InnoVenton Times

January 2026

2025— Don't stop Believin'__by Journey

Letter from the Editor...

Welcome to the 2025 edition of the: "InnoVenton Times".

This edition reflects some of the highlights at InnoVenton during the year.

In 2025 we celebrated our 20th Anniversary! To all the staff, students and colleagues who have played a part in our sustainability, creativity and ingenuity over the last 2 decades, we salute you. Read more about the celebration and reflections featured in our media release. Perhaps there is some way you can get involved with us over the next 20 years.

We want to thank our stakeholders who play a pivotal role in ensuring the sustainability of the institute and enable us to contribute our expertise to several areas in the Chemical Technology Development space. We acknowledge the role that the Technology Innovation Agency and the Department of Science, Technology and Innovation play. You enable us to offer a service and create a platform for technology stations like ours to exist, being of service to our country's citizens in the technology development space. Nelson Mandela University supplies support systems that keep a technology institute like ours integrated with university culture. Thank you for your support over the last 20 years.

InnoVenton maintained the SABS ISO 9001:2015 Certification, with a clean audit, for its quality management system which extends to 2029.

Opportunities to market InnoVenton came on several occasions. Staff and students either presented a talk or engaged with colleagues. You'll find a spread of these engagement activities to enjoy.

InnoVenton is focused on technology development for products and processes alongside training. Our testing services continue to offer problem solving and mainstream analysis for local companies who need support in this area.

We also look at some of the activities promoted by the Technology Station Program and some of the Technology Development Projects completed during the year. Worth mentioning is the Kilo Lab production facility and 3 fine chemicals product development projects undertaken during the year. The progress achieved is elaborated on in the articles included.

The Green Hydrogen Project remained on track this year; an update is included following the developments in catalysts used for hydrogen evolution. Industry support from BASF, Endress & Hauser and Metrohm is acknowledged. Dr Shawn Gouws launched his book, "Chasing Challenges", which documents the Chemical Process Diploma programs journey from inception at InnoVenton.

Personal Care Product development projects continue to draw interest from clients as they leverage the support offered at InnoVenton. The targeted training and partnerships with agencies like the Hope Factory and CHIETA have enabled targeted business development training and practical product formulation support for SME's and individuals interested in starting their own small cosmetic product manufacturing business. The Formulation Science students, under the guidance of Dr Nicole Vorster, continue to inspire new innovative ideas in product formulation.

More information about our workshops for SME's and individuals in the personal care products space can be found on Instagram, our website, or Facebook page for regular updates.

Special mention needs to be made of our new Advisory Board Members; Prof Christa Grobler (Nelson Mandela University Executive Dean: Faculty of Science), Ms Sue Alcock (EnviroServ: Operations Manager), Ms Vuyokazi Zozi (ECDC: Regional Manager), Ms Priscilla Fry (Business Chamber: Skills Development Manager), Mr Lunga Mjodo (Business Chamber: Strategic initiatives Manager), Dr Batsho Mpuhlu (Heraeus: Production and Technology Manager) and Mr Rudi van Niekerk (H&R Africa: Regional General Manager_ Africa). We look forward to your support, input and advice as we tackle the year ahead.

To our staff, readers and avid supporters, consider, "A Team is not a group of people who work together, a team is a group of people who trust each other". (Simon Sinek). Thank you for your diligent work and most valued support. Here's to wishing you a fantastic, successful year ahead. __**Dr Melissa Gouws.**

InnoVenton Celebrates 20 years of innovation and research

__Zandile Ngwendu

GQEBERHA - Nelson Mandela University's InnoVenton celebrated turning 20 years of dreams, innovations and creativity into real-world solutions on Thursday, 22 May 2025, in Summerstrand, Gqeberha.

Based in the University's Faculty of Science, InnoVenton offers services to industry clients, SMEs, students and student entrepreneurs, focusing on engagements with industry and SMEs in technology development for Downstream Chemical products and processes as part of the path to commercialisation.

"InnoVenton is where we dream, innovate and create, helping ideas become real-world solutions," said InnoVenton Acting Director Louise Hamilton. "Our general testing services offer problem solving and analysis for local companies who need support in this area. Formal training, short courses, workshops, and technology support form the foundation of our engagement interactions."

These have included large projects such as converting microalgae to energy, Iluba rose preservation, Sasol aviation fuel distillation and COVID-19 hand sanitiser response, as well as formulating cosmetic and personal care solutions for clients and synthesis of niche high value chemicals.

In 2025, there is a whole new slate of innovative research – and, with support from the Technology Innovation Agency (TIA) - an entity of the Department of Science, Technology and Innovation (DSTI) – InnoVenton brings this one step closer to commercialisation.

"At InnoVenton ideas become reality with chemical technology solutions making a difference," Mrs Louise Hamilton said.

Mr Vusi Skosana, Head: Technology Stations Programme at the TIA said the Technology Stations Programme (TSP) was established to enable universities of technology to provide technology development services to small and medium enterprises.

"InnoVenton is one of our oldest partners in this programme and we celebrate this 20-year milestone with pride as we have seen the impact of this partnership," said Skosana. "Some of the main objectives of TSP is to provide vital infrastructure and expertise to support enterprise development within the innovation landscape. This has, over the years, served as a bridge between academic theory and experiential training for students to practically apply the knowledge acquired.

"The infrastructure, equipment and expertise at InnoVenton has over the years been instrumental to supporting enterprise development within the innovation landscape for businesses both small and large. This support for industry and human capacity development has fostered an enabling ecosystem that has positively impacted the economy in the Eastern Cape and beyond. TIA congratulates the management and staff of InnoVenton and we wish them success in future endeavours as we continue to work together."

In partnership with TIA, InnoVenton leverages its position and resources to develop, implement and support technology in the chemical related industries.

Photo (L to R): Miss Dimakatso Kekana, Miss Olebogeng Mogapi, Mrs Cecilia Saunders, Miss Jamie Naidoo, Miss Siphosethu Schalk, Dr Nicole Vorster, Mrs Carlen Kruger and Dr Melissa Gouws, our party planning committee.

Nelson Mandela University Deputy Vice-Chancellor for Research, Innovation and Internationalisation, Professor Azwinndini Muronga, said the work conducted at InnoVenton was science for society. "The end goal is to make a tangible socio-economic impact that supports local, regional and national priorities," said Prof Azwinndini Muronga. As a leader in applied science and innovation for social good, he said, supporting entrepreneurship and job creation was key for the University.

Prof Muronga saluted the "mastermind" behind InnoVenton, the late Prof Ben Zeelie. Acknowledging the institute's contribution to the innovation space and said that he looked forward to the next 20 years.

2025 is a project-packed year for InnoVenton, with activities that include:

- Product and process development: entrepreneurs use the pilot scale facility at InnoVenton where they can have test batches produced to qualify their products.
- Cosmetic formulation development and improvement: clients have requested assistance to improve formulations for body lotions and face creams using various specialized key ingredients.
- Graduate Internship Programme.
- Pilot scale prototype manufacturing facility for emulsions for cosmetic formulations, to bridge the gap between lab scale work and 4500L contract manufacturing.
- Synthesis of agri-chemical intermediates for food security.
- Investigating fluorochemicals manufacturing and downstream chemical synthesis applications.

Over and above this, InnoVenton offers numerous workshops, open to the public, throughout the year.

Photos: The evening glamor and atmosphere was elegant and celebratory.

Photo Above: Mrs Louise Hamilton, Dr Melissa Gouws, Mr Vusi Skosana and Dr Gary Dugmore.

Photo above (L to R): Dr Gary Dugmore, Prof Paul Watts, Ms Ronelle Friend, Mrs Louise Hamilton, Dr Nicole Vorster, Mrs Anneke Greef, Mr Philip van Zyl.

Photo above: Minstrels playing music, creating atmosphere and setting the mood.

Photo: Prof Peter Loyson and Dr Shawn Gouws

About InnoVenton

InnoVenton, Nelson Mandela University's Institute for Chemical Technology, has engaged with local and international industry, to research their response to upscaling the development of chemical manufacturing of fine and speciality chemicals in South Africa. The country's industrial base, raw materials, and feedstocks provide a timely opportunity to develop competitive technologies to re-industrialise its fine chemical manufacturing sub-sector, contributing to economic growth and job creation, raising aggregate domestic demand and exports, and supporting the country's National Strategic Objectives.

Innoventon's engagement with industry and SMEs has led to the identification of products with high potential to be commercialised through manufacture in South Africa. Given the investment in time and resources, the importance of the initial selection of products and/or technology for further development, cannot be overstated. Engagement with the greater industry sector is essential to ensure that there is market demand to provide a business case. InnoVenton scientists review and evaluate available technologies and formulate a synthetic route which could meet the commercial objectives. InnoVenton is actively involved in mentoring and upskilling postgraduates through work on industry and technology development projects, allowing them to apply theoretical and academic experience to innovating around commercially relevant technologies. We offer workshops and short learning programmes to students and unemployed graduates, to broaden their understanding of chemical process technology development and to nurture skills such as the techno-economic assessment of potential technologies at appropriate levels of detail or certainty. Chemical process technology development also requires appropriate workspaces, laboratory facilities, and specialised equipment, so at InnoVenton we continue to invest in modern equipment and facilities to support chemical process technology development and re-industrialisation of fine and speciality chemical manufacturing in South Africa.

The InnoVenton Kilolab

In line with our Mission, which is to enable "Technology Innovation and Development improvement for competitive advantage in the South African Downstream Chemical Industry". InnoVenton is building capacity, expertise and assets in our Kilo Lab Facility. This facility is one of -a-kind on the African continent based at an academic institution. Positioned in Gqeberha, (Port Elizabeth) gives us the opportunity to lend support to emerging chemical manufacturing companies locally in the Eastern Cape and Nationally. Three major projects have benefited from this asset which will be presented in articles in this edition. Transferring skills and knowledge in this area of expertise is an ongoing process, building experience takes time and persistence.

The opportunity still exists for companies to start manufacturing materials locally for the South African market, where support is needed with respect to technical chemical interventions, InnoVenton is in a unique position to assist. We talk about revitalizing the chemical industry, and that's a big vision. It can only be achieved if awareness about what we do, and can offer, is made more widely known in the chemical sector. InnoVenton engages with clients, offers feasibility studies and provides technical expertise as required. Some of the outputs have come in the form of Technology Transfer packages which can be used by the clients as a roadmap for their requirements.

20 YEAR ANNIVERSARY InnoVenton

NELSON MANDELA UNIVERSITY

InnoVenton

Kilo Lab Facility

The Kilo Lab chemical process development pilot facility at InnoVenton is utilized to serve both large companies and SME's. We produce test batches for quality control purposes and conduct product development trials to TRL5/6. This facility is unique to the Nelson Mandela University, serving as a unique asset on the Africa continent at an HEI.

To find out more contact InnoVenton@mandela.ac.za.

science & innovation Department Science and Innovation REPUBLIC OF SOUTH AFRICA

technology innovation AGENCY

InnoVenton

Our role is to provide technology support services, skills development training and technology development capability for basic research and client projects.

InnoVenton@mandela.ac.za

Chemical Process Technology Development SLP Scale Up: *Grams to Kilograms*

What the course covers:

- **Research vs Development; initiation of Chemical Process Technology Development**
- **Technology Development stages and Technology Readiness Levels**
- **Justification for investment**
- **Scale up factors for the process chemist to consider and be aware of: Multipurpose Batch reactors, Separations at scale; Monitoring & Control; solvent recover; sampling; crystallization; chromatography**
- **Other factors: stability; thermochemical/reactive chemical hazards; toxicity; raw materials; telescoping, safety; environmental issues**

Who would benefit:

- **Anyone involved in Chemical Process Laboratory development**
- **Anyone who would like to develop a broad understanding of Chemical Process Development Scale Up & commercialization challenges.**

InnoVenton InnoVenton@mandela.ac.za NELSON MANDELA UNIVERSITY

Rapid Prototyping and Manufacturing Projects

Manufacture of a nutraceutical

_ Dr Gary Dugmore, Jarryd Cuthbertson, Olebogeng Mogapi

Essential Sterolin Products commissioned the manufacture of a nutraceutical that was manufactured using the kilo lab facility located at InnoVenton.

DCTS will have manufactured 20kg, by the end of Q4 2025/26. Production is done in batches of 2kg each, each batch has a cycle time of 2 weeks for manufacturing and another week for drying, milling and packaging. Each batch is accompanied by a CoA, which is generated by our Analytical Testing Laboratory. It includes TLC for identification and purity and FTIR identification, Loss on Drying, HPLC BSSG % content and residual solvent by GC-MS. The product is included in food and cosmetic products, both for local and export. The BSSG product meets quality specifications, and the process has been optimised and documented.

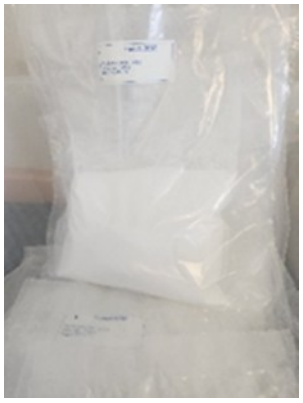


Photo: Manufacture of 20 kg of the nutraceutical

Advanced Manufacturing Chemical: Herbicide active ingredient

_Jarryd Cuthbertson, Dr Gary Dugmore

The herbicide active, under development, is used to control bush encroachment in rangeland. To date, a technology description of the laboratory scale process for the synthesis of this herbicide is at technology readiness level (TRL) 5 (integrated process tested in a simulated pilot) has been disclosed. Kilo lab trials of the integrated process in a simulated environment was completed recently. The updated Technology Transfer package has been transferred to Innovolve, the commercialization vehicle at the Nelson Mandela University for potential licencing.

Advanced Manufacturing Chemical: Strategic Chemical Intermediate

_Jarryd Cuthbertson, Dr Gary Dugmore

The intermediate (~30MT p.a.) is used locally as a key raw material by Chemical Process Technologies (CPT) to produce Cymiazole, an acaracide used for treatment of animals against tick infestation. CPT currently imports all their requirements for their product.

This would contribute to the local production of nonselective broad-spectrum herbicides. The process will initially require 200MT p.a. with growth potential to 630MT p.a. after 5 years.

DCTS will apply green chemistry principles to develop a Process Technology ready for licensing at TRL 5 that meets the economic, quality and EHS requirements for a sustainable and competitive process.

To date the existing technology has been evaluated and the technology has been selected for further development. Currently activities to progress to TRL4: Optimization of integrated process to identify reactive chemistry hazards and scale up issues, are in progress.

Collaborations established in 2025

We are pleased to have the opportunity to collaborate with the following agencies in 2026 related to training and SME support:

The Hope Factory – Service Level Agreement; Na'lithuba - Service Level Agreement;
CHIETA – Memorandum of Agreement;
Chemtech Institute (Training) – Memorandum of Understanding;
ECDC (as part of the Nelson Mandela University MOU- Innovation Stream)
Technology Station in Chemicals TSC and Technology Station in Chemicals MUT, both for cosmetic formulation and piloting.

Reading…. Books!

Fact 1: Reading can make you a better conversationist.

Fact 2: Neighbours will never complain you are reading too much.

Fact 3: Knowledge by "osmosis" has not yet been perfected, you better read!

Fact 4: Books have stopped bullets. Reading can save your life!

Fact 5: Dinosaurs did not read; look what happened to them!

Your direction is more important than your speed.

InnoVenton

Technology and Specialized Development

InnoVenton/DCTS strives to provide specific technology support and innovation in the areas of:

Research
Applied Chemistry in Product and Process Development
Teaching & Learning
Short learning programs & workshops
Engagement & Services
Technology Support
Technology Demonstration
Analytical Testing Services

Our experts are willing to assess and assist you with your process and development needs.

Innoventon@mandela.ac.za

CHIETA and InnoVenton

SMMEs in the Cosmetic Product Market

- Louise Hamilton

A range of skills development interventions were implemented by InnoVenton DCTS, in partnership with The Hope Factory. These were “New Venture Creation Short Skills Programme” and “CIPC business registration” and “Cosmetic Formulation Training”. The impact was felt by 50 start-up businesses who benefited from this intervention.

The trainees were provided with skills to prepare them to start, grow, and sustain a small cosmetic or personal care product business. The practical formulation workshops took a cradle-to-grave approach, starting with the development of a new idea and the elements that need to be considered in developing the marketing concept. This was followed by a summary of the development process and a full explanation on the types of claims that could be used to market products to the consumer. Particular attention was given to permitted and prohibited claims, and the successful substantiation of the former, in accordance with the requirements of the Advertising Regulatory Board (ARB) of South Africa. A review of both South African and European Regulations was incorporated to give a balanced perspective. The last 3 days of the course were dedicated to practical cosmetic and personal care formulating. Practical skills like this enable entrepreneurs to do initial product ideation and prototyping.

Our client demographics are represented by mostly women and historically disadvantaged clients:

2025 percentages: HDI – 85%; Women - 78%; Youth - 50% Disability - 3%

Training was conducted from September 2024 and completed in June 2025; a product showcase and graduation was held on 30th July 2025.

Photo: Graduation and Product Showcase Participants

Photo: SME’s were given the opportunity to display and sell their products.

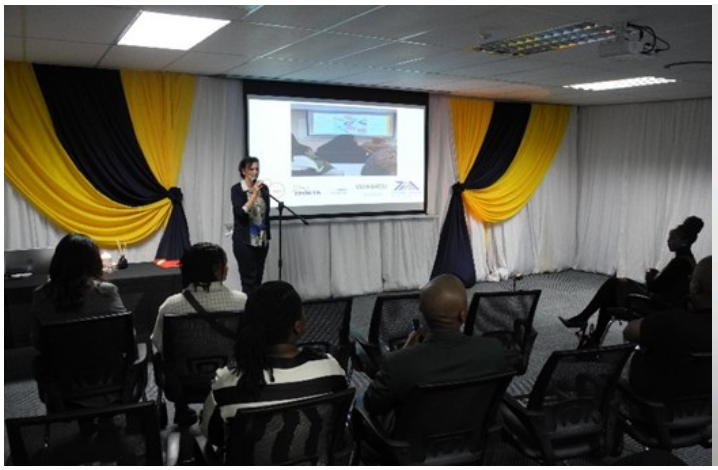


Photo: Mrs Louise Hamilton addressing the graduates.

Photo: The CHIETA CEO, Mr Yershen Pillay and Cosmetic Training Beneficiary, Ms Pontsho Dibakwane

CHIETA/The Hope Factory

Ladies in the Amakhala and Tsitsikamma region

20 Ladies, over the age of 40, from the Amakhala and Tsitsikamma regions enjoyed training on "New Business Creation" which included a week of training at InnoVenton on the science behind cosmetic formulations. They were given practical skills training on how to make creams, lotions, soaps and shampoos. The women left with the skills and enough raw materials to start manufacturing at the kilogram scale and test their own products in the market.

Photos: The Hope Factory Training Ladies with their products and starter kits.

Green Hydrogen Production using PEM

_ Dr Shawn Gouws

Dr Shawn Gouws and his group of students are investigating the proton exchange membrane water electrolyzer route to produce green hydrogen. They are investigating and characterizing several possible catalyst combinations using iridium as a base catalyst for the oxidation evolution reaction that can be used in the membrane electrode assembly of the proton exchange membrane (PEM) water electrolyzer.

Photo: Dr Claudelle Anensong (Post Doc), Miss Zininzi Tandwa, Mr Anele Nzimeni (B Sc Hon), Mr Wananimurena Ramudzuli (Intern), Mr Rofhiwa Moligi (IST)

The objective of this TIA Seed Fund Project is to decrease PGM (Platinum group metal) loading on the oxygen evolution reaction (OER) by using suitable descriptive metals (e.g., Ru, Ti, Ni, Co, Mn, and Cu) to enhance the stability and durability of the electrolyser and to construct a 1kW PEM electrolyser plant. Additionally, the project aims to investigate the behaviour of these catalysts in PEM water electrolysers.

Through CAPEX funding, a Metrohm cyclic voltammetry unit was purchased to support this research. The cyclic voltammeter plays a vital role in the electrochemical characterisation of catalysts used in proton exchange membrane water electrolysers. The apparatus will be used to determine the onset potentials, and linear scan voltammetry will be employed to determine the Tafel slopes that define the kinetic rate of the reaction for the corrosion studies.

BASF generously donated an amount to support training in the Green Hydrogen Demonstration Space.

Photo: Dr Shawn Gouws with Mr Christian Emter from BASF

The Endress & Hauser instrumentation automation was used to upgrade the Green hydrogen unit.

Photo: Ebrahim Ayob (Technician) and Leon Nel (Senior Sales) " The People for Process Automation", Endress & Hauser

Photo: Dr Shawn Gouws, Ebrahim Ayob (Technician) and Leon Nel (Senior Sales)

Large quantities of industrial hydrogen are produced from fossil fuels, which contribute to a significant carbon footprint that gradually harms our planet. Therefore, there is a need to lower the carbon footprint in various industrial processes such as methanation, methanol, and ammonia. One potential approach the group is exploring involves using proton exchange membrane water electrolysers to generate green hydrogen for these industrial applications.

We investigate proton exchange membranes (PEM) due to the high abundance of platinum group metals (PGMs) mined in South Africa. Although PEMs offer several advantages, such as high current densities, they complement other renewable energy sources, such as solar or wind, have low gas permeability, and enable faster hydrogen production with minimal environmental impact.

Current research involves manufacturing membrane electrode assemblies and testing them in PEM water electrolysers to assess durability and robustness. To do this, a small test rig was built and commissioned with solar PV cells to produce green hydrogen from renewable energy sources. Endress & Hauser have automated the system with pressure sensors to measure the differential pressure for calculating hydrogen efficiency. A flow meter was installed to measure water consumption and determine the amount of hydrogen produced in N/m². The thermocouples installed will provide valuable information to optimise the temperature needed for the water and gases (hydrogen and oxygen being produced). The power supply will be connected to a datalogger to measure the potential across the electrodes and calculate the Faradaic efficiency of the plant.

Looking back over 2025, here are some of the Conferences that the team has participated in:

- Swakopmund, Namibia April 2025 delivered an oral presentation on iridium reduction as oxygen evolution reaction.
- At the Chemistry 2025 virtual conference hosted in Rome, Italy in June 2025.
- Virtual Chemistry Conference in Mauritius, August 2025 on teaching and learning. Presented an oral presentation on Language barriers in chemical technology teaching.
- Learning and Teaching research week; an oral presentation on “Chemical Education: Teaching philosophy and the revolution of education.” 27-29 August
- Attended and presented an oral presentation at 18th International Conference of education, research and innovation (ICERi), Spain 10-12 November 2025 entitled: “Digitalize Learning via process simulation to understand process control for chemical engineers and operators”.

Dr Gouws and his postdoctoral fellow Dr Claudelle Anensong published a book chapter together. In the book: Advances in Hydrogen Energy - Production, Storage, and Utilization: The perspective Chapter: Hydrogen Production Via Proton Exchange Membrane (PEM) Water Electrolysis, Publisher: IntechOpen, release online as Chapter November 2025, available in hard copy in January 2026.

In the Photo alongside, **Dr Shawn Gouws** with **Mr Jason Mackay** who was awarded his Masters in Chemistry with a thesis titled, “ Synthesis and characterisation of electrocatalysts for the oxygen evolution reaction to produce green hydrogen via PEM-WE “

Previous passed CPT diploma student **Makabongwe Makhwelo** completed her Advanced Diploma in Operational Management. Congratulations!

Facilities & SHE

Our Staff and Students are encouraged to manage the chemicals they are responsible for by registering them and making use of designated storage areas. Ensuring all chemical bottles and containers are properly labelled, reduces the risk of misuse and accidents.

Safety on site is a shared responsibility, everyone can contribute to creating awareness and minimize risk associated with hazards. Make sure you practice the safe work procedures developed for your project. Working in a clean, organized space enables productivity. Environmental Stewardship remains a value to which we aspire. Responsible waste management practices form part of our institutional culture where "*Reduce, Reuse and Recycle"* are principles on which our waste management is based. Appropriately labelled chemical waste enables responsible disposal and reduces undue damage to the natural environment.

We strive to demonstrate our commitment to continually improve our commitment to Health and Safety at InnoVenton providing a conducive, safe working environment. The Science Faculty SHE committee remains a platform where issues and opportunities are discussed and addressed. InnoVenton encourages staff and students to work towards promoting a safe, healthy working environment.

InnoVenton
Dream. Innovate. Create.

InnoVenton

Downstream Chemicals

Technology Station

InnoVenton/DCTS strives to provide technology support and innovation in the areas of:

- **Product replacement, extension or formulations**
- **Improving production/process flexibility**
- **Reducing production lead times, reducing environmental impact, improving product quality; improving working conditions and safety**
- **Providing expert technology, analytical, testing services**
- **Providing custom designed short learning programs for industry**
- **Kilo-lab, distillation and process plant facilities**
- **TIA Funded Projects**
- **Chemical Process Development**
- **Product and Process Development for tailored solutions.**

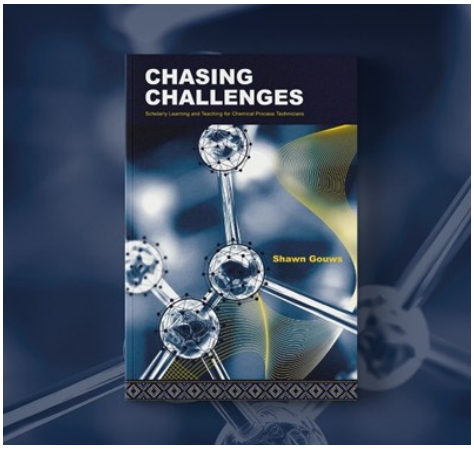
Technology Station activities are fully integrated at the institute to maximize impact.

InnoVenton@mandela.ac.za

Dr Shawn Gouws launches his book, **“Chasing Challenges”**

Blending personal reflection with professional insight, *Chasing Challenges* traces Dr Gouws’ teaching journey from his early days at the former PE Technikon to his current role as Programme Coordinator for the Diploma in Chemical Process Technology.

Photo (L to R): Drs Buyiswa Hlangothi, Noluthando Toni, Muki Moeng, Shawn Gouws, Melissa Gouws and Adeniyi Ogunlaja



The book introduces the Chemical Process Technology programme, which was developed and initiated during his time at InnoVenton. It integrates chemistry, mathematics, engineering, and physics to give students a strong foundation in industrial applications. It explores curriculum design, large-class teaching, technical skill development, communication strategies, and the use of digital tools to enhance accessibility for students, including those from rural Eastern Cape.

Written with a focus on student-centred learning, *Chasing Challenges* discusses simulation-based training, foundational curriculum design, language diversity, industry partnerships, and the evolution of education from 1.0 to 5.0. “Every challenge in chemical education holds the potential for achievement. Through reflection, innovation, and perseverance, we can transform adversity into learning and progress,” said Dr Gouws.

For more information or to obtain a copy of *Chasing Challenges*, contact Dr Gouws at Shawn.Gouws@mandela.ac.za.

Excellence Engagement Award

Dr Shawn Gouws was awarded the Faculty of Science Engagement Excellence award for 2025 for his role and contribution to the Chemical Industry through the Nelson Mandela University.

Photo: (Front Row L to R) Dr Zikhona Tywabi-Ngeva, Prof Zenixole Tshentu, Dr Sasha-Lee Dorfling-Jooste, Prof Christa Grobler, Prof Benita Barton, Dr Shawn Gouws, Gideon Brunsdon.

Dr Melissa Gouws and Dr Shawn Gouws celebrating the Excellence Awards evening together.

An Overview of cosmetic product development

Personal Care Product Development

_____Mrs Carlen Kruger

At InnoVenton, we have had the privilege of working with a diverse range of clients. This year we assisted Ronwyn Roos to make a Tallow Balm.

BOERE is a local, down-to-earth brand dedicated to providing natural, simple, and affordable products to its community. Its flagship product, Boere Balsem, is a versatile skincare "multitool" designed for all skin types. What sets Boere Balsem apart is its all-natural ingredients, locally sourced production, and its ability to be used from head to toe without negative side effects. Additionally, its adaptable formulation allows BOERE to develop a variety of products from the same base, expanding its range while maintaining its commitment to quality and simplicity. InnoVenton developed a Body Balm which met the clients' criteria, the client was trained on how to manufacture the product at laboratory scale.

Renewed Radiance is a cosmeceutical range designed to target hyperpigmentation and delay signs of aging, such as reduced skin elasticity, fine lines, and wrinkles. The aim is to promote a healthy, radiant complexion, minimizing marks, blemishes, and age spots. By using a combination of potent, scientifically tested active ingredients that work synergistically, Renewed Radiance helps achieve a smooth, even skin tone and an improved overall appearance. The client wants to use no less than seven carefully selected tyrosinase inhibitors, ceramides and peptides whose efficacy has been proven. These actives should be used within their therapeutic indexes in the Renewed Radiance range. According to the client, the number of tyrosinase inhibitors is particularly important when treating hyperpigmentation in skin of colour, because of its abundant melanin production which makes this skin type more prone to hyperpigmentation from simple bites, scrapes, etc. The use of sunscreen (SPF 50) is essential, as the absence of sun protection not only reduces the effectiveness of the entire range, but may also lead to further skin damage.

An exfoliator and serum have been developed so far. The Client envisages 5 products in her range.

<u>Some other products developed, & prototyped were:</u>

- Skin Klinik – Cosmetic products (Dermatological treatment enhancing Products) developed and tested for stability.
- Dr Avelo Mayekiso – Skin Care products prototyped and developed.
- Lisa Boogaard – Cosmetic products prototyped and tested for stability.
- Contextualize - 2 products (application testing)
- Isegen – 5 products (improved)

Some of the interesting feasibility studies we did last year, worth mentioning were for dread lock care products, sneaker cleaning products, automotive care products, and brow lamination products, all of which have to potential to go into product development. Bidvest-Steiner has asked us to develop drain and urinal cleaning tablets for their product range.

Our workshop space got a bit of an upgrade with our two display walls serving a selfie taking and other similar interaction opportunities for clients.

We are reorganizing the product development lab, where we will be manufacturing up to 10 kg batches for clients, in anticipation of the pilot scale manufacturing unit to be built and launched.

A new service offering we would like to add is in vitro SPF testing for sunscreen up to SPF 30.

Acquisition of new stability testing equipment, will help make the process faster and more seamless.

In 2025 we introduced the new Fragrance Workshop for the first time to our clients. The Introduction to Formulating cosmetics workshop is now online to make it easier for those who are out of town to participate. Another new workshop was the Requirements for market entry workshop, offered online.

Photo: 2025 Fragrance workshop delegates

InnoVenton

Cosmetic Product Formulation

Have you ever wanted to formulate your own cosmetic product? But weren't sure where to start?

InnoVenton can help you understand how to mix and blend various components in such a way so that they don't react but instead interact to provide a final product with very specific desired properties or functions.

You would have access to Chemical Research and Development expertise and Technology Support as you design our formulation.

Some products developed in our laboratories include; personal care products, household cleaning products, pharmaceutical products, industrial chemical products.

We would love to help you design and optimise your cosmetic formulation.

InnoVenton@mandela.ac.za

Cosmetic Products: introduction to Regulatory Compliance and Market Entrance

Due to numerous requests from SMEs attending our practical cosmetic workshops, and to assist in the product development journey of entrepreneurs, a workshop which will assist in navigating the route to market is being developed. This course has been setup as an online training session and is a new offering to our clients.

Networking at the IFSCC in Cannes

Dr Nicole Vorster and Mr Jaques Strydom (Evonik SA) at the International Federation of Societies of Cosmetic Chemists in 2025 in Cannes, France.

Introduction to Cosmetic Formulation

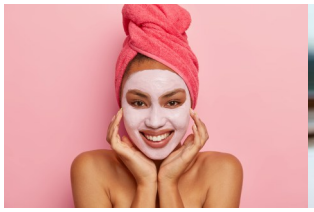
Are you interested in setting up your own natural skin care business, but don't know where to start? Join us for a day to find out. *You don't even need a scientific background!*

The course will cover:

- **Evaluating your formulation idea**
- **Introduction to formulation terminology and the language of formulation**

Who should attend?

Inventors and entrepreneurs who would like to acquire basic tools to better understand and evaluate their idea.



Formulating Creams and Lotions

Do you want to learn to formulate creams and lotions? Come and join us for a one-day practical workshop.

What you'll learn...

- **Basics of emulsion theory**
- **Skin moisturisation mechanisms**
- **Key ingredients in creams and lotions**
- **How to design and formulate your own creams and lotions**
- **Basic formulation practical skills and techniques**
- **Basic product evaluation**

Who will benefit? Aspiring entrepreneurs and formulators. No scientific background or experience needed. The next two courses may also be of interest. (i.e. those related to Fragrances and Surfactants)

Prerequisite: Attendance of **Introduction to Formulating Cosmetics** Short course is recommended .

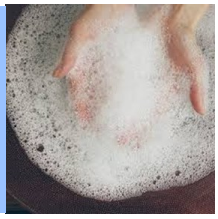
Fragrances & Essential Oils Workshop

Do you want to learn to make your own perfume, essential oil blend and room spray? Come and join us for a one-day practical workshop.

What you will learn:

- **Fragrance basics**
- **Difference between fragrance notes**
- **Fragrance families**
- **IFRA guidelines**
- **How to make an essential oil blend**
- **How to make an eau de parfum**
- **How to make a room spray**
- **Basic fragrance practical skills and techniques**

Prerequisite: Attendance of **Introduction to Formulating Cosmetics** Short course is recommended .



Formulating Surfactants

Do you want to learn to formulate Surfactants? Come and join us for a one-day practical workshop.

What you'll learn...

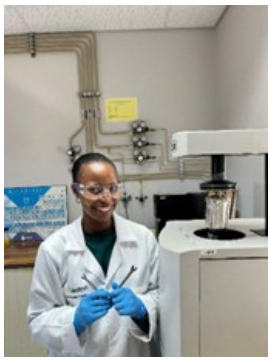
- **Basics**
- **Surfactant mechanisms**
- **Key ingredients in surfactants**
- **How to design and formulate your own surfactant-based product**
- **Basic formulation practical skills and techniques**
- **Basic product evaluation**

Prerequisite: Attendance of **Introduction to Formulating Cosmetics** Short course is recommended .

What's going on in the Lab ?

_____Miss Olebogeng Mogapi and Miss Siphosethu Schalk

The Analytical Laboratory has been bustling with exciting activities and accomplishments. Here's a glimpse into some of the events and milestones:



In-Service Training and Skills Development

In 2025, we hosted an in-service training student, Dimakatso Kekana (photo LHS), whose enthusiasm and positive attitude brought fresh energy to the laboratory. She gained valuable hands-on experience in real-world analytical techniques and laboratory operations.

Applied GC-MS Screening for Health and Safety Investigations

The laboratory conducted GC-MS screening using SPME extraction to identify compounds suspected to be the source of reported health symptoms, including coughing and eye and throat irritation, associated with contact with a broom. The analysis identified Mesityl oxide as a potential contributor to the observed symptoms, demonstrating the value of GC-MS in safety-related investigations. **Photo: Olebogeng with her PPE**

Industry Training and Knowledge Transfer

We provided practical training to industry personnel, focusing on mastering essential laboratory techniques. These sessions supported skills development and strengthened collaboration between the laboratory and industry partners.

Support for Process and Product Development

In support of active process and product development projects, the laboratory conducted HPLC (High Performance Liquid Chromatography) method development, validation, and quantitative analysis**. Photo: Siphosethu performing analysis on the HPLC.**

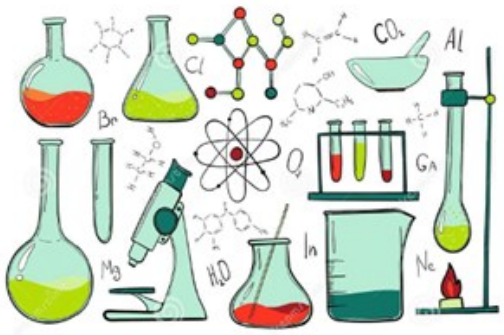
Exposure to Advanced Analytical Techniques

Olebobeng Mogapi and Siphosethu Schalk (photo RHS) attended Analytica Lab Africa, a leading laboratory and analytical technology exhibition in Africa, where the capabilities of advanced instruments and technologies were showcased.

Certification of Analysis (COA)

The laboratory successfully performed Certificate of Analysis (COA) testing for Copper Sulphate in compliance with USP and BP specifications, supporting quality assurance and regulatory compliance.

NELSON MANDELA UNIVERSITY InnoVenton



MASTERING LABORATORY TECHNIQUES

Sometimes little things make a big difference.

Formulation Science **Showcase** 2025

Students pitch innovative scientific formulations to 'Dragon's Den'

_NMU Article 27/11/2025

From eczema cream and sunscreen to cancer-screening tablets and a herbal pesticide, the BSc Honours in Formulation Science class of 2025 has showcased impressive creativity.

Nelson Mandela University's honours programme is known for its diverse curriculum, which includes chemistry, statistics, entrepreneurship and formulation science theory and practicals.

From left, Stefan Kruger, Siyasanga Ngcatshe, Dr Nicole Vorster, Floyd Seobela, Sifiso Maseko and Hlumelo Mji

Students first engage with the theoretical foundations before developing their own product-formulation proposals. They also complete additional modules which focus on consumer product regulations, and how to write a business plan, giving them a broad grounding in applied science, said Carlen Kruger, BSc Honours Formulation Science graduate and Formulation Chemist at InnoVenton in the Faculty of Science.

The course offered full-time and part-time, continues to grow, with more than 20 applicants accepted for next year, noted course coordinator Dr Nicole Vorster.

InnoVenton also runs regular one-day practical workshops on formulating creams and lotions, personal care products and fragrances to stimulate entrepreneurial interest.

Drawing on traditional medicine, Hlumelo Mji used sour-fig leaves to create *Lumi Skinn*, a sunscreen with an SPF of 30. He explained that sour-fig leaves are used for soothing skin irritations, including bluebottle stings, and can also be boiled in water for treating sore throats.

The only full-time student this year, Hlumelo hopes to pursue a master's in nanoscience. He previously completed a Diploma and Advanced Diploma in Analytical Chemistry at Nelson Mandela University.

Floyd Seobela developed a gallium tablet for cancer screening; once ingested, the tablet binds to cancerous cells, making them visible during scans. Floyd works in pharmaceutical quality control in Cape Town and studied at the University of Limpopo. He also plans to pursue a master's in nanoscience or chemistry.

With eczema cases rising, even among newborns, Siyasanga Ngcatshe formulated her Eczema Intensive Soothing Cream using an extract from the sausage tree (*Kigelia africana*). A formulation chemist in Gauteng, she wants to start her own business and complete a master's in Formulation and Cosmetic sciences. She is a graduate of Tshwane University of Technology.

Photo above: Sifiso Maseko and Stefan Kruger

Sifiso Maseko produced chewable tablets from compressed bitter-kola seeds to support immunity, boost energy and aid digestion. A senior laboratory technician in the University of Limpopo's pharmacy department, he hopes to pursue his master's in Chemistry. He previously studied at Rhodes University.

Inspired by his daughter Lily, Stefan Kruger created *The Lily Bomb*, a granular natural pesticide containing neem oil and mustard seeds to use on lawns. The product is safe for children and animals. A pharmacist at Greenacres Hospital in Gqeberha and a Mandela University pharmacy alumnus, Stefan enrolled in the programme to expand his creativity and scientific versatility.

READ MORE ***https://news.mandela.ac.za/News/Leading-by-example,-building-entrepreneurship***

Dr Nicole Vorster is the programme's coordinator, for more information feel free to contact her at: Nicole.Vorster@mandela.ac.za

Photo: Hlumelo Mji, Floyd Seobela and Siyasanga Ngcatshe

Beauty means business for entrepreneurs at InnoVenton workshops

NMU Website Article 13/03/2025

Aspiring entrepreneurs are tapping into innovative and affordable workshops offered in Summerstrand – and learning that beauty means business.



The presenters, from left, Anneke Greef, Dr Nicole Vorster and Carlen Kruger. Workshop participants create their own perfume in the lab at InnoVenton. Pictures by Carlen Kruger

Through short courses in formulating cosmetics and fragrances, Nelson Mandela University's InnoVenton Downstream Chemicals Technology Station is helping aspiring business owners turn their passion for beauty products into profitable ventures.

No scientific background or experience is needed, just a willingness to innovate and learn.

A team of formulation chemists – Dr Nicole Vorster, Anneke Greef, and Carlen Kruger – presented the most recent interactive workshop, on fragrance, in February.

It is one of various workshops which offer the chance to learn terminology, the ingredients used in cosmetics, as well as how to scale and cost formulations, and regulatory requirements for product labelling.

"We have developed these workshops in response to feedback from attendees who wanted to learn more about specific aspects of fragrance creation," said Dr Vorster, senior lecturer and Formulation Science coordinator in the Department of Chemistry.

"By the end of this workshop, participants will have acquired more knowledge about fragrances and fragrance blending and will be equipped to start their own fragrance businesses or improve their existing products."

The InnoVenton workshops cater to a wide range of individuals, from aspiring entrepreneurs like Marshall Goliath and his sister Kim Gie, who run a scent company, to those like Lucelle Gallant, a former teacher who wants to learn more for personal enrichment.

The recent fragrance workshop, which focuses on the art and science of scent, is one of the most popular offerings. Participants learnt about fragrance notes, scent families, and how to make eau de parfum, as well as room sprays. The course is ideal for those who want to dive deeper into the intricacies of fragrance formulation.

"We were very interested to find out more about the science behind how we make perfumes," said Gie. "This workshop has been really helpful for when we give feedback to clients. Now I can explain about top notes, heart notes and base notes, and so on."

Another participant, Nicole Louw, said she made hair-care products and wanted to learn more about how to infuse them with fragrance.

This particular workshop not only attracted entrepreneurs but also those with a specific interest in scent. Yondela Ntwanambi, who works in hospitality at a four-star lodge, hopes to use her new skills to improve room fresheners, which are widely used in the industry to reduce odours.

"I am really enjoying getting to experience all the different scents," said Ntwanambi. "I wanted to try something new, and I would like to make air fresheners one day."

Practical sessions gave participants the opportunity to create their own perfumes, essential oil blends and room sprays.

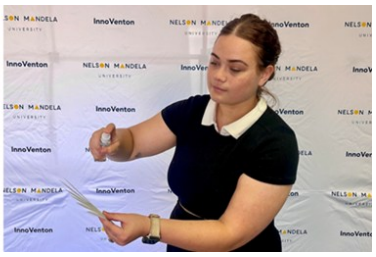
Goliath, whose V&G company sells oil-based fragrances in several retail stores, explained that the workshop also helped his team better understand their product.

"We've been approached to develop signature fragrances, and we're expanding our product range. This workshop has given us the knowledge to take that next step."

InnoVenton offers a range of services to staff, students and the wider community that include formal training, short courses, analytical services and technology support.

It plays a key role in helping entrepreneurs gain the skills they need to succeed and perhaps be the next Estée Lauder, MAC or L'Oreal. Whether they are creating their own beauty products or enhancing existing ones, the InnoVenton workshops at Mandela University are helping turn dreams into reality.





Workshop participants and formulation chemist Carlen Kruger prepares perfume testers for the participants. Pictures by Gillian McAinsh.

Mystical Marketing

Rhodes 3rd year students visit InnoVenton

An enthusiastic group of Rhodes students accompanied by Ms Mpondi Molefe spent the day at InnoVenton with some of our project leaders.

The students were shown how Chemical synthesis and process development can be used to support SME and small manufactures in the chemical industry. They were also shown how Formulation Science enables entrepreneurs to start their own businesses and be self sufficient. A tour of the Analytical Chemistry Labs at InnoVenton showcased the range of test work carried out in the laboratory.

Supplier Day July 2025 in Johannesburg

In the photo below, Olebogeng Mogapi and Siphosethu Schalk attended the Lab Africa exhibition.

The 2025 SACI Career and Innovation Day at Rhodes was a great opportunity to spend time with graduates and share what InnoVenton is all about and what we do. Dr Melissa Gouws was invited to share with the delegates the role InnoVenton plays and how we could assist and promote innovation and entrepreneurship amongst graduates. It was a great chance for students to network.

The South African Chemical Institute (SACI)
EASTERN CAPE SECTION

Photo: Rhodes hosts the annual SACI Career and Innovation Day

Photo: Olebogeng and Siphosethu had a chance to catch up with Jan Du Plessis at the annual SACI Career and Innovation Day . It was also an opportunity to meet some of our suppliers in person.

China-Africa Youth Scholars Forum on Photovoltaic and Hydrogen (August 8-11, 2025)

Dr Claudelle Sybilline Anensong Djadock (PhD) presented an Energy Technology Report **at** Wuhan, Hubei University of Technology, China. The Hubei University of Technology and Nelson Mandela University signed a cooperation agreement between the two institutions, opening a new chapter in the China-Africa Youth Scholars Forum on Photovoltaic and Hydrogen Energy Technology. The aim of this was to build new momentum for China-Africa energy co-operation and contribute to national carbon neutrality strategies.

As a Postdoctoral fellow at Nelson Mandela University and InnoVenton Downstream, working with Dr. Shawn Gouws' research groups (Green Hydrogen Production), it was a great opportunity to attend the conference as one of the speakers. Claudelle's presentation focused on "Oxygen Evolution Reaction (OER)-Electrocatalysts for Green Hydrogen Production via Proton Exchange Membrane (PEM) Water Electrolysis." **Photo: Claudelle (RHS) with delegates at the conference.**

Photo below: Dr Gary Dugmore manning our expo stall at the Manufacturing Indaba, Santon Convention Centre.

TIA Eastern Cape Industry Roundtable Engagement 2025 in Bluewater Bay. **Dr Shawn Gouws, Mrs Louise Hamilton, Dr Melissa Gouws, Mr Rofhiwa Moliga and Mr Wananimurena Ramudzuli** attended the event and supported the exhibition session.

The Technology Innovation Agency hosted an Industry roundtable in Bluewater Bay, Port Elizabeth. The theme was, "Innovating from the Eastern Cape to the world". The Green Hydrogen project was part of the exhibition, Mr Rofhiwa Molingi, Mr Wananimurena Ramudzuli and Dr Shawn Gouws were there to engage with local industry. Mrs Louise Hamilton gave an address under the Economic Cluster discussion. The Acting Chief Executive Officer of the TIA, Mr Ismail Abdoola and Ms Tandokazi Nquma-Moyo, GM: Strategic Partnership, Business Development & Stakeholder Relations, welcomed the delegates and facilitated the discussion sessions. There was wide representation from business and industry in the Eastern Cape region, facilitating a robust opportunity to network with funders and share ideas.

InnoVenton
Dream. Innovate. Create.

Iron Man 2025

InnoVenton entered the Port Elizabeth Iron Man corporate triathlon for the first time. Our three brave volunteers were Dr Nicole Vorster (swam), Mrs Anneke Greef (cycled) and Dr Shawn Gouws (ran).

Can anyone remember what out placing was in the race?

Heritage Day is always a hit at InnoVenton, yes we braaied. **Photo below: Miss Dimakatso Kekana, Miss Siphosethu Schalk and Miss Olebogeng Mogapi** added extra flair to the day.

Photo below: Miss Siphosethu Schalk and Miss Jamie Naidoo celebrated Heritage Day in style.

Let's not forget about **Women's Day,** It's a wonderful excuse to celebrate the hard working talented ladies at InnoVenton. In the photo

below we have **Miss Dimakatso Kekana, Miss Olebogeng Mogapi, Mrs Cecilia Saunders, Miss Jamie Naidoo, Miss Siphosethu Schalk, Dr Nicole Vorster, Mrs Carlen Kruger and Dr Melissa Gouws**.

InnoVentons participation at Research Week 2025

We set up our exhibition stall at the annual Nelson Mandela University Research and met up a colleague from Separation Scientific SA, Ms Jessy-Lee Arries.

InnoVenton has corporate membership status at the South African Institution of Chemical Engineers.

InnoVentons participation at Research Week 2025 cont.

Dr Gary Dugmore and Mrs Louise Hamilton participated on a Research week discussion panel, exploring innovation and entity engagement at the Nelson Mandela University

The Green Hydrogen Team had a display of their own to demonstrate some electrochemical principles to the students. They also participated in the poster session.

Photo: Mr Anele Nzimeni, Dr Claudelle Anensong, Dr Shawn Gouws, Mr Wananimurena Ramudzuli and Mr Rofhiwa Moligi.

Photo above: Mr Rofhiwa Moligi, Mr Anele Nzimeni, Dr Shawn Gouws, Dr Claudelle Anensong, Mr Wananimurena Ramudzuli

Photo: Dr Shawn Gouws and Mr Anele Nzimeni (B Sc student) with his poster presented.

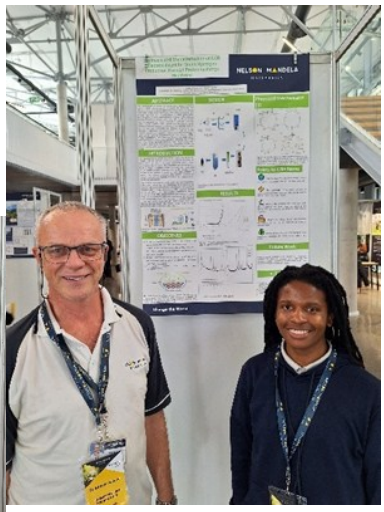


Photo below: Dr Claudelle Anensong with her poster.

SACI 45th Annual Conference in Johannesburg was attended by **Mr Jarryd Cuthbertson, Miss Siphosethu Schalk, Mrs Carlen Kruger and Miss Olebogeng Mogapi, all looking fabulous for the Gala Dinner.**

Science and Society:

InnoVenton

Youth Career Summit Exhibition in Kariega at the Nelson Mandela Bay Science & Technology Centre (NMBSTC)

_Dr Melissa Gouws

Nelson Mandela Bay Science & Technology Centre (NMBSTC) hosted the 2025 Youth Career Summit Exhibition in Kariega (ex-Uitenhage) on 17-18 September 2025. The theme of the summit was "Bridging the skills gap – building the workforce of the future". The summit aims to bring together learners, youth, TVET colleges and industry to address one of South Africa's most pressing challenges, the skills shortage. The Summit provided an interactive platform for learners and youth to explore career opportunities, understand industry demands and to gain the skills needed for future employability and entrepreneurship.

Youth and learners who were interested in science and engineering-based careers were encouraged to engage with representatives from industry and academia to consider future career options. For example: electrical engineering, mechanical engineering, automotive electronics, logistics, retail, formulation science, catering services and clothing design. InnoVenton was represented by Dr Melissa Gouws who facilitated a session with learners about opportunities around formulation science and the chemical industry. Eg: Formulation Science: Developing and formulating your own cosmetic range or working for cosmetic companies that want to expand their range of products.
Chemical Industry: Analytical Chemistry, Environmental Chemistry, Agri Chemicals and Petro Chemicals. Careers range from routine analytical work to advanced research and development. This was the first time some of them had heard about technological development, what support services are available and what training support can be provided by InnoVenton to SME's. Technology development is the continuous process of inventing, creating, and improving tools, systems, and methods (technologies) through research and innovation. It involves structured stages to move ideas from concept to market, often supported by funding and bridging research to industry. InnoVenton offers a range of workshops to introduce and guide participants through the process of formulating their own products. The first of these is an Introduction to Formulating Cosmetics (online), which is followed by a practical Creams and Lotions Formulation workshop. SME's who are interested in formulating surfactant-based products or using fragrances and essential oils are offered hand on practical training in the laboratory. An "Introduction to regulatory compliance for entrance into the market" (online) is an option for SME's who are at a stage where they are serious about establishing their brand.

Our Personal Care workshops and Short Learning Programs include:
- Introduction to Cosmetic Formulation (online)
- Formulating Creams and Lotions
- Formulating Personal Care Surfactant-based Products
- Fragrance & Essential Oils
- Requirements for market entry for cosmetic consumer products (online)

Topics covered included skills development training in the form of interactive discussions and presentations. Academic pathways, career guidance and careers in the motor industry were on offer to consider. Some institutions set up exhibition stalls to enable more interactions with the learners and their teachers. These included, but were not limited to, the PE TVET, CHIETA, InnoVenton, Volkswagen, Eskom, the Retail Business SETA and Transnet. The three objectives of the Career Summit were to:
a) Empower learners and youth with practical knowledge and experience to make informed career decisions.
b) Provide a platform for knowledge sharing where learners and youth interact with industry and training institutions.
c) Highlight opportunities in trades, TVET programmes, and other skills development pathways — particularly for Grade 9 learners making critical subject and career choices.

Some local entrepreneurs who started their own businesses in the catering and clothing sectors were there to inspire learners to create their own opportunities with the talent and enthusiasm they have.

Photo 1: InnoVentons Exhibition Stall at the Career Summit with Dr Melissa Gouws.

Photo 2: Clothing Entrepreneurs inspire learners to start their own business with a talent or service they believe in, like Mabasentle Designs and Cosmetics.

Dazzling events catering and decorating events table was hosted by Rizelle and Ingrid, inspiring young business owners to consider the hospitality industry as a career path.

Transnet was there in full force recruiting fit young individuals to consider the transport sector. The **CHIETA** was well represented offering funding and opportunities for work integrated learnerships.

InnoVenton and Penguins; so we try to keep the beach clean

The Ladies joined a "Beach-clean-up" project with **PE SACCOB** (penguin project) on the coldest day of the year. And Yes, they did collect some trash.

Photo's: Miss Olebogeng Mogapi, Miss Jamie Naidoo, Miss Dimakatso Kekana, Mrs Louise Hamilton and Mrs Cecilia Saunders.

The Mission and Strategic Objectives of DCTS are Technology Innovation and Development Improvement for competitive advantage in the South African Downstream Chemical Industry.

InnoVenton has Instagram

Innoventon_mandela_uni

Feel free to check out our Instagram Page for the latest updates related to our formulation workshops.

InnoVenton

Dream. Innovate. Create.

Specialist Analytical Services

Gas Chromatography

- GCMS, (Fingerprinting comparison of volatile/semi-volatile organic compounds)
- SIMDIS, (Simulated Distillation of Fuels)
- GC x GC, (Separation of complex hydrocarbon mixtures)

Coal and Biomass Analysis

- Thermal Gravimetric Prox-Analysis (moisture, volatiles, ash, fixed carbon)
- Calorific Value

Spectroscopy

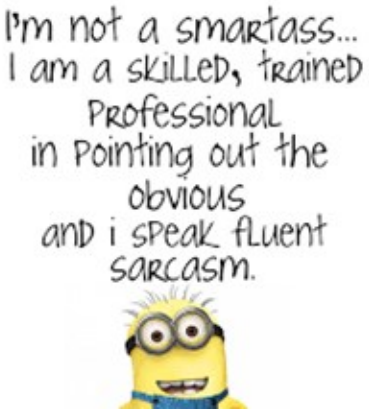
- UV/Vis, Qualitative and Quantitative analysis
- FTIR, Raw material fingerprinting

Fuel Analysis

- Flash point, Density, Viscosity, Cetane number
- Copper Strip, Iodine Value
- CFPP, Cloud Point, Oxidation Stability
- Vapour Pressure, Distillation Points
- Energy Value, Carbon Residue
- Sulfated Ash, Total Contamination

Our Laboratory is willing to assess and assist you with your testing and analysis requirements.

InnoVenton@mandela.ac.za



SUDOKO

Each row, column and 3x3 block must contain all the numbers 1-9.

Do not repeat numbers in any row, column or 3x3 block.

	4	6					2	
	7		2	9	8			
	1	8		7		6		
3								7
		9		4		5	3	
			9	6	3		7	
	8					4	1	

New Equipment Acquisitions

Product Formulation Equipment:

Liquid Decanter- This bench size decanter will assist our SME's when they need to bottle and package their products.

Electrochemical Analytical Equipment:

CV Equipment:

Metrohm Cyclic voltammetry – A new Cyclic Voltameter was purchased from Metrohm to support the Hydrogen Research project to evaluate catalyst loading combinations on membranes. (MEAs).

20 YEAR ANNIVERSARY InnoVenton

InnoVenton maintained and extended our ISO 9001: 2015 Certification for another 3 years (May 2029). This affirms our commitment to quality service to our customers and stakeholders.

SABS ISO 9001

In-Inservice Training & Intern Development

InnoVenton set up an internship training programme focusing on developing and upskilling individuals. The idea is to end up with versatile skilled technicians who have applied knowledge. This should put them in a position where they can contribute and add value to operations at any company where they find themselves working.

The 2025 Interns were placed in areas of Cosmetic Product Development, Analytical Testing and administration. They are Miss Dimakatso Kekana (IST- Analytical Chemistry), Mrs Carlen Kruger (Formulation Science), Miss Jamie Naidoo (Receptionist). Miss Zininzi Tandwa (CPT), Mr Rofhiwe Molingi (CPT) and Mr Wananimurena Ramudzuli (CPT).

The 2025 Chemical Process Technology IST's were: Mr Wongaletu Alam, Miss Sinovuyo Gogela , Miss Sinoyolo Zibonda, Mr Mthokozisi, Mahlaba, Miss Celeka Marafane and Miss Ovayo Vanqa.

InnoVenton
Dream. Innovate. Create.

Looking forward - 2026

2026 promises to be another project packed year. The following are a few of the main activities planned.

Product and Process Development Projects: Entrepreneurs in the Chemical manufacturing sector continue to show interest in our pilot scale facility at InnoVenton where they can have test batches produced to qualify their products.

Cosmetic Formulation Improvement: Clients have requested assistance to improve formulations for body lotions and face creams using various specialized key ingredients.

Graduate Internship Program: We look forward to our next intake of Interns and the training lined up for them.

Pilot scale prototype manufacturing facility for emulsions for cosmetic formulations, to bridge the gap between lab scale work and contract manufacturing.

Fluorochemicals; investigate which compounds can be synthesized locally. Upgrading of facilities for chemical synthesis applications.

Workshops to look out for in 2026

An introduction to Cosmetic formulation workshops for SME's and individuals who are considering developing a new product.

Creams and lotions practical workshop for persons who want to experiment in the lab to make their own lotions.

Surfactants workshop for Detergents and Soap Formulators.

Fragrances in Personal Care Products for SME's who want to develop perfumes and fragrance products.

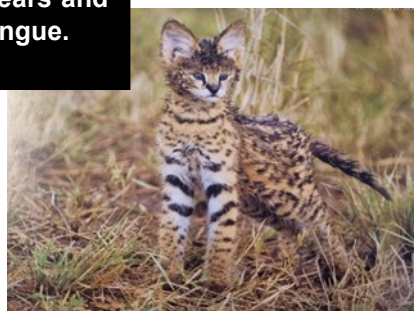
Regulatory Cosmetics market entry requirements for cosmetic consumer products.

G to KG scale up workshop, scale up for process chemists.

Data Analysis with Excel SLP, 3 CPD points, for Analysts, Scientists and Engineers.

Process Safety SLP, 5 CPD points, for companies who want to draw focus to safety in their industry.

A wise person has long ears and a short tongue.



Process Safety SLP

This course will provide a broad understanding of the tools and problem-solving techniques used in process safety.

The course covers different hazards found in the chemical industry, safe work permits, consequences of toxic vapours, fires and explosions the SHE considerations regarding these consequences, process design and operations, asset integrity, legal aspects, management of change and safety cultures. The format of the presentations will be on MS Teams.

Who would benefit:

- **Anyone involved with a role that does not have direct line responsibility for process safety**
- **Anyone who would like to develop a broad understanding of process safety**

InnoVenton

InnoVenton@mandela.ac.za

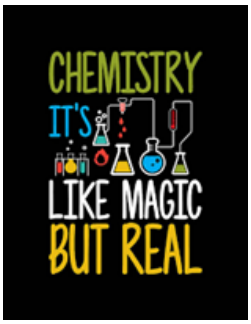
NELSON MANDELA UNIVERSITY

Looking forward - 2026

Spaghetti Cake Recipe

For a truly homey comforting party snack, great for entertaining guests, only takes a few minutes to prepare.

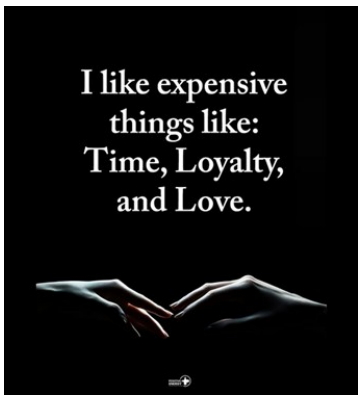
Ingredients:



- 250 g spaghetti
- 150 g Chorizo sausage, roughly cut
- 6 extra large eggs, beaten
- 250 ml fresh cream
- 250 ml milk
- 100 g pecorino cheese, grated
- Salt and freshly ground pepper
- Bazil leaves as a garnish.

Instructions:

Preheat the oven to 180 °C. Use butter or spay and cook to coat the sides and base of a 22cm cake pan, place some baking paper on the bottom and smear butter on it too. Cook the spaghetti in salt water till al dente. Drain and place it in the prepared cake tin. Sprinkel the chorizo sausage pieces over the top and mix it into the spaghetti with a fork. Mix the eggs, cream, milk, pecorino cheese, salt and pepper together and pour the mixture over the pasta. Gently mix the egg mixture through the pasta so that it is well coated. Bake for approximately 25 minutes until cooked. Sprinkle fresh basil leaves over the top. You can cut it into slices and serve it hot. Provides 4 good portions.



Variations: The spaghetti cake is just a base, you can use other meat like chicken or cooked seafood, bacon or mushrooms to stir into the pasta mix. Or, replace the spaghetti with rice, just let it stand after cooking to set ,so that the rice doesn't crumble apart.

_ Bernice van der Merwe

InnoVenton

20 Years *of*

Dreaming. Innovating. Creating.

InnoVenton
Dream. Innovate. Create.

For More About InnoVenton

http://innoventondcts.mandela.ac.za

InnoVenton@mandela.ac.za

(041) 504 3233/3281

www.facebook.com/InnoVenton

https://www.linkedin.com/company/innoventon- downstream-chemical-technology-station/mycompany/

Innoventon_mandela_uni

SABS ISO 9001

science, technology & innovation
Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA

NELSON MANDELA UNIVERSITY

technology innovation AGENCY