12:00	Activated carbon from waste paper for the removal of contaminants from wastewater	Viola Willemse, University of Namibia
12:00 – 13:15	<i>Lunch</i>	
13:15 – 13:25	<i>Chair's comments</i>	<i>Dr Matthew Quesne</i>
13:25 – 13:45	Title TBC	Professor Cornie van Sittert, North-West University, South Africa
13:45 – 14:10	CO <sub>2</sub> sorption studies of two isostructural Co(II) and Zn(II) mixed ligand metal organic frameworks containing substituted diimide ligands	Dr Eustina Batisai, University of Venda, South Africa
14:10 – 14:30	<b>To be confirmed</b> The role of Cu <sub>5</sub> Pd cluster during CO <sub>2</sub> hydrogenation on ZnO (010) surface	Phaahla Tshegofatso Michael, University of Limpopo
14:30 – 14:50	Photocatalytic degradation of Rhodamine B dye using Cu <sub>4</sub> O <sub>3</sub> nanoparticles under visible Light	Jacobina Nangombe, University of Namibia

### Thursday 10 April 2025 continued

14:50 – 15:20	<i>Refreshment Break</i>	
15:20 – 15:40	Title TBC	Professor Nora de Leeuw, University of Leeds, UK
15:40 – 16:00	<b>To be confirmed</b> Title TBC	Cherise Thesner, North-West University, South Africa
16:00 – 16:30	Discussion on Future Activities	All
16:30	<i>Close of Session</i>	
18:30	<i>Conference Dinner</i>	<i>Hotel Restaurant</i>

### Friday 11 April 2025

08:30 – 08:40	<i>Chair's comments</i>	<i>Professor Nora de Leeuw</i>
08:40 – 09:00	Removal of Contaminants from Wastewater with Activated Carbon from Acacia Erioloba Seed-Pods	Elia Haukongo, University of Namibia
09:00 – 09:20	GH <sub>2</sub> -based ammonia-derived fertilizers, their application in desert soil fertility at Daures Village	Matilde Johannes, University of Namibia
09:20 – 09:40	TBC	TBC
09:40 – 10:00	TBC	TBC
10:00 – 10:30	Prize Giving & Closing remarks	Professor. Cornie van Sittert, North-West University, South Africa Professor. Nora de Leeuw, University of Leeds, UK
10:30	<i>Close of Conference</i>	

### Departure

