

MONDAY 18 JULY 2022

TIME	VENUE & DESCRIPTION
12h30-15h30	Registration Atlantic 2
15h30-16h00	Demonstration of indigenous African instruments Dizu Plaatjies
16h00-17h00	Opening ceremony Bette Davidowitz Javier Garcia Martinez Jonathan Jansen
17h00-18h00	Chair: Dr Kgadi Mathabathe Plenary: Professor Elizabeth Mavhunga Bridging the theory-practice divide in chemistry education through PCK
18h00 - 19h30	Welcome Reception The Brasserie Lagoon Beach Hotel

Atlantic 2

09h00 - 10h00

Chair: **Prof Felix Ho**

Plenary: **Prof Thomas Holme**

Systems thinking in foundational chemistry: connecting chemistry content to earth and societal systems

10h00 - 10h30

Morning Tea

Atlantic 1

Atlantic 2

Courtyard 1

Courtyard 2

Session 1
10h30 - 12h30

CTLPC - **Chair: Sofie Ye**

Invited speaker:
Gautam Bhattacharyya
Six-plus decades of the mechanistic approach to teaching organic chemistry: Questions about its cognitively feasibility

Leyte Winfield
Feminist Pedagogy in the Chemistry Curriculum

Esther Narthey
Pre-service teachers' conceptions of organic reaction mechanisms and how they can be improved

Sofie Ye
University students' reasoning and problem solving at the interface of chemistry and mathematics

TETK - **Chair: Angela Stoff**

Invited speaker:
Washington Dudu
TPACK as a practical lens for in-service chemistry teachers' use of simulations in teaching three states of matter

Mothale Judicial Sebatana
Advancing science teacher's pedagogical skills to teach chemistry by utilizing Problem-Based Learning

Marina Birkenstock
The Interconnectedness of Chemical Topics in Teacher Training Studies

Angela Stoff
The efficacy of use of the unit factor method at a South African in-service teacher workshop to improve stoichiometry calculation competence

CTLPC - **Chair: Molly Atkinson**

David Katz
Active chemistry: low-cost classroom activities, small scale investigations and active assessment

Zainoena Allie
Learning through play: sense-making of chemistry concepts

Regina Ruffler
Genie of Catalysis

Yael Feldman-Maggor
Chemistry Teachers' Learning Patterns in Online Nanotechnology Professional Development Courses

Molly Atkinson
Exploring undergraduate organic chemistry students' understanding of stereochemistry concepts

TETK - **Chair: Hans-Dieter Barke**

Invited speaker:
Vanessa Kind
Learning from international performance assessments: lessons for science teacher quality and teacher education

Olutosin Akinyemi
Development and validity of a tool for capturing and measuring the quality of d-TSPCK in digitally created teaching videos for Chemical Equilibrium

Abdullahi Sheikh Abdi
Assessment of knowledge and practice towards chemical security and safety among academic laboratory staff in Puntland State of Somalia

Kenneth Ngcoza
Developing pre-service teachers' PCK through mobilizing prior everyday knowledge on lightning

Hans-Dieter Barke
Sub-microscopic level and interpretation of chemical reactions - misconceptions and challenges

12H30 - 13H30

Lunch

Session 2

Chair: James Kariuki - CTLPC

Chair: Salome Janke - CDCE

Workshop 1

Workshop 2

13h30-15h00

Invited speaker:
Mauro Mocerino
Visualising chemistry concepts using immersive virtual reality

Invited speaker:
Ginger Shultz
Engaging students in inquiry of snow chemistry processes informed by local and traditional knowledge

Micke Reynders
Chemistry education for sustainability: Introducing systems thinking in first-year organic chemistry

Solange Locatelli

Using the Google drawing tool to learn and revise chemistry concepts

Note
Invited = 30 minutes

Eric Villeneuve
Defronting the chemistry classroom: Teaching using a virtual whiteboard on an I-Pad.

Rosalyn Klein
Growing postgraduate chemistry students: benefits of undergraduate research

Zakiya Wilson-Kennedy
JEDI (Justice, Equity, Diversity, and Inclusion) systemic change in higher education - adaptive approaches within the four-frame model

Salome Janke
Profiles of first term chemistry students in relation to academic success

Oral = 20 minutes

James Kariuki
Chemistry Teaching and Learning in the Lab and the Classroom

TIME	VENUE & DESCRIPTION			
15h00 - 15h30	Afternoon Tea			
	Atlantic 1	Atlantic 2	Courtyard 1	Courtyard 2
Session 3	Chair: Christian Madu - CARI/CFS	Chair: Doras Sibanda - CTPLC	Chair: Festo Kayima - TETK	Workshop 3
15h30-17h00	Dudley Shallcross Crib sheets	Faith Zondi How to teach digital-TSPCK? A case with Chemistry pre-service teachers	Marissa Rollnick Invited speaker: A review of topic specific PCK in available videos on the big idea, "What is chemical equilibrium"?	Felix Ho Enhancing chemistry teaching and learning through a systems thinking lens
Invited = 30 minutes	Kavish Jawahar Exploring the alignment of visual literacy demand in a South African school chemistry textbook and exemplar assessment	Gareth Arnott Let's let them 'cheat'! Group work in a summative setting	Hans-Dieter Barke Sub-microscopic level and interpretation of Redox and Acid Base Reactions	
Oral = 20 minutes	Javier Garcia-Martinez Circular Chemistry: Rethinking Chemistry Research and Education	Chinda Worokwu Eliciting and correcting science education undergraduates' misconceptions about electrolysis through drama teaching strategy for 21st century chemistry	Festo Kayima Using reflective practice to support chemistry teacher-trainees' development of professional and classroom knowledge	
	Christian Madu Chemical Security Management Curriculum at the University of Nigeria	Doras Sibanda Physical science teachers' perception of how they support learners' understanding of chemical bonding at high school		

Poster Session 1

Chemistry teaching and learning, pedagogy and cognition

17h00-18h30

- 1. Kehinde Abdullahi:** The circumstances surrounding organic chemistry education in secondary schools across Kwara state, Nigeria
- 2. Rethabile Tekane:** Lessons learnt from training a blind student in biological sciences
- 3. Erika Knack:** Investigation into the development of chemical content knowledge in upper secondary schools
- 4. Yamkela Nomnganga:** Academic and career development programs to improve her school learners performance in mathematics and science in the Cape
- 5. Vineet Jeena:** Prioritizing the development of experimental skills and scientific reasoning: a model for authentic evaluation of laboratory performance in large organic chemistry classes
- 6. Thomas Bussey:** Generating predictive analytics using computer vision to inform instructional decision making.
- 7. Rita Asano:** Using quality teaching and learning resources for effective integrated science education among senior high schools in Ghana
- 8. Sun-Kyoung Kim:** Development of chemistry programs enhancing creative thinking ability applying meta-cognition
- 9. Hyun-Kyung Kim:** A Study on the perception of the gifted students about science classes using smart devices

Context and diversity in chemistry education

- 10. Francoise Tibika:** An introduction to modern alchemy
- 11. Dudley Shallcross:** A scientist just like me

Teacher education, teacher knowledge and continuous professional development

- 12. Dudley Shallcross:** Can cutting edge science research be used in primary school education
- 13. Neide Hiroko Takata:** Contribution of the supervised internship in chemistry teaching to the training of teachers
- 14. Ihor Kulai:** Use of historical perspectives in guided inquiry learning in an introductory chemistry course
- 15. Hans-Dieter Barke:** Laboratory jargon of lecturers and misconceptions of students

TIME

VENUE & DESCRIPTION

Atlantic 2

09H00 - 10H00

Chair: **Prof Bette Davidowitz**
Plenary: **Prof Ruby Hanson**

Role of chemistry education in managing humanitarian challenges

10H00 - 10H30

Morning Tea

Atlantic 1

Atlantic 2

Courtyard 1

Courtyard 2

Session 4

Chair: Florastina Payton-Stewart - CDCE

Chair: Maw Lin Foo - EIOE

Chair: Solange Locatelli - CLPC

Chair: Shelley Rap -CFS

10H30 - 12H00

Invited Speaker:

Joyce Sewry

Students, Chemistry and the Community

Tory Anchikoski

Making videos in tandem – An engaging and cost-effective way to reach online learners

Renee Cole

Building a Path to Success: Improving Learning Experiences through Constructive Alignment of Course Components

Kehinde Olayinka

Survey on Responsible Chemistry- Chemical Security & Safety in Nigerian Universities

Invited = 30 minutes

Leyte Winfield

Representation and decolonization in chemical education

Sinegugu Khulu

Recalibrated laboratory practicals and demonstrations: student performances in fourth year physical science

Langanani Rakhunwana

Self-regulated learning strategies for first-year chemistry during COVID-19

Ismail Ali

Chemical security Learning

Oral = 20 minutes

Chrispen Mutanho

Enhancing in-service teachers' PCK through the indigenization of chemistry

Naledi Seheri

Peer Evaluation Approach for Practical Activities: An Advantage for Assessing a Large Class

Rachel Mamlok-Naaman

What does Research in Science Education say about students learning?

Ali Also

Activation of chemical safety and security program in Misurata University

Florastina Payton-Stewart

Chemistry for Everyone: Making STRIDES in Diversity, Equity, Inclusion, and Respect

Maw Lin Foo

A card game played on Zoom for revising effective atomic number concept in inorganic chemistry

Solange Locatelli

The use of a metavisual strategy and self-questioning to learn chemistry concepts

Shelley Rap

"Speak to me in Numbers" Program – an innovative pedagogical approach of sustainability through chemistry education

Atlantic 2

12h00 - 13h00

Panel discussion

**International conferences and journals in Chemistry Education Research
How to make your work visible and enrich your practice**

Panellists: Renée Cole, Rachel Mamlok-Naaman, Tom Holme and Marietjie Potgieter

13h00 - 17h30

Excursion with Packed Lunch

Atlantic 2

09h00 - 10h00

 Chair: **Prof Marissa Rollnick**

 Plenary: **Ozcan Gulacar**

Empowering and inspiring the future generation: Uncovering relevancy and meaning in chemistry education

10h00 - 10h30

Morning Tea

Atlantic 1

Atlantic 2

Courtyard 1

Courtyard 2

Session 5
Chair: Dudley Shallcross - RLTPC

Chair: Belinda van der Westhuizen - EIOE

Chair: Derek Fish - CTLPC

Chair: Micke Reynders - CFS

10h30-12h30

Note

Invited = 30 minutes

Oral = 20 minutes

Invited Speaker:

Ron Blonder

Students and teachers' participation in an authentic outreach activity with the Scanning Electron

Microscope: From face-to-face to remote mode

Mabel Ihuoma Idika

3D virtual laboratory: its awareness and usage among secondary school chemistry teachers and students in Ibadan metropolis, Nigeria

Hendra Agustian

Laboratory work as an epistemic practice: Discursive characteristics of student learning in the pharmaceutical chemistry teaching laboratory

Thomas Logotheitis

The times of corona: how laboratory teaching evolved in Soton

Dudley Shallcross

The importance of the Virtual Learning Environment in enhancing the teaching of practical Chemistry

Eric Villeneuve

Using the Reaction of Citric Acid and Sodium Bicarbonate as a Take-Home Experiment on Stoichiometry

Renee Cole

The MICRO Project: Developing authentic scientific practices using rapid, iterative quantitative laboratory experiments using microfluidic devices

Nicole Graulich

What do students actually learn from explicitly designed tutorial videos in organic chemistry?

Natalie Ahne

Developing a digital environment on historic context for chemistry lessons

Belinda van der Westhuizen

Investigating effective instruction of a first-year chemistry module in the online environment

Jean du Toit

Project report writing: an honour's level write to learn and learn to write approach

Helen Drummond

Strategies for the teaching and learning of chemical change topics: stoichiometry and theoretical aspects

Ari Myllyviita

3D-modelling in different themes in the high school chemistry education

Charles Mamombe

Teachers' and learners' perceptions of stoichiometry using POGIL: A case study in South Africa

Florastina Payton-Stewart

Science communication to the public: pedagogical deliberations at Xavier University of Louisiana

Derek Fish

Rethinking the Chemistry Show

Invited Speaker:

Lynne Pilcher

A journey in embedding systems thinking in tertiary chemistry

Aderonke Oyeyiola

The peregrination to chemical safety and security in Nigeria

Mostafa Abdoarrahem

Chemical security curriculum development in a Libyan University: Facts and Hopes

Hooi Ling Lee

Chemical Security Education at Universiti Sains Malaysia: From concept to classroom

Micke Reynders

Effectiveness of a systems thinking visualization tool for first-year chemistry

12H30 - 13H30

Lunch

TIME		VENUE & DESCRIPTION			
		Atlantic 1	Atlantic 2	Courtyard 1	Courtyard 2
Session 6	CFS - Chair: Felix Ho -CFS	CTLPC - Chair: Iselin Aakre	Workshop 4	Workshop 5	
13h30-15h00	Supakorn Boonyuen Off-campus learning: small scale experiments with synchronous online activities during COVID-19 at Thammasat University, Thailand	Alina Behrendt Development of students' chemistry competences at the transition between primary and secondary school	Zakiya Wilson-Kennedy Equitable chemistry learning environments	Regina Ruffer The "Mysteries" of Surface Phenomena	
Note					
Invited = 30 minutes					
Oral = 20 minutes	Baker Joda Off-campus learning: small scale experiments with synchronous online activities during COVID-19 at Thammasat University, Thailand	Ines Komor Supporting the Process of Mathematical Modelling in Physical Chemistry			
	Christine Straut Enhancing Chemical Risk Management with e-Learning Modules Focused on Chemical Security	Nsikelelo Malinga Language as a barrier to effective assessment in science - Matric Chemistry Workshops			
	Felix Ho Conceptualizing and implementing systems thinking in chemistry education: where are we now, and where are we going?	Iselin Aakre How do university students perceive different models of a hydrogen molecule?			
15h00 - 15h30		Afternoon Tea			
Poster Session 2	Chemistry for sustainability				
15h30-17h00	16. Thomas Logotheis: Academia-industry links: The five pillars of SC				
	17. Cathrine Chimude: Effectiveness of Life Cycle Inventories of Aspirin synthesis for the introduction of Systems Thinking in chemistry to first year engineering students				
	18. Maurice Payne: The CMS and the CAT: Versatile Tools for Chemical Inventory Management				
	19. Mohamed Erhayem: Evaluation Chemical Security and Safety Culture in Sebha University, Libya: case study				
	20. Nabil Bader: Implementation of chemical safety and security culture in chemistry curriculum and education system in Libyan universities				
	21. Elena Charro: Teaching Chemistry for sustainability through IBSE strategies: the case of fashion Nokwanda Hendricks: Water reclamation: Educational strategies to improve public perception on water sustainability hello her three in the office working, and most of				
	22. Nokwanda Hendricks: Water reclamation: Educational strategies to improve public perception on water sustainability				
	It has to be misled alone in her honey lift correct collagen patterns of sick Curriculum and assessment reform initiatives				
	23. Abdullahi Mohamed: Chemical Security Education in Somalia				
	24. Tim Göbel: Linking engineering and natural sciences in a "nano" student laboratory in Germany				
	25. Tisetso Mosala: Exploring students' perceptions and opportunities for curriculum reform in an academic development programme chemistry module				
	26. Randall Smith: Language proficiency in chemistry education				
	27. Ncediwe Tsolekile: Evaluating the effect of COVID-19 on assessment at a University of Technology: Legitimation Code Theory				
	28. Hyun-Kyung Kim: A Comparison of Elementary and Secondary Chemistry Curriculum in Korea and Mongolia				
	Teacher education, teacher knowledge and continuous professional development				
	29. Sun-Kyoung Kim: Investigation of Teaching Competency and Communication Competency of STEAM School Teachers				
	Effective instruction in the online environment development				
	30. Orlando Raola: Teaching Molecular Shapes on Remote: A pandemia experience				

TIME	VENUE & DESCRIPTION			
	Atlantic 1	Atlantic 2	Courtyard 1	Courtyard 2
Session 7	EIOE - Chair: Florian Trauten		RLTPC - Chair: Frackson Mumba	
09h00-10h00	Invited Speaker: Gwen Lawrie Translate, generate, connect or even just notice: scaffolding development of representational competence in hybrid environments.	Invited Speaker: Kgadi Mathabathe Patterns of social regulation during the collaborative planning of chemistry practical investigations: implications for laboratory training in hybrid learning spaces	Teacher Day Reserved programme	Teacher Day Reserved programme
Note				
Invited = 30 minutes				
Oral = 20 minutes	Florian Trauten Evaluation of automated feedback loops in an e-learning setting for general chemistry	Invited Speaker: Frackson Mumba Improving Student Learning outcomes through Project- Guided Inquiry Chemistry Labs		
10h00 - 10h30 Morning Tea				
Session 8	CARI/CDCE - Chair: Sam Pazicni		CTLPC - Chair: Martin Gröger	
10h30-12h30	Invited Speaker: Daniel Southam Exploring a persistent pandemic contingency: student and staff perceptions of oral assessment in chemistry	Larissa Wellhöfer Information literacy in a problem-based learning lab: How sociocultural aspects influence teaching and research		
Note				
Invited = 30 minutes				
Oral = 20 minutes	Falah Hussein The University's Impact in Spreading the Culture of Chemical Safety and Security	David Katz Chemical demonstrations: the good, the bad, and the ugly		
	Kavish Jawahar Exploring integration for the topic of stoichiometry in South African Natural Sciences and Physical Sciences school curricula	Amanda Bongers Encoding chemistry information into memory: evidence for flexible and domain-specific strategies		
	Enas Easa The pedagogy of differentiated instruction in the chemistry high classroom: The impact of customized pedagogical kits on chemistry tasks' achievements, self-efficacy, and attitudes of students and teachers	Martin Gröger Alexander von Humboldt revisited: An insight into his chemical research and developments related to chemistry teaching and climate change today		
	Sam Pazicni Development of an evidence-driven model to evaluate higher education professional development programs			
12H30 - 13H30 Lunch				
Atlantic 2				
13h30-14h30	Chair: Prof Marietjie Potgieter Plenary: Hannah Sevan An Asset-Based Approach to Closing Asymmetries and Supporting Student Success in General Chemistry			
14h30-15h30	Closing ceremony Poster prizes Marietjie Potgieter Supakorn Boonyuen Bette Davidowitz			

