Scientific Programme

CATSA 2023 CONFERENCE PROGRAM

Sunday, 5 NOVEMBER	
15h00 - 18h00	REGISTRATION
18h00	ICEBREAKER / STUDENT CHALLENGE

Monday, 6 NOVEMBER			
07h00 - 08h30	Breakfast		
07h00 - 12h00	Late Registration		
08h30 - 08h40	WELCOME / CONFERENCE OPENING - Conference and CATSA chair: Prof. Eric van Steen		
08h40 - 09h25	PL: Prof. Nora de Leeuw	University of Leeds, England	Computer-aided design of sulfide nano-catalysts for sustainable energy applications
Venue	Main Hall (Paro Dias)		
	Session 1: Heterogeneous Catalysis		**Session 2: Homogeneous Catalysis**
Venue	Main Hall (Paro Dias)		Strandloper
Chair:	Thys Botha		Selwyn Mapolie
09h30 - 09h50	OP-01: Development and enhancement of iron-based catalysts to boost the conversion of CO_2 via Fischer-Tropsch synthesis *Florian Mai and Andreas Jess*		OP-04: Hydrogen production from formic acid catalyzed by novel ruthenium pyridyl-formamidine compounds *Juliana M. Edor, Hermanus C.M. Vosloo, Johan Jordaan and Andrew J. Swarts*
09h50 - 10h10	OP-02: Potassium-promoted $LaAl_{0.8}Mn_{0.2}O_{3-\delta}$ empowered supports for the iron-based Fischer-Tropsch synthesis *Oaitse Percy Ketlogetswe, Motlokoa Khasu, Michael Claeys and Nico Fischer*		OP-05: Characteristics and reactivity of chelating ONO Ru and Cu complexes in the oxidation of *Nijal K. Singh, L. Soobramoney, Mzamo L. Shozi and Holger B. Friedrich*
10h10 - 10h30	OP-03: Tuning the active sites of supported cobalt catalysts to enhance efficiency for hard wax production *Jairus Lamola, Jana Potgieter, Prabashini Moodley, Denzil Moodley, Thys Botha, Michael Claeys, Eric van Steen*		OP-06: Polymetallic Ir(III) photosensitisers for photoredox catalysed carboxylation reactions of ketimines utilising CO_2 *Tara Davids and Gregory Smith*
10h30 - 11h00	TEA / COFFEE BREAK		
	Session 3: Heterogeneous Catalysis		**Session 4: Electrocatalysis**
Venue	Main Hall (Paro Dias)		Strandloper
Chair	Holger Friedrich		Anzel Falch
11h00 - 11h20	OP-07: Pyrolysis and CO_2-assisted gasification of polystyrene using spent fluid catalytic cracking catalyst. *Athi-enkosi Mavukwana, Fatih Aktas, Kiran G. Burra, Celestin Sempuga and Ashwani K. Gupta*		OP-11: Developing commercially relevant rechargeable zinc-air batteries: Electrocatalysis and beyond *Kenneth I. Ozoemena and Aderemi B. Haruna*
11h20 - 11h40	OP-08: Comparison of catalytic thermal conversion of waste polypropylene and polyethylene to carbon nanotubes over Fe-Co-Mo/MgO catalyst. *Matthew Adah Onu, Olusola Olaitan Ayeleru and Peter Apata Olubambi*		OP-12: Improving the ORR activity of the Pt-Ta_2O_5/C nanocomposite by nitrogen doping *Athule Ngqalakwezi, Gary Pattrik & Thelma Ngwenya*
11h40 - 12h00	OP-09: Mo_2C catalyst screening for the intensification of the reverse water-gas shift reaction *Lindokuhle B. Ngema, Wijnand Marquart, Michael Claeys and Nico Fischer*		OP-13: High performing Ni-Fe nitride electrocatalyst in alkaline exchange membrane fuel cells *Joesene Soto, Qihao Li, Schuyler Li, Andrés Molina, David Muller and Héctor Abruña*
12h00 - 12h20	OP-10: Conversion of DME to gLFG over a Pd/Beta zeolite catalyst *Candace P. Eslick, Jack C. Q. Fletcher and Stephen J. Roberts*		OP-14: Electronic interactions in oxide–supported iridium oxide catalysts for the oxygen evolution reaction *Ziba S. H. S. Rajan, Tobias Binninger, Dominique Gouveia, Mark Blumenthal, Darija Susac, and Rhiyaad Mohamed*
12h20 - 13h20	LUNCH		

12h20 - 13h20	LUNCH		
13h20 - 14h05	CATSA ANNUAL GENERAL MEETING		
Venue	Main Hall		
14h10 - 14h40	KL-01: Prof. Dean Brady	University of Witwatersrand	Cyclic economy: Biocatalysis as a key technology for sustainability
Venue	Main Hall (Paro Dias)		
Chair	Martie Smit		
	Session 5: Heterogeneous Catalysis		Session 6: Biocatalysis
Venue	Main Hall (Paro Dias)		Strandloper
Chair	Nico Fischer		Martie Smit
14h45 - 15h05	OP-15: Zirconia-based catalysts for the (bio)alcohols-mediated valorisation of platform molecules derived from lignocellulose *Nicola Scotti, F. Zaccheria, F. Bossola, C. Evangelisti, L. Ardemani, V. Dal Santo, A. Irimescu, S. S. Merola, R. Psaro and N. Ravasio*		OP-18: H_2O_2 driven biocatalytic oxyfunctionalization reactions *Dirk J. Opperman and Martie S. Smit*
15h05 - 15h25	OP-16: Modified basicity of Mg-Fe mixed metal oxides catalysts for glycerol conversion to form glycidol and glycerol carbonate via transesterification *Sakhile. Dube, Lindelani Qwabe and Holger Friedrich*		OP-19: Nanocatalysts for ROS generation and disease diagnosis *Philani Mashazi, S. Mvango, S. Sicwetsha, O. Adeniyi and R. Chavalala*
15h25 - 15h45	OP-17: Synthesis of zeolite-based catalyst from blast furnace slag for the thermochemical conversion of biomass *Nhlanhla Nyembe and Yusuf Isa*		OP-20: Investigating functionally relevant residues in cytochrome P450 monooxygenases using a 3D class specific molecular information system *Marko Marinkov, Ana C. Ebrecht, Diederik J. Opperman, and Martha S. Smit*
15h45 - 16h15	TEA / COFFEE BREAK		
	Flash Presentations		Flash Presentations
Venue	Main Hall (Paro Dias)		Strandloper
Chair	Lebohang Macheli		Cassiem Joseph
16h20 - 16h25	FP-01: Melamine based Covalent Organic Frameworks/ Nitrogen Doped Reduced Graphene Oxide Composite for Battery-type supercapacitor application. *Daniel M. Teffu, Edwin Makhado, Katlego Makgopa and Kwena D. Modibane*		FP-05: Studying the effect of different alumina support modifiers on the Fischer-Tropsch synthesis activity and selectivity of Ru catalysts *Sanele Moloi, Thulani M. Nyathi, Nico Fischer and Michael Claeys*
16h25 - 16h30	FP-02: Supported liquid metal catalysts on hierarchical SiO_2 supra particles for propane dehydrogenation – effects of support pore size *Nnamdi Madubuko, Umair Sultan, Daniel Lehmann, Nicola Taccardi, Marco Haumann, Nicolas Vogel and Peter Wasserscheid*		FP-06: Phosphonium-functionalized N-heterocyclic carbene (NHC) complexes of Rhodium(III). As highly polar catalysts for hydrosilylation *Estefan van Vuuren, Frederick P. Malan and Marilé Landman*
16h30 - 16h35	FP-03: Crystallite size dependent oxidation of Ni catalysts revealed via in situ magnetometry *Dominic de Oliveira, Nico Fischer, Michael Higham, C. Richard A. Catlow and Michael Claeys*		FP-07: Catalytic Oxidation Desulfurization of Dibenzothiophene by Triethylamine-based Bronsted-Lewis Acid Ionic Liquids *Ran Liu, Yali Yao, Xinying Liu and Fatang Li*
16h35 - 16h40	FP-04: Co/N-doped Hollow Porous Carbon Spheres for Efficient Oxygen Reduction Reaction *Shuang Zong, Aibing Chen, Xinying Liu*		FP-08: Modification of titanium dioxide nanotubes using metal and non-metals to reduce the band gap for visible light photocatalytic degradation of phenol in industrial wastewater effluent *Athule Ngqalakwezia, Mpfunzeni Raphulua and Thembisile Khumalo*
16h45 - 18h00	Technical Session: Poster Session 1		
18h00 - 19h00	PORETECH CHALLENGE		
19h00 - late	BRAAI		

Tuesday, 7 NOVEMBER			
07h00 - 08h30	Breakfast		
08h30 - 08h35	Daily admin		
08h35 - 09h05	**KL-02: Holger Friedrich**	**University of KwaZulu-Natal**	**An Introduction to Heterogeneous Catalysis with examples of novel catalysts towards sustainable chemistry**
Venue	**Main Hall (Paro Dias)**		
Chair	**Zeni Tshentu**		
	Session 7: Heterogeneous Catalysis		**Session 8: Heterogeneous Catalysis**
Venue	**Main Hall (Paro Dias)**		**Strandloper**
Chair	**John Moma**		**Reijnout Meijboom**
09h10 - 09h30	**OP-21: An exploration into novel approaches for tuneable supports for supported catalytically active liquid metal solution catalysts** *Aaron L Folkard, N. Madubuko, N. Taccardi, M. Haumann, H.B Friedrich and P. Wasserscheid*		**OP-24: Efficient and selective oxidative transformation of aminophenols on Ru-Au and Ru-Pd nanocatalysts supported on titanium oxide** *Thandiwe Mntambo, Mabuatsela Maphoru, Letlhogonolo Mabena and Mzamo Shozi*
09h30 - 09h50	**OP-22: Using Ru-based SILP for low temperature water gas shift reaction** *Ferdinand Fischer and Andreas Jess*		**OP-25: Catalytic oxidative-transformation of phenolic compounds over noble metal-based catalysts supported on SiO_2** *Tumisang Lekgetho, Mabuatsela Maphoru, Letlhogonolo Mabena and Matshawandile Tukulula*
09h50 - 10h10	**OP-23: A new use of indium as stability enhancer in steam reforming reactions for the hydrogen production.** *Filippo Bossola, Mauro Coduri, Thantip Roongcharoen, Martina Fracchia, Soroosh Saeedi, Xuan Trung Nguyen, Claudio Evangelisti, Dragos Stoian, Luca Sementa, Alessandro Fortunelli and Vladimiro Dal Santo*		**OP-26: Magnetic reinforcement of high entropy nano-electrocatalysts for ORR and OER, and application in rechargeable zinc-air batteries (RZAB)** *Ernst Hechter, Aderemi Haruna, Dean Barrett, Xiao-Yu Yang, Kenneth Ozoemena*
10h10 - 10h40	**TEA / COFFEE BREAK**		
10h40 - 11h10	**KL-03: Banothile Makhubela**	**University of Johannesburg**	**Valorization of plant biomass using molecular and surface molecular catalysts**
Venue	**Main Hall (Paro Dias)**		
Chair	**Manie Vosloo**		
	Session 9: Homogeneous Catalysis		**Session 10: Electrocatalysis**
Venue	**Main Hall (Paro Dias)**		**Strandloper**
Chair	**Selwyn Mapolie**		**Kenneth Ozoemena**
11h15 - 11h35	**OP-27: N-heterocyclic carbene complexes of Ru(II), Rh(III), and Ir(III) – Parallels and Deviations** *Frederick P. Malan, Estefan van Vuuren, Babatunde Awe and Marilé Landman*		**OP-31: Application of platinum-alloy nanoframes to enhance electrocatalytic activity of oxygen reduction reaction in PEMFCs.** *Siphelo Ngqoloda, and Thelma Ngwenya*
11h35 - 11h55	**OP-28: Negishi Pd-catalyzed cross-coupling reaction in the synthesis of unnatural amino acids** *Vladimir A. Azov, Francois De Beer and Akho Ntsila*		**OP-32: Metal-Free Polyaniline Copolymers: An Efficient and Stable Electrocatalyst for Clean Hydrogen in Acidic Media** *Kabelo E. Ramohlola, Edwin Makhado, Shaine Raseale, Mpitloane J. Hato, Emmanuel I. Iwouha, Katlego Makgopa, Kwena D. Modibane*
11h55 - 12h15	**OP-29: Heteroleptic dirhodium(II,II) complexes as catalyst precursors toward the hydroformylation and hydroaminomethylation of alkenes** *Stephen de Doncker, Gregory Smith and Siyabonga Ngubane*		**OP-33: Carbon nanofibers as the favourable support for Mn_3O_4 catalyst for oxygen reactions in rechargeable zinc-air battery** *Augustus K. Lebechi, Thapelo P. Mofokeng and Kenneth I. Ozoemena*
12h15 - 12h35	**OP-30: Novel triazole rhodium complexes as pre-catalysts for the biphasic hydroaminomethylation of olefins** *Lydia Christoph and Selwyn Mapolie*		**OP-34: Well-defined conjugated reticular oligomer and conducting polymer constructing "muscle"-biomimetic electrocatalysts for water electrolysis** *Boying Zhang, Phathutshedzo Khangale, Xinying Liu*
12h40 - 13h40	**LUNCH**		

12h40 - 13h40	LUNCH	
13h45 - 14h15	KL-04: Priscilla Baker — University of the Western Cape	Highly porous, low conductivity emulsion polymers – where to from here?
Venue	Main Hall (Paro Dias)	
Chair	Thelma Ngwenya	
	Session 11: Electrocatalysis	**Session 12: Heterogeneous catalysis**
Venue	Main Hall (Paro Dias)	Strandloper
Chair	Thelma Ngwenya	Bernard Owaga
14h20 - 14h40	OP-35: Microwave-assisted synthesis of triplite, $Mn_2(PO_4)F$, composites for use in an asymmetric supercapacitor *Ryan O'Connor, Thapelo Mofokeng, Aderemi Haruna, Dean Barrett, Kenneth Ozoemena*	OP-39: Novel heterostructure catalytic materials for removal of organic pollutants in water *John Moma, Menelisi Dlamini, Manoko Maubane-Nkadimeng, Lethula Excellent Mofokeng and Jeffrey Baloyi*
14h40 - 15h00	OP-36: Electrocatalysis of water splitting: the application of Electrochemical Impedance Spectroscopy *Artem Pushkarev, Irina Pushkareva and Dmitri Bessarabov*	OP-40: Effect of electron distribution and oxygen vacancies in perovskite-catalysed reactions *Ndzondelelo Bingwa*
15h00 - 15h20	OP-37: Nanostructured cobalt-iron oxygen evolution reaction catalysts obtained by urea hydrolysis. *Soroosh Saeedi, Claudio Evangelisti, Filippo Bossola, Marcello Marelli, Mauro Coduri, Gebrehiwet Abrham Gebreslase, David Sebastián, María Jesús Lázaro, and Vladimiro Dal Santo*	OP-41: Selective photocatalytic reduction of CO_2 to CH_4 over Pd-modified TiO_2 nanocatalyst *Xiao Tian, Xin-ying Liu, Diane Hildebrandt, Fa-tang Li and Xiao-jing Wang*
15h20 - 15h40	OP-38: α and β polymorphs of MnO_2 precursors control the structure-performance relationship in high-energy layered $Li_{1.2}Mn_{0.54}Ni_{0.13}Co_{0.13}O_2$ cathodes for lithium-ion batteries *Tebogo R. Tsekeli, Aderemi B. Haruna and Kenneth I. Ozoemena*	OP-42: Photocatalytic water splitting for green hydrogen production using PGM modified TiO_2 *Naomi Harrisankar de Oliveira, Eric van Steen*
15h40 - 16h10	TEA / COFFEE BREAK	
	Flash Presentations	**Flash Presentations**
Venue	Main Hall (Paro Dias)	Strandloper
Chair	Thulani Nyathi	Tayyibah Tahier
16h15 - 16h20	FP-09: Improving the selectivity to Liquefied Petroleum Gas by combining Fischer-Tropsch synthesis with zeolite cracking *Andreas Jess and Nicolas Oppmann*	FP-13: Ammonia decomposition using Supported Catalytically Active Liquid Metal Solutions (SCALMS) *P. Rothgängel, A.L Folkard, N. Taccardi, M. Haumann, P. Wasserscheid*
16h20 - 16h25	FP-10: Hybrid FeCo-Fe2CoO4/C bifunctional electrocatalysts for robust rechargeable zinc-air batteries *Agnes M. Mongwe, Augustus K. Lebechi, Aderemi B. Haruna and Kenneth I. Ozoemena*	FP-14:Salicylaldimine copper(II) complexes for efficient and selective alcohol oxidation *Siyasanga Booysen, Martin O. Onani and Nandipha L. Botha*
16h25 - 16h30	FP-11: The Development of Anion Exchange Ionomer for Electrocatalysts in Application of Anion Exchange Membrane Fuel Cells *Thandiwe. R Maumau, Nobanathi. W Maxakato, Phumlani. F Msomi*	FP-15: From Biomass to value-added chemicals (furfural, lactic acid, levulinic acid), bio-based monomers, and bio-based polymers *Raynold Techie-Menson, James Darkwa, and Banothile C. E. Makhubela*
16h30 - 16h35	FP-12: Photocatalytic degradation of organochlorines using MOFs decorated with SnO2 nanoparticles. *Boipelo L.O Poho , Kwena D. Modibane, Abdoulaye Thiam and Katlego Makgopa*	FP-16: Catalytic effect of modified micro-graphite particles on biodenitrification *Zhaozhou Peng, Xinying Liu, Phathutshendzo Khangale, Diane Hildebrandt, Junzhang Li, Shouxin Liu*
16h40 - 18h00	Technical Session : Poster session 2	
18h00 - 19h00	At leisure	
19h00 - late	CATSA BANQUET	

Wednesday, 8 NOVEMBER		
07h00 - 08h30	Breakfast	
08h30 - 08h35	Daily admin	
08h35 - 09h05	KL-05: Cornie van Sittert North-West University	Computational Chemistry in Catalysis:Enhancing Understanding and Design
Venue	Main Hall (Paro Dias)	
Chair	Thobani Gambu	
	Session 13: Theoretical catalysis	**Session 14: Electrocatalysis**
Venue	Main Hall (Paro Dias)	Strandloper
Chair	Tishana Singh	Rhiyaad Mohamed
09h10 - 09h30	OP-43: Monometallic nanoparticles as catalysts for HER – A DFT study *Monique van den Berg, JI du Toit, and CGCE van Sittert*	OP-46: Manganese fluorophosphate ($Mn_2(PO_4)F$) as bifunctional electrocatalysts for oxygen reduction and evolution reactions. *Ndebele Nobuhle, Lebechi Kelechi, Haruna Aderemi and Ozoemena Kenneth*
09h30 - 09h50	OP-44: Role of titania in cobalt-based FT catalysts–An inverse catalyst model *Yatheshth Ragoo, Eric van Steen, Melissa Petersen, Thobani Gambu, Hellen Chuma*	OP-47: Novel approach synthesis of platinum-based ternary alloys as electrocatalysts for polymer electrolyte membrane fuel cells *Zicabangele Mseleku, K.P. Tshehla, T. Ngwenya*
09h50 - 10h10	OP-45:A molecular dynamics (MD) study on the effect of cyclic conducting moieties on poly (2,6-dimethyl-1,4-phenylene oxide) (PPO) anion exchange membranes (AEMs) *Thabakgolo T. Letsau, Takuya Mabuchi and Phumlani F. Msomi*	OP-48:Development a of viable metal electrocatalyst to produce green hydrogen from water electrolysis *Sabelo A. Jeza, Amir H. Mohammadi, David Lokhat, Cornelia G.C.E van Sittert*
10h10 - 10h40	TEA / COFFEE BREAK	
	Session 15: General	
Venue	Main Hall (Paro Dias)	
Chair	Patricia Kooyman	
10h45 - 11h05	OP-49: 3D hybrid zebra materials for sorption enhanced DME synthesis from direct CO_2 hydrogenation *Giuseppe Bonura, S. Todaro, G. Giacoppo, A. Mezzapica, A. Cajumi, C. Cannilla, F. Frusteri*	
11h05 - 11h25	OP-50: Carbon dioxide reduction via the reverse Water Gas Shift reaction over iron-nickel alloy-based catalysts: Alloy composition and support effects. *Shaine Raseale, Karina De Kock, Michael Claeys and Nico Fischer*	
11h25 - 11h45	OP-51: Addressing sustainability challenges in the preparation of cobalt Fischer-Tropsch catalysts *Jez Cloete, Jana Potgieter, Denzil Moodley, Kobus Visagie, Thys Botha*	
11h45 - 12h05	OP-52: Catalysis using gold and gold alloys *Graham J. Hutchings*	
12h05 - 12h25	OP-53: Near Ambient Pressure (NAP)-XPS: Applications and Instrumentation *Liana Socaciu-Siebert*	
12h25 - 13h00	Closing Remarks / Announcement for CATSA 2024	
13h00	CONFERENCE ENDS / LUNCH	