

InnoVenton Times

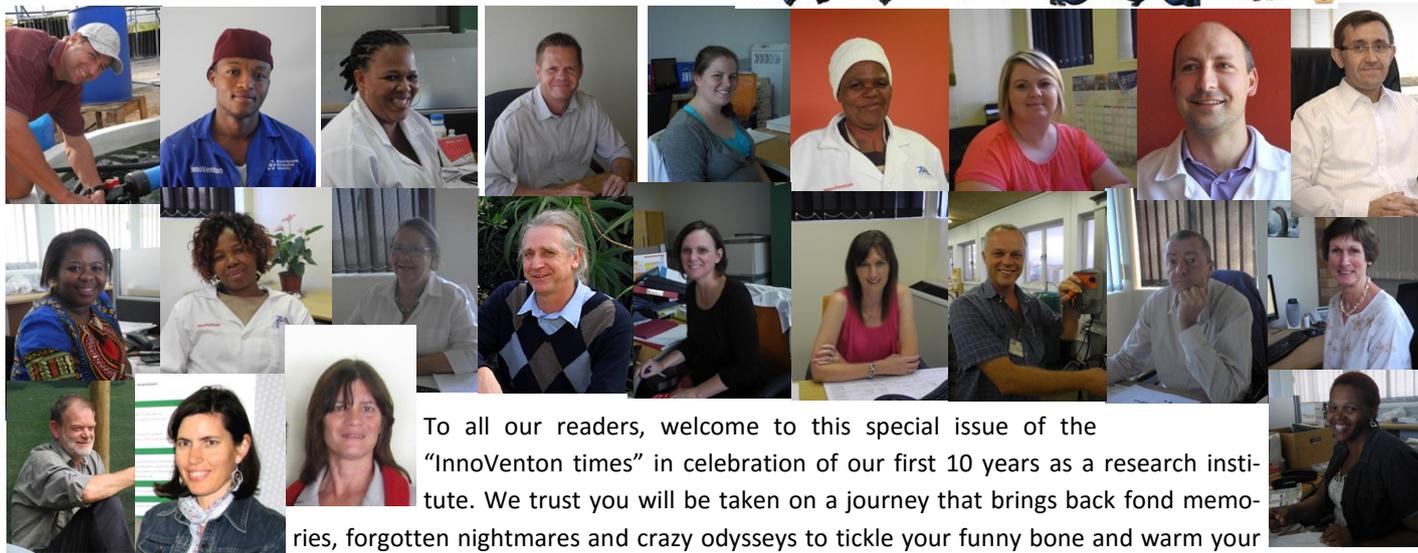
Thursday, March 26th, 2015

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CELEBRATING 10 YEARS OF TECHNOLOGY

Letter from the Editor...



To all our readers, welcome to this special issue of the "InnoVenton times" in celebration of our first 10 years as a research institute. We trust you will be taken on a journey that brings back fond memories, forgotten nightmares and crazy odysseys to tickle your funny bone and warm your heart. Obviously one can fit in only so much in a publication such as this – there is so much more to tell

– Oh or maybe not. It is with confidence that InnoVenton steps into another decade of challenges, risks and opportunities. It takes extraordinary people to achieve exceptional things and if we all keep our enthusiasm and drive, the sky's the limit. To the Team at InnoVenton, thank you for your valuable contributions, critical input and unwavering determination to get the job done. May the next 10 years be even more inspiring. Congratulations. To all our Partners. Thank you for riding along with us as we take steps to be an Institute you can rely on for expert technological support.

Always, Melissa

The Team at InnoVenton: (From left) Mr Philip van Zyl, Mr Unathi Plaatjies, Mrs Nomathamsanqa Dokwana, Mr Otto Lessing, Mrs Nadine Raepsaet, Mrs Mildred Mpalala, Mrs Natasha Luiters, Mr Warren Thompson, Prof Paul Watts, Miss Nwabisa Matebese, Ms Nobahle Mdlatu, Mrs Cecilia Saunders, Prof Ben Zeelie, Mrs Louise Hamilton, Dr Melissa Gouws, Dr Shawn Gouws, Dr Gary Dugmore, Ms Margriet Bosma, Mr Coos Bosma, Dr Nicole Vorster Mrs Ronelle Potgieter, and Mrs Nozuko Mtwa.

Awards and Recognition

- 2006: Hosting of Technology Station
- 2007: DTI Excellence Award in Chemical Technology Development
- 2008: NSTF Innovation Team Finalist
- 2012: Rated top Technology Station in RSA
- 2012: SARCHI Chair Awarded to InnoVenton
- 2012: NMMU Engagement Team Award
- 2013: NMMU Innovation Award
- 2014: Faculty of Science Teacher of the Year Award (Shawn Gouws)
- 2015: DST Innovation Bridge Award for "Technology most likely to impact public spending"

Facts & Figures

- *4 Book chapters*
- * 10 Patents*
- * 20 Articles*
- *63 Conference proceedings*
- *13 PhD's*
- *31 Masters*
- *13 SLP's offered*
- *39 Major projects @

InnoVenton Analytical
For all your analysis requirements



InnoVenton Analytical

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Give us a call for all your water, polymer, QC or consultation testing needs.

TEL: 041 504 3178

The Year 2005

InnoVenton is Created

Imagination is the beginning of creation. You imagine what you desire, you will what you imagine and at last you create what you will. (George Bernard Shaw)

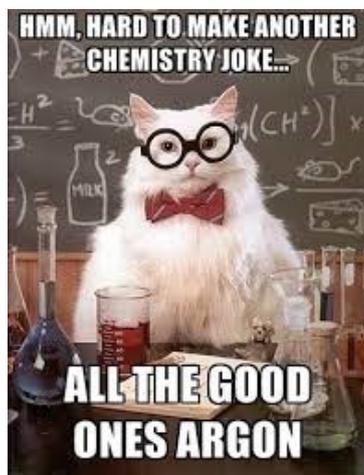
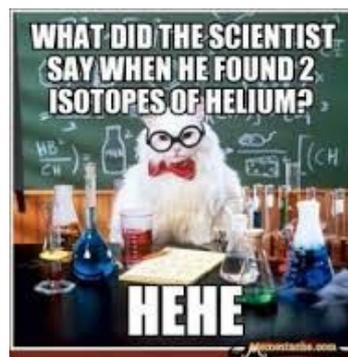
InnoVenton: NMMU Institute for Chemical Technology was formally registered as an NMMU research entity during the first year of NMMU's existence following a process to consolidate and re-register all entities and groupings from the three former Institutions (PE Technikon, UPE, and the PE Campus of Vista University) that were merged to form the new NMMU. This process involved the submission of formal proposals that were subject to peer review by both internal and external peers. The result of this process was the formal registration of InnoVenton as one of three institutes in the new NMMU. The activities that were initially incorporated into the new entity were mainly that of the former PETCRU (Port Elizabeth Technikon Catalysis Research Unit), and the activities of the then NRF Niche Area Program, which were mainly operated under the ex-PETCRU. The analytical services activity (then operating as ChemQuest) was also incorporated into the new entity.

The original purpose of the newly registered Institute as it appears in its founding document was to:

- ◆ Provide training:- Specifically career-oriented training
- ◆ Provide technology support - Specifically to SME industries
- ◆ Perform contract R&D (nationally and internationally), and
- ◆ Undertake self-initiated R&D for the purpose of commercialising such technologies.

After 10 years – what did we achieve? Two new formal academic programs, 8 Short Learning Programs with >800 Learners trained, 13 Doctorates, 31 Master's, paying >R5 million in student bursaries, >20 Publications, 4 Chapters in Books, 10 Patents, >70 Conference contributions, 1 Commercialised technology, >1000 Individuals and firms provided with technology support, created >30 new jobs inside the NMMU (paying some R45 million in salaries) and >100 direct new jobs external of the NMMU, and invested some R20 million in new equipment and facilities – all of this from externally raised funds. In the words of Winston Churchill:

Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning.






Nelson Mandela Metropolitan University
for tomorrow

InnoVenton: NMMU Institute for Chemical Technology and Downstream Chemicals Technology Station

Faculty of Science



Qualifications offered:

- ▶ Diploma in Chemical Process Technology
- ▶ BSc Honours in Formulation Science
- ▶ MSc Applied Chemistry (Product Development)
- ▶ MSc Applied Chemistry (Process Development)
- ▶ Doctorate

innoventondcts.nmmu.ac.za

The Year 2006

Technology Station Awarded to InnoVenton

Following a request to submit a proposal for the establishment of a second DST Tshumisano Technology Station at the NMMU, the Downstream Chemicals Technology Station (DCTS) was awarded during February 2006, and InnoVenton started operating as InnoVenton/DCTS in April 2006. The long-term objective of the Tshumisano Programme (now the TIA Technology Stations Programme) is to strengthen technological innovation activities and related skills upgrading to increase the relative competitiveness of SMMEs in targeted sectors on the national, regional and global markets. In view of its specific R&D focus in downstream chemical product and process development, InnoVenton/DCTS will strive to provide specific technology support and innovation in the areas of:

- ◆ Product replacement;
- ◆ Product extension;
- ◆ Improving production flexibility;
- ◆ Reducing materials and energy consumption;
- ◆ Reducing production lead times;
- ◆ Reducing environmental impacts;
- ◆ Improving product quality;
- ◆ Improving working conditions/safety; and
- ◆ Providing expert technology, analytical, and testing services.



Geoff Ritson – First Coordinator for Technology Station activities

From its inception, the Technology Station activities at InnoVenton have been fully integrated into the larger Institute so as to maximise the impact that we could have externally and to maximise the impact of the Station on the Institute itself.

To date, the Technology Station Programme has contributed just over R35 million over the past 10 years, the single largest financial contributor to the Institute's development and growth. For this, we commend the Department of Science and Technology and thank the Programme managers, Dr David Phaho, and Mr Vusi Skosana for their support over these years. To them we dedicate these words from Peter Sarstead's song "Friends":

*We don't have much money
But we have lots of friends
They've got lots of money
And they've got lots of friends*

Sizzling Sudoku.....

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



The Ultimate Trophy—THE Wooden Spoon—Ask UCT.

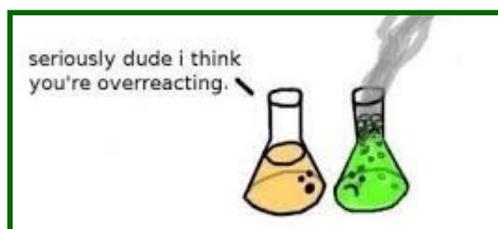
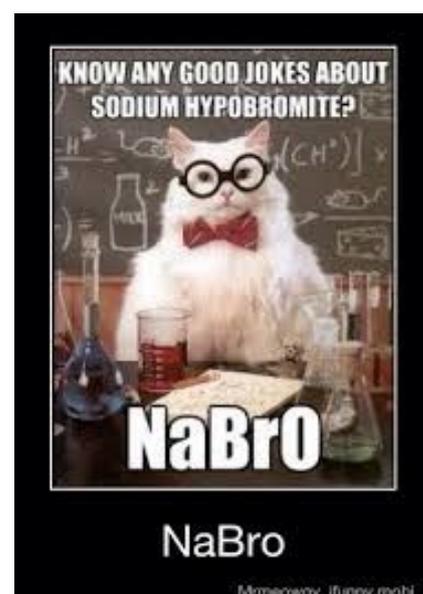
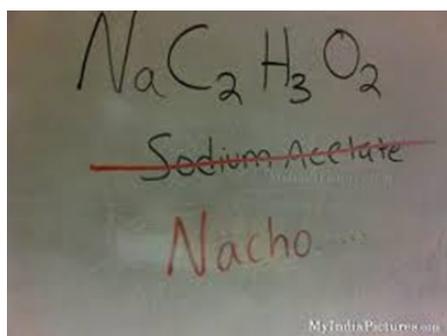
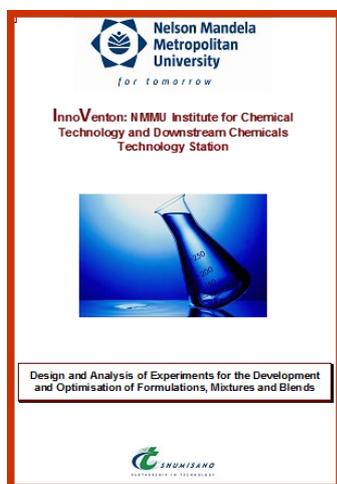
InnoVenton presents first course in Mixture Designs

So how does one know when your soap, paint, rubber, etc. is the best it could possibly be? The answer lies in some advanced statistical experimental design. All consumer products, from household items, personal care products, medicines, and much much more, are mixtures of various components or chemicals. Each of these has a specific role to play in the final product – but how much of each component should there be to give the best result? In mixture experiments, one expresses the amount of any single component in terms of the proportion of that component and then try and measure the performance of the product in terms of these various proportions. Obviously no single component is ever alone in the product – in fact they are always there together. So what one needs is some very fancy mathematical statistics to separate out the effect of each individual component from all the rest. The course developed by InnoVenton and presented now to several hundred post-graduate students and people in industry was the first such course ever to be presented in South Africa.

Eight Masters and Doctoral students complete studies

Seven Masters' Degree and one Doctoral candidates in InnoVenton/DCTS have completed and submitted their theses/dissertations in 2006 – the most ever. The following are the titles of the theses/dissertations of the respective students:

- IA Asquith (D Tech): Evaluation of a statistical methodology for the development of effective herbicidal mixtures for the control of Yellow Nutsedge.
- N Williams (M Tech): An investigation into the stability of the commercial fungicidal product Dithane.
- E Kruger (M Tech): An evaluation of ionic liquids as solvent media for electrochemical oxidations.
- B Mphulu (M Tech): The development of a batch manufacturing process for p-menthane-3,8-diol.
- S Quesheka (M Tech): An evaluation of three potential manufacturing routes to 2-alkyl-4-alkoxybenzaldehydes.
- C Lombe (M Tech): Microwave assisted fluorinations of aromatic compounds.
- D Muller (M Tech): Investigation the influences of validation of a pharmaceutical manufacturing process.
- S Gwicana (M Tech): Micellar-enhanced ultrafiltration process for the retention of platinum group metal ions.



The Year 2007

NMMU launches a unique Multipurpose Chemical Pilot Plant to enhance service to SA Industry

Nelson Mandela Metropolitan University's Institute of Chemical Technology (InnoVenton) launched its new and unique Kilo Laboratory in 2007 as part of a drive to contribute to the government's national strategy to develop and support the chemical industry in SA. According to Dr Gary Dugmore, the institute has created this facility as part of its innovation value chain in industrial chemical development. The chain consists of teaching, new knowledge creation through applied research and development in product and process development, technology demonstration through pilot scale production and finally the creation of new businesses based on the new chemical products and process developed through this process of value creation.

Painstakingly assembled over five years the unit resembles a cross between a very large chemistry set and an industrial chemical factory. With the support of Sasol, ChemCity, Dow and the Tshumisano Trust, through their contributions of equipment, skilled manpower and funding, this unique chemicals processing complex, valued in excess of R5 million, lies within the institute's facilities at the Gomery Road in Summerstrand, is an impressive facility and can be regarded as a national asset. Standing some three stories high and packed with multipurpose units which can be linked or operated independently to create a wide range of processing formats. Supplied with it's own set of utilities and monitored through a computer based control system it is therefore a truly stand-alone mini-factory where researchers and process staff can 'plug-and-play' to demonstrate to would-be industry clients, entrepreneurs and investors, the technologies the institute have developed.



The unit plays an important role in teaching, and postgraduate chemical students eagerly seek the opportunity to develop their knowledge and skills in chemical process operations through a one year stint as an intern working in the Kilo Laboratory. Operated within strict industrial standards of HSE (Health, Safety and Environment), the environment is ideal to prepare graduates for the real world of industrial chemical manufacture.

Dugmore getting slightly over-exited

No more flat tyres

A Johannesburg BEE company that specializes in motor vehicle safety products, Mobilsafe Motorvehicle Safety Products, purchased a technology from the USA for the production and distribution of a liquid product that, when put inside tyres, will automatically seal punctures thereby preventing flat tyres. The product was especially aimed for use in rural communities with bad roads. After several complaints regarding the poor performance of the product, the company approach InnoVenton for technical assistance. Gary Dugmore and his team had to completely reformulate the product, redesign the manufacturing process, and retrain the factory staff to run the production facility. This intervention not only allowed the company to successfully penetrate the market here in the RSA, but also in the larger Africa. The company was eventually sold (hopefully at a profit) and manufacturing facilities moved to Kenya.

WHAT ABOUT WATER...

Need to trace every drop? **InnoVenton Analytical** specializes in water analysis and offers services for the testing of drinking water, bore-hole water, effluents and other aqueous systems.

The Laboratory is SANAS accredited for selected methods under the ISO/IEC 17025:2005 Quality Management System.

InnoVenton Analytical



Otto, our very own Ironman, not once but twice.





MAKING A DIFFERENCE - KHULANI ALOE VERA

Khulani Aloe Vera is a BEE owned company who extract Aloe Vera from the leaves of Aloes on several farms in the Uitenhage area. InnoVenton was approached to assist the company in terms of establishing procedures for producing products (e.g. aloin) that would meet the strict requirements of the pharmaceutical and personal care manufacturers. The technology support provided included raw material extraction, including new equipment designed and manufactured by ACTS, production, and quality assurance. Below are a few pictures with the equipment and the people from Khulani Aloe Vera in front of Aspen's entrance after successfully concluding a supply contract with Aspen. In the picture on the right is the electrical milling machine (top) that can be carried in the veld to the point of application and which, in this case, is used to powder the dried aloe extract to a consistency suitable for packaging and selling to the personal care market.



The unit is flanked by station staff, from the left; Liwandile Mcingana, Kilo Lab Plant Operator, Mtheza Mtyopo, Project Coordinator, and Sive Mboza, Kilo Lab Process Operations Intern. At the bottom is one of 3 lightweight, portable frames, designed and manufactured by ACTS that greatly simplifies and improves yields and cleanliness of the stacking and draining process of the Aloe leaves into a container for drying and concentrating the extracted juices.

Distillation Pilot Plant

InnoVenton acquired a 10L/h Shortpath distillation pilot plant from PiloDist (Germany) in October 2007. The unit will complement the existing distillation capability by expanding the capability to conducting continuous distillation with short residence times and under high vacuum. This allows the unit to perform separations of highly temperature sensitive compounds, for example essential oils, by reducing the boiling points of components and reducing the contact time any component is actually exposed to heat.



InnoVenton
Technology Innovation Agency

Nelson Mandela Metropolitan University
for tomorrow

InnoVenton: NMMU Institute for Chemical Technology and Downstream Chemicals Technology Station

Faculty of Science

Research focus
Applied Chemistry in Product and Process Development.

Teaching and Learning
Formal qualifications and non-formal short courses.

Engagement and services

- ▶ Technology support
- ▶ Technology demonstration
- ▶ Analytical and testing services
- ▶ Quality services

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Material Testing? GET A GRIP

PASSIONATE ABOUT POLYMERS?

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INNOVENTON: DREAM INNOVATE CREATE

The Year 2008

NMMU launches unique BSc Hons Degree in Formulation Science

SNEEZE-FREE perfumes, hair straighteners without the burn, food preservatives that are natural and safe - all these products, and more, may be making their way onto supermarket shelves thanks to an innovative new degree at Nelson Mandela Metropolitan University. InnoVenton, the university's Institute for Chemical Technology, recently launched the country's first BSc Honours degree in formulation science.

Essentially, students are being taught the basic scientific principles behind the blending and mixing of products - and will then have to blend their own usable product which may be commercialised. The course covers all consumer products - from food and cosmetics to paints and plastics. Depending on the products they formulate, students may be able to start their own businesses or could even walk into jobs overseas. We're moving away from the traditional academic role of universities. It's a new and exciting time - especially in South Africa where there is a need to create jobs. It will be great if we can get that right.

I hope that in this year to come, you make mistakes. Because if you are making mistakes, then you are making new things, trying new things, learning, living, pushing yourself, changing yourself, changing your world. You're doing things you've never done before, and more importantly, you're doing something.

Neil Gaiman



The lady in the photo on the left is Kwezikazi Mkentane and the lady on the right is Tutu Maseko.

Oh No – That Jorg again

During 2008 InnoVenton, assisted by the then GTZ, carried out a comprehensive appraisal of the local innovation system in the chemical and allied sector in the Eastern Cape, with a specific focus on the wider Nelson Mandela Bay area. The process developed in Germany, called Rapid Appraisal of Local Innovation Systems (RALIS) was led by a German consultant, Jorg Meyer-Stammer (now deceased) and local consultants appointed by the GTZ. The study considered the specific industry sector in smaller categories, namely the automotive, pharmaceutical and personal care sector, and the agricultural sector. Several workshops with representatives of the respective sectors were held at the NMMU and numerous on-site interviews were conducted. A comprehensive report on the findings were compiled by the GTZ team and paved the way for a number of future developments within InnoVenton, including the establishment of our biofuels testing capabilities.



RALIS in Action



component sector, pharmaceutical and personal care sector, and the agricultural sector. Several workshops with representatives of the respective sectors were held at the NMMU and numerous on-site interviews were conducted. A comprehensive report on the findings were compiled by the GTZ team and paved the way for a number of future developments within InnoVenton, including the establishment of our biofuels testing capabilities.



InnoVenton Water and Effluent Testing Laboratory

InnoVenton Analytical specializes in water analysis and offers the following services for the testing of drinking water, borehole water, effluents and other aqueous systems:

- ▶ SANS 241 for drinking water Class I and II
- ▶ Schedule K for Industrial Effluent
- ▶ Municipal Bylaw Guidelines for disposal to the sewer
- ▶ Analysis packages as per your requirements
- ▶ Associated micro analysis for drinking water samples.
- ▶ Environmental monitoring

InnoVenton Analytical offers a wide range of water and effluent testing services. The Laboratory is SANAS accredited for selected methods under the ISO/IEC 17025:2005 Quality Management System.

Guidelines for water samples:

There are some key requirements that we have recommended in order to improve the accuracy and reproducibility of your water results. These include:

A minimum of 1L of sample for drinking/potable water and no less than 1.5 L sample for Effluent / Storm water / Other

A sterile container must be used to collect the sample particularly if you require micro work as part of your analysis package. (These can be obtained from InnoVenton should you require them)

OR

An empty 2L plastic bottle can be used, if submerged in and rinsed 3 times with source water, and then filled with more of the sample.

The container must be clearly marked, with the label consisting of sample type, site of sampling, time and date of sampling and company and/or customer name where applicable.

The sample/s must be delivered to InnoVenton before 11am, preferably on the same day as sampling, or alternatively, if this is not possible, then within 24 hours.

Temperature guide: The sample must be maintained at <10 °C, but NOT frozen for optimum micro evaluation.

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High-Level DST visits to InnoVenton

Dr Phil Mjwara, Director-General of the Department of Science and Technology, visited NMMU on Wednesday, 27 August 2008, when he spent time in the Faculty of Science, and discussed some of the flagship activities in the Faculty. These include the recently awarded prestigious Research Chair in Nano-photonics, which is funded by the DST. Dr Mjwara also inspected some of the laboratories of InnoVenton, the university's Institute for Chemical Technology.



Back row: Prof Andrew Leitch (Dean: Faculty of Science, NMMU) - 2nd from right.

Front row (from left): Prof Mohammed Jeenah (Deputy Vice-Chancellor (Research, Technology and Planning),

NMMU), Ms Tang Mmamone, Deputy Director in the Human Capital Knowledge Programme, Department of Science and Technology, Dr Phil Mjwara, Director-General of the Department of Science and Technology,.

Rising fuel prices, a decline in oil reserves and green technology are hot topics currently discussed everywhere. NMMU's Institute for Chemical Technology and its Downstream Chemicals Technology Station (InnoVenton) is taking the lead by **upgrading its facilities with R7 million** to research and test biodiesel and associated products. Deputy Minister of Science and Technology **Derek Hanekom**, whose department will be funding R1 million worth of equipment for the upgrade, recently visited the Institute and complimented it as being one of the best of its kind in the country. NMMU and industry will also each fund R3 million towards the initial upgrade.

Extending facilities by R20 million ... Deputy-Minister of Science and Technology **Derek Hanekom** (centre) recently visited Innoventon, the Institute of Chemical Technology. With him are, from left, **Prof Mohammed Jeenah**, DVC Research Technology and Innovation, **Nurunessa Moolla**, Chief of Staff in the Deputy Minister's Office, **Dr Gary Dugmore**, Deputy Director, Technology Demonstration and **Prof Ben Zeelie**, Director, InnoVenton and **Dr Nawaz Mahomed**, Manager Innovation DST.



Automotive Component Testing

InnoVenton has specialized in automotive testing for over 10 years and offers the following services to test moulded plastic car parts and other interior vehicle fittings against industry specifications:

- ▶ Weathering and Exposure testing
- ▶ Environmental and Thermal cycles
- ▶ Emissions (on GCMS)
- ▶ Flammability, Odour, Fog and Formaldehyde
- ▶ Substances of Concern (SOC's)
- ▶ Impact Strength / Hardness
- ▶ Thermal Analysis (TGA/DSC)
- ▶ Chemical Resistance
- ▶ Analysis packages as per your requirements

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The Year 2009 Microalgae to Energy Project for NMMU

The year 2009 saw the start of the NMMU's Microalgae to Energy (MA2E) project. The first steps were small since at that stage we did not have any external funding but this fact, in reflection, probably set the foundations of how the project would develop – through lots of enthusiasm and some dogged determination. The amount of blood (literally), sweat, and other unmentionable words put into the project by each and everyone in the organization, and what we have achieved by this “never-say-die” approach is probably the single most outstanding feat of InnoVenton in its short 10-year history. Since the beginning the project never had “enough” money and make-do became the motto for each day. In this way, the staff, by themselves and mostly using equipment brought from home, put a floor into the greenhouse by moving more than 70 tons of grit with five wheelbarrows and seven spades, planted and cemented in more than 60 washing line poles (twice), made (by hand) well over a thousand polyethylene bag photo-bioreactors, almost the same number of rigid vertical column photo-bioreactors, dug several km of trenches for anchors, piping and wiring, and more. And keep in mind that while all of this was going on, each and everyone still had his or her “normal” job to do – teach, guide post-graduate students, perform analyses for stakeholders, etc. Below are a number of pictures to show how it all happened – and they do speak a thousand words!!!

*If you have built castles in the air,
your work need not be lost; that is
where they should be. Now put the
foundations under them.*

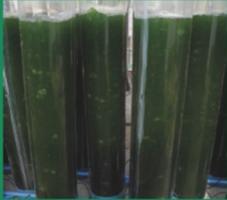
Henry David Thoreau





Microalgae - to Energy







Project Components:

- ▶ Large-scale cultivation of microalgae in photo-bioreactors
- ▶ Photo-bioreactor development ▶ Microalgae biomass harvesting
- ▶ Fresh water recovery ▶ Discard (fine) coal recovery, beneficiation, and agglomeration ▶ Bio-crude oil production from microalgae biomass
- ▶ Bio-fossil crude oil blend from coal-microalgae blends ▶ Bio- and drop-in fuel production ▶ Other applications of microalgae biomass

InnoVenton

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Faculty of Science



The World Cup is Coming



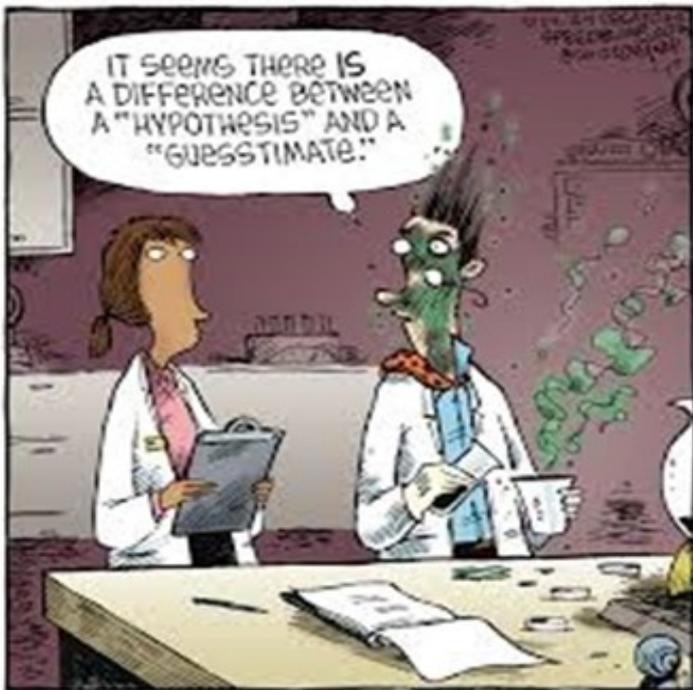
So someone has to do some work. InnoVenton was selected by an international clothing supplier (check photos – maybe you'll see a label) for the testing of materials used for the production of supporter wear, from t-shirts to the proverbial old takkie. As many as 10 different tests were performed on the materials and products, including chemical analysis for substances of concern (e.g. skin irritants), tensile strength tests, fading tests and simulated weathering. At least it looks as if some may be enjoying themselves.



Remember the Greatest 2010 World Soccer Fan at InnoVenton— Yes Mr Lwandile Mcingana.



Roses – a blooming success



The new Iluba rose falls directly between two categories: It is a real flower that has been preserved to last — without water — for up to six months. InnoVenton scientists together with Tinie Maske (a local entrepreneur), developed a chemical process in which some of the water in the cells and tissue of the flower are replaced with natural preservatives. Once infused with the preservatives, the flowers and foliage are able to absorb moisture from the air for an extended period of time — often for as long as two years.

“We believe we are positioned in an extremely large market between the fresh flower market and the artificial floral industry,” says J. J. Viljoen, founder and director of African Floralush in Muldersdrift, South Africa, which produces the long-lasting Iluba roses and foliage. The company hires unskilled workers and spends three to four months training employees in computer skills and its patented three-week preservation process. Viljoen says that in addition to the 90 African Floralush employees — virtually all of whom are involved in flower processing and packaging — 25 spinoff enterprises, each with one or two employees, have been established in South Africa as a result of company's presence.

The great challenge of the twenty-first century is to raise people everywhere to a decent standard of living while preserving as much of the rest of life as possible.

Edward O. Wilson



This is what Happy Microalgae looks like.



The Year 2010

And sometimes one has to PLAN

The year 2010 saw the start of an annual joint planning/discussion get-away between InnoVenton staff/students and the Catalysis Research Centre at UCT. The first event was held in Plettenberg Bay – arranged by UCT. Every year organization is done by the other institution – with the exception of course when UCT slips up and don't tell us we have to plan. These get-aways are a mixture of serious work, team building (mostly by swearing at little white balls) and good food cooked by ourselves. To date, two major cooperative projects have been undertaken as a result of these planning sessions, namely the microalgae to energy project and the bio-plasticiser project.

Can't remember – This where we stayed Jack?



One has to eat something!!

You sure it went that way Rein??



Reactors – Reactors – and more Reactors

OK – so we do need some containers to heat up all those chemicals in. So what you do is you ask some “real” engineers to build you some (by the way these containers are also called reactors) – below is a picture to show you what they can look like.

Ok then if you don't get the results you want, you blame the engineers, go ahead and build your own one – here is a picture of what that looks like.



Oh well – Was it Einstein who said that the definition of insanity is “to do the same thing over and over again and expecting different results”?



Stories that will never get out.....

- 1.) What Cecilia was doing at the “Green Hotel”
- 2.) Ivans particular taste in literature.
- 3.) Where Ben keeps his “Scotty Hat”
- 4.) Ronelle and Callums IST torturing techniques.
- 5.) Why Margriet doesn't have a dog or eat crayfish.
- 6.) Melissa's chicken story.
- 7.) Geoff, the Renault Scenic and 4 flat tyres.
- 8.) Willie, Germany, Peter, Gary & Ben, enough said.....
- 9.) How Melissa & Daniel set the lab alight!
- 10.) Coos's theory of relativity, statistically speaking.
- 11.) Who broke the hand held pH meter?
- 12.) Where Mildred hides the toilet paper.
- 13.) How long Nozuko can keep laughing?
- 14.) How many hair styles Thami can carry off?
- 15.) Can Nwabisa reach Ice Cream in the Fridge?

Word Search

- InnoVenton
- Kllolab
- Technology
- Innovate
- Create
- Dream
- Inspire
- Motivate
- Products
- Process
- Raceway
- Algae
- Develop
- Analytical
- Research
- Engagement
- Anion
- Labcoat
- Ton
- Lazy
- Work
- Fun
- Ipad
- Owl
- Promote
- Braai
- Potjie

K G U W S T R O N T I U M F N S A
M U T N A U Q I R O N C L F P L F
J E U R E K A L K B N M J G R U C
S E E W P W N U A R O U A T O O C
E R L I O U I L J A V R Q E T S B
Q I A J T H O I D A E L M C C O H
M E L L J L N O R I N S X H A R I
X E G M I O Z N E J T T O N E G E
C T A K E L P E A F O L U O R A W
O O E N G A G E M E N T O L H N Z
A M B D H L X Y A R K R W O K I L
P O S E E K C G O L D I G G W C J
L R J V L X R L A Z Y G M Y P L S
W P S E P I V A N A L Y T I C A L
W M R L G P R O C E S S R N A B A
J B U O G A L W R E D S U S C J B
N A O P D D K Q E S W H S P B A C
B L E U F U N Z A K O A T I Z J O
Q L P G G Q C F T O R K Y R N S A
E I N N O V A T E M K M K E A R T

The RED TIE Rules: Rev. 1, SOP#500, 12/03/2015, Issuing Authority: Operations Manageress

Scope

Have you done something particularly stupid lately? Or managed to mess-up, damage or irreparably scar a piece of equipment? Perhaps you tried something fantastic on the project you are responsible for and it was a momentous failure and stuff up? Did you type something in a report that made you sound like an idiot? THEN...

No matter how big or small the incident - Congratulations, you qualify to wear the Red tie for the day! For one Reason, - you're the Black Sheep!

Procedure

Kindly fill in the log book on Natasha's Table, recording this act, feat of failure or accomplishment. Provide a detailed explanation, sign your name and record the date of this episode. Take the Tie, which will be provided on all admissions of guilt. And PUT IT ON!

You will be expected to display this act of confession for the full duration of the working day. This procedure is to be followed by all Staff and Post Docs associated with InnoVenton. The purpose of this is to foster a culture of sharing and learning. In the unlikely event that we have more than one offender on a day, the person with the incident that had the most impact will have the honour of wearing the tie first. The second recipient will have to wait till the next day. If anything in this procedure is unclear, kindly take up all grievances with the Operations Manageress.

Boundaries

This is a completely self-administered Rule – Everyone is responsible of fining themselves by themselves, on their own. Nobody else is going to do it. This is all based on honesty and integrity And finally, to have some fun and laugh at yourself once in a while.



InnoVenton at Work



InnoVenton at Play



The Year 2011 Algae Project at COP 17



InnoVenton attended the United Nations 17th Conference of Parties – Climate Change Conference 2011, as part of the TIA stand in showcasing the Algae-to-Energy Project. Much interest on the project was received and the project was presented to, amongst others, the Hon Ms Naledi Pandor (Minister of Science and Technology), the Hon Mr Derek Hannekom (Deputy Minister of Science and Technology) and the Hon Mr Sisa J Njikelana (Member of Parliament and Chairperson of the Parliamentary Caucus on Energy). All of the abovementioned conveyed great interest in visiting the facilities at InnoVenton, NMMU, where the Algae-to-Energy Project is currently run. InnoVenton Dr Gary Dugmore (deputy director), Dr Maranda Esterhuizen-Londt (post-doc), Mr Lubabalo Mafu (MSc student) and Mr Otto Lessing (project manager: algae) took turns to be present at the exhibition which included 3D mock-ups of two algae reactors.

Right: Lubabalo Mafu (right) sharing a light moment with the Hon Mr Derek Hannekom, Deputy Minister of Science and Technology, and Mr Somila Xosa, Director: Transport and Renewable Energy, DST (left)

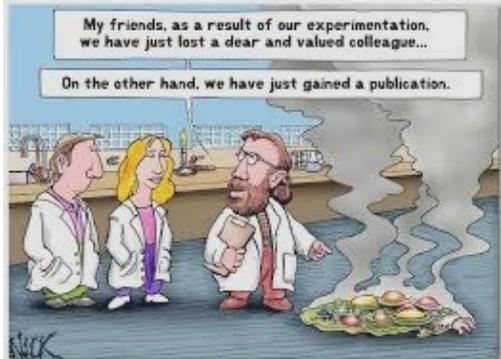


Above: Lubabalo Mafu presenting to the Hon Ms Naledi Pandor, Minister of Science and Technology

Diploma in Chemical Process Technology at the World Petroleum Congress in Doha

The new 'Diploma in Chemical Process Technology' was presented as a case study for one of the forums at the World Petroleum Congress. The presentation was a joint effort between InnoVenton and International Training Provider, KBC International.

There was significant interest in the content and theme of our presentation and, in talking with many delegates from African countries, Middle East and South America, there is quite obviously a significant shortage of skills globally in petroleum process operations in refining, production (from wells and offshore) and petrochemicals. This is seen as a significant limiting factor in development of these resources, particularly in developing countries.





Paint your (own) wagon

InnoVenton has become known for “doing things for themselves” – do not wait for someone else to do something first before you can – be the someone else for yourself and fix the door or the electrical plug or whatever is needed and possible; do not wait till you can buy this or that technology – create it for yourself – yes it may not look that pretty but if it works, it works – and you will forever have the full understanding of how it really works and what the weak and strongpoints are. In some small way we also try to instill this spirit into our students – like the Formulation Science Honours student class of 2011 who had to renovate their laboratory themselves (with the help of some staff). Here’s the story (in pictures) – and just look at the pride in those faces when it was all done!!



Coalgae® more and more Coalgae®



Going ^{Up} – Major Building Expansion for InnoVenton

After close to three years of trying to obtain enough funding to expand the physical facilities at Gomery Avenue, the new floor to the building eventually happened – and everyone will agree – it was worth the wait. The funding for the building, furniture and a significant amount of new equipment came from a grant from the DoE (Infrastructure program), a generous Sasol Fuels Research grant, and the TIA (who funded mostly new equipment).

The additional space was organized in such a way that it could house most of our analytical equipment, make provision for an open plan office for some 8 persons, and our small chemical production platform laboratory. New equipment included an almost complete fuels analysis laboratory, and a large (30 KVA) UPS system. We pay tribute to all of our generous sponsors and the architects who provided us with a design that fits like a glove to InnoVenton’s team spirit way of doing things.

A “Home” is the place that we love best but where we grumble the most.
Billy Sunday



The Year 2012

New Program in Chemical Process Technology gets the nod

Approved – at last! The development of the Diploma in Chemical Process Technology started already in 2008, at the same time we were developing business plans and looking for funding to develop our fuels analysis and testing capabilities. Four years of negotiations, curricula, competency profiles, learning outcomes, forms and more forms. And then it was over – November 2012 – now the rush to see whether we could have a first intake of students in 2013 – and we did. The first 24 students enrolled during February of 2013, and they all got sponsorships in one or other form – either from a full scholarship through industry, or from Foreign Government scholarships for African students.

Putting together this program was a very intensive process and ably guided by international training provider to the petrochemical industry, KBC International (London & Houston). The program was wholly developed from an agreed-upon competency profile for a chemical process technician and included not only components in science and engineering, but also a significant component in life and personal skills. KBC International kindly provided a license to the NMMU for all their learning material (for the massive license fee of GBP 1.00). Now in 2015 we have a full complement of learners across all three levels of the program – and already we have to consider expanding the scope of the program to beyond the petrochemical industry into areas such as pharmaceutical manufacturing and food processing.



The great aim of education is not knowledge – it is action.

Herbert Spencer

So what's that about Chicory?



Chicory SA is a SME that approached InnoVenton to assist them in the extraction of Inulin from chicory root. At present all Inulin used in SA is imported and this could be an opportunity for a local market to control the manufacturing and distribution of Inulin. Chicory is of interest to industry because the swollen taproot contains a high proportion of the carbohydrate Inulin. Inulin is a polymer of fructose molecules terminated by a glucose molecule and can be used for the production of fructose syrups. Inulin is a pre-biotic and has significant benefits as a dietary supplement and a food ingredient. Chicory South Africa (CSA) has identified the opportunity to maintain and/or increase chicory production in the Eastern Cape. If Inulin of appropriate quality can be economically produced from the locally grown chicory, this could lead to significant demand and increased production, thereby creating jobs. The process developed by our Gary Dugmore has been scaled up at the premises of Chicory SA and the final step of removing as much of the ash in the product is almost complete – and then next time you eat that yogurt containing “pre-biotics” – perhaps we had a hand in it.



Bursaries for new Diploma in Chemical Process Technology

A formal signing of a Memorandum of Agreement between PetroSA and NMMU for the provision of bursaries for studies towards the new Diploma Programme in Chemical Process Technology (CPT), which is anticipated to start in 2013, took place on 29 March 2012.



The Chemical Process Technology programme was developed by InnoVenton in collaboration with KBC International, an international consultancy and training specialist to the oil and gas industry. This collaboration, facilitated by PetroSA, is an excellent example of Public, Private Partnership between Industry and the University advocated in the NSDS III to address the skills and knowledge needs of Industry. The course will contribute to addressing the critical scarce skills area in chemical and refining process oper-



Ever wondered what we do to exercise our minds and stay mentally fit and alert... here's the secret. ↑

ations in SA and throughout Africa, in line with the guidelines contained in the National Skills Development Strategy III published in 2011.



A Letter to make you...



SETLAARSPARK

LAERSKOOL
E-mail: setlaarspark@nmmu.ac.za
041-5814227
041-5812105



PRIMARY
Vierdelaan / Fourth Ave.
WALMER
6070

1906 - 2006
EUPEES - CENTENARY

ONS GEE REGTIG OM! / WE REALLY CARE!

15 February 2012

The Laboratory Manager
Inno Venton
P O Box 77000
PORT ELIZABETH
6031

ANNUAL TESTING OF BOREHOLE WATER ON A PROBONO BASIS

Dear Cecilia,

Gratitude is certainly one of the most difficult emotions to explain, especially when it comes from the heart, when it is intended towards people who have made an unforgettable impression on one. There is no task more difficult to express than thankfulness, as it is not in mind, but also confession, thanksgiving and thus sharing.

This is exactly what you and your company have revealed with your open-handedness and involvement at Settlers Park Primary School in terms of their "water project", through your generosity in having the said water tested free of charge.

More importantly is the friendship that has been formed, which could never be replaced by any amount of money.

We trust that we can continue with our relationship in the future and thank you once more for your kind support that is greatly valued.

Yours faithfully,

Andre Schlemmer
ANDRE SCHLEMMER

Neil Harty
NEIL HARTY



Do you remember when.....
Babrie, Max, Ilse, Ivan, Cathy,
Rudi, Wilroy, Siya, Nico, Up-
enyu, and Nigel were part of
the mix...?

Watts that all about??

The Year 2013

InnoVenton at Glenwood NMMU SciX 2013 - "Water for All"

Glenwood House, George, held SciX 2013 - the annual science expo



Good Microbiological Laboratory Practice

On Wednesday, 15th May 2013, Alec Cameron & Associates Training Consultants presented a —Good Microbiological Laboratory Practice||, at InnoVenton.

The objective of the course is to ensure that the Microbiology laboratory is compliant with the requirements of the World Health Organisation and South African GMP requirements, the course is of benefit to all Microbiologists, Micro Technicians and QA Auditors.



Nadine Raepsaet, microbiological analyst at a Bright Field Microscope

SARChI Chair Prof Paul Watts joins NMMU, InnoVenton

We are very pleased to announce that Prof Paul Watts has joined NMMU, InnoVenton.

Prof Paul Watts graduated from the University of Bristol (UK) in 1995 with a first class BSc in chemistry. He continued his studies at Bristol, obtaining a PhD in bio-organic natural product chemistry in 1999. His PhD focused on the synthesis of isotopically labelled compounds, for use in determination of biosynthetic pathways to polyketide-derived natural products. He subsequently worked at the University of Hull (UK) where he led the micro reactor and continuous flow technology group. He has published nearly 100 papers in the field and regularly gives lectures on the topic at worldwide conferences.



Within InnoVenton he will further develop the continuous flow methodology to investigate how small production platforms can enhance chemical manufacturing in South Africa. Since his arrival,

Paul and his team of students and research associate have already completed a major project of a new process to synthesise a key intermediate towards the anti-HIV drug Nevirapine, a project funded through the Bill Gates Foundation. Paul has also taken a keen interest in our teaching programs and from 2015 onwards he will be acting as our Deputy Director responsible for all academic activities relating to research and teaching.

I think the most wonderful thing in the world is another chef. I'm always excited about learning new things about food.

Paul Prudhomme

Major Equipment Acquisitions for InnoVenton

Thanks mainly to a grant of more than R2.5 million at the start of 2014, InnoVenton was able to expand its analytical and testing facilities significantly with the acquisition of several pieces of state-of-the-art analytical and testing equipment. These included:



Eltra Bulk TGA: A thermogravimetric analyser for the analysis of materials such as coal, cement, biomass, etc. This instrument will be used extensively for the testing of Coalgae®.



Bruker FTIR: quality control for polymers, glass and paint films



Climatic Chamber: Used to carry out thermal cycle testing for the automotive component sector.

The Year 2014

Coalgae® Technology Unveiled

The beginning of 2014 saw the first public showcasing of NMMU’s Coalgae® technology on request of the Department of Science and Technology, and what a show it was. The Coalgae® technology comprises the use of microalgae biomass to recover and upgrade waste coal into a high quality coal that also contains a biomass component. The Coalgae® can be used for either energy production (e.g. by Eskom) or fuels production by producing a good quality crude oil that also contains a biofuel component.

The public showcase was timed to occur before the National elections in 2014 and that meant that most of the arrangements for the showcase had to be done over the December holidays. This included the manufacture (by hand) of close to 400 vertical column photo-bioreactors – and apart from Christmas day, InnoVenton staff were working even on New Year’s day to have everything completed. The response to the launch, which was held over two days, was quite overwhelming with numerous national and international press (newspaper, radio and TV coverage). The event directly led to invitations to make presentations at the International Energy Agency’s Clean Coal Workshop and at the 14th Clean Coal Forum, Jakarta, Indonesia.

Later during 2014, InnoVenton also submitted a funding proposal for R114 million to the DST’s High End Infrastructure Programme for the funding of a large (1 hectare) Coalgae® Technical Demonstration Facility to be erected near Witbank in Mpumalanga. The proposal was approved in principle but will be carried out in stages with the first stage to happen at the NMMU with the erection of a micro-technical demonstration facility that would be able to produce around 0.5 ton of Coalgae® product per week.



Speakers at the public showcasing of Coalgae®
FLTR: B Zeelie, Prof D Swarts (Vice-Chancellor), Mr Mmboneni Mofhe (DST, Deputy Director-General: International Cooperation and Resources at the Department of Science and Technology) and Prof Thokozile Mayekiso (NMMU, Deputy Vice-Chancellor)

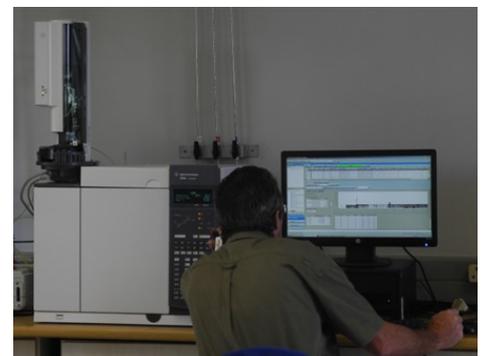
The **VERY** hot tent where the launch was held.

Major Equipment Acquisitions cont.



Zwick Tensiometer: Used for material testing by staff and students in Formulation Science and by our analytical group for the testing of automotive plastic and material components.

Agilent 2D Gas-chromatograph: Used for the analysis of complex samples such as crude oils, petroleum fractions and much more. The GCXGC is based on a completely new technology and is the first of its kind to be installed in South Africa.



2014 Winning Chicken Potjie Recipe

Chicken Potjie

Ingredients

- 45 ml cooking oil
- 2 Onions
- 1 kg chicken thighs
- 10 ml salt
- 4 bay leaves
- pinch dried thyme
- 4 black pepper corns
- pinch ground allspice
- 90 ml chutney
- 500 ml carrots, peeled and sliced
- 6 large potatoes, peeled and sliced
- 500 g whole button mushrooms
- 125 ml boiling water
- 1 chicken stock cube
- Chicken spice (sprinkle generously)

Method

Heat the oil in the pot. Sprinkle the thighs with salt and fry the chicken, a few pieces at a time, until golden brown. Place all the chicken back into the pot, add the herbs, spices and chutney.

Arrange the carrots, potatoes and mushrooms in layers on top of the chicken. Dissolve the stock cube in the water and add it to the potjie. Replace the lid and simmer for approximately 1 hour and 20 minutes. Add water if the potjie becomes too dry.



From left: Ms Nobahle Mlatu, Ms Nozuko Mtwa, Dr Melissa Gouws, Ms Mildred Mpalala & Mr Otto Lessing

“Our lazy Boy”

InnoVenton has found a new piece of furniture,
a High Chair that specializes in mixtures & pictures,
He swivels along offering lectures,
and has turned out to be a hidden treasure.

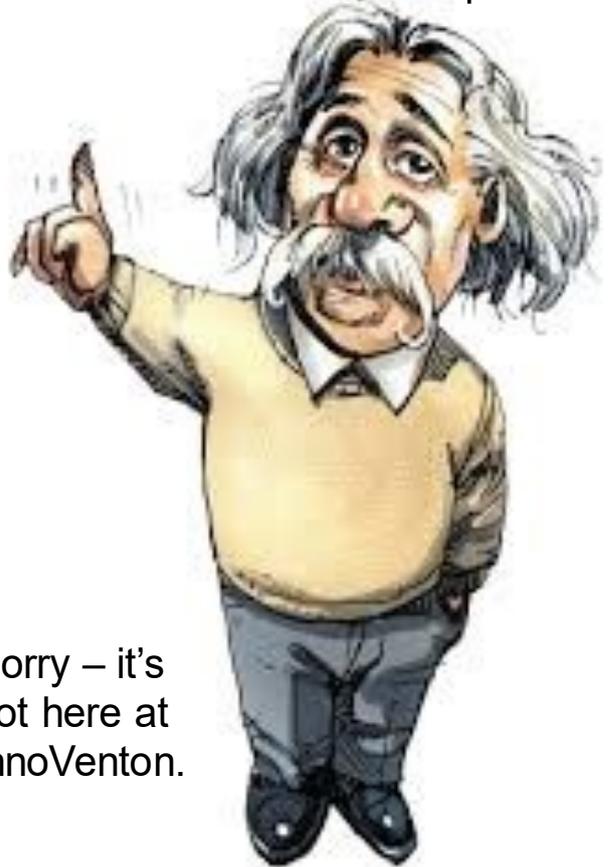
This Chair is Wheeling along nicely;
despite it being a little pricey
The arms it supports can be heavy,
only because they’re made of jelly.

If you Rock this Chair to quickly;
It could become a little sickly.
Don’t Deck this Chair,
I swear he is So rare,
just a wonderful Teddy Bear.

So this Chair is Professor Paul Watts
He doesn’t go to the Casino to play slots.
Just has us all tied up in knots.
At least he isn’t covered in spots.



Traditional wisdom has its place.



Sorry – it’s
not here at
InnoVenton.



Silly Song Search

Ben	She works hard for the money—Donna Summer
Gary	Girls just wanna have fun_Cyndi Lauper
Shawn	I like to move it, move it_Erick Morillo
Unathi	Oh Cecilia you breaking my heart—The Vamps
Margriet	A kind of magic—Queen
Coos	In my place—Cold Play
Patricia	Taking care of Business—Bachman Turner
Otto	Lovin each day—Ronan Keating
Louise	Woza Friday—Johnny Clegg
Natasha	I'm walking on sunshine—Katrina and the waves
Mildred	Orinoco flow—Enya
Melissa	I'm wide awake—Katy Perry
Thami	Silver bells—Anne Murray
Paul	By the river of Babylon—Boney M
Nicole	The scientist—Cold play
Nadine	Yakety yak—The coasters
Nozuko	I don't want your money honey—Transvision vamp
Ronelle	Under pressure—Queen
Phillip	Could it be magic—King singers
Warren	All by myself—Celine Dion
Cecilia	All the single ladies — Beyonce
Nwabisa	Don't stop me now—Queen

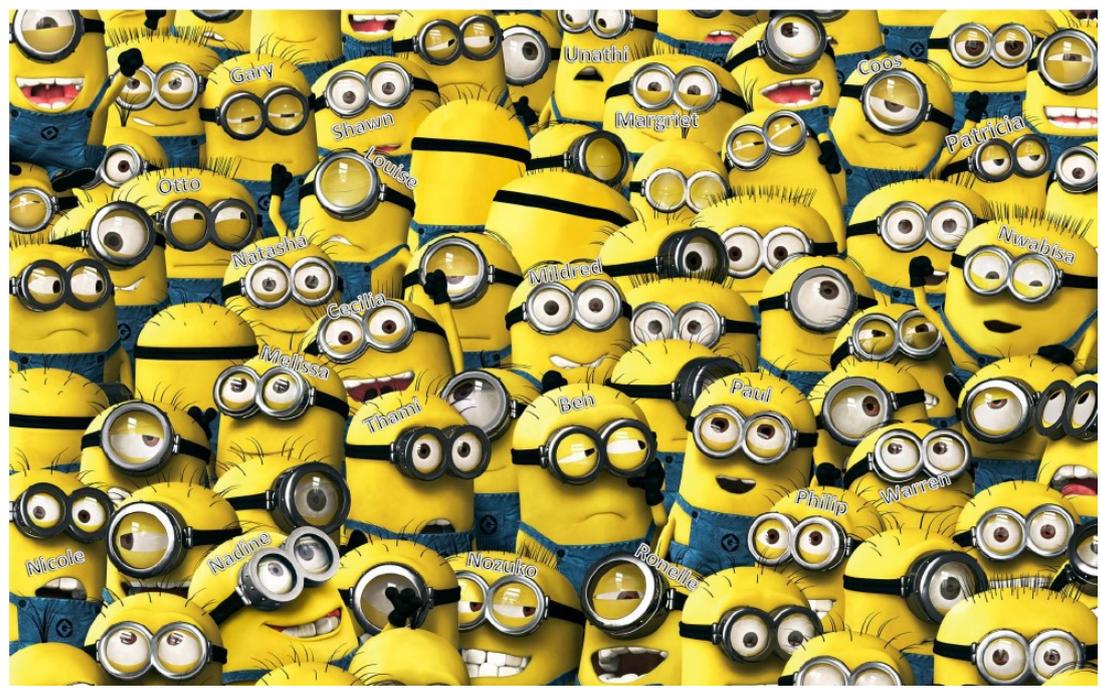


Winners will get a KIT KAT to take a BREAK

InnoVenton's own Mr Phillip Van Zyl together with Mr Unathi Plaatjies qualify as



InnoVenton has it's own Little Minions.....



InnoVenton Cinema—Forthcoming attractions.....



★New Admin Building★
 ★DWS Specialist Water Lab★
 ★Coalgae® Micro Demonstration plant★
 ★Chemical Process Technology Training Platform★

WATCH THIS SPACE...



 <p>Nelson Mandela Metropolitan University for tomorrow</p>	 <p>technology innovation A G E N C Y</p>	 <p>Member of the Hatch Group HATCH GOBA</p>	 <p>NRF National Research Foundation</p>
 <p>science & technology Department: Science and Technology REPUBLIC OF SOUTH AFRICA</p>	 <p>Eskom</p>	 <p>THRIP TECHNOLOGY AND HUMAN RESOURCES FOR INDUSTRY PROGRAMME</p>	 <p>Pumping SOLUTIONS</p>
 <p>InnoVenton</p>	 <p>UNIVERSITY OF CAPE TOWN</p>	 <p>VVCU</p>	 <p>sasol reaching new frontiers</p>
 <p>change</p>	 <p>NWU</p>	 <p>gtz</p>	