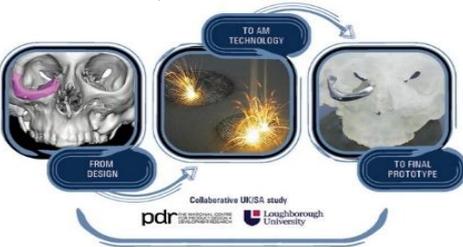


# Formal Lecture Programme – AUDITORIUM

THURSDAY 30 JULY 2015

<p>5 minutes 09h00 – 09h05</p>	<p><b>OFFICIAL WELCOME</b></p>	 <p><b>Mr Dennis Symes</b>  <b>Headmaster: Glenwood House School</b></p>
<p>40 minutes 09h05 – 09h45</p>	<p><b>The chemistry of popular batteries and their use in modern technologies</b></p> <p><b>Presentation</b> 20 minutes</p> <p><b>Chemistry Experiments</b> 20 minutes</p>	 <p><b>Prof Ernst Ferg</b>  <b>Department of Chemistry, NMMU</b>          Associate professor in the department of chemistry at the Nelson Mandela Metropolitan University. Lectures in the field of physical chemistry to undergraduate and post graduate students for a number of chemistry-related programs offered at the university. Started science career in 1993 at the CSIR in Pretoria in the battery group and joined the PE Technikon (now NMMU) in 1998 as lecturer. His research work was primarily in the field of Pb-acid batteries, in which he did his DTech research project. He has continued his research work in this field of electrochemistry and the materials used in batteries. He has focused on the use of various techniques of analysis such as powder X-ray diffraction and its use in characterizing various materials from catalysts, polymers, geology and battery related materials. He is the research leader of the NMMU Uyilo EV program.</p>  <p><b>Dr Nico Rust</b>  <b>Senior Energy storage specialist; NMMU: Uyilo EMTIP</b>          Studied at the NMMU from 1998-2008. During his studies at the NMMU he worked part time as a laboratory analyst where he tested lead acid batteries on a routine basis using electrochemical and analytical techniques. He was involved with various projects related to major players in the petroleum industry and helped to develop and build a platform for the synthesis of a fuel additive for pre-market evaluation purposes. During his period at the NMMU he was also part of the publication and helped publish two patents - one involved the design of a temperature monitoring device for lead acid batteries and another for the development of a continuous process for the synthesis of p-Menthane-3,8-diols. He also published 4 articles in accredited journals. He completed his doctorate degree in Chemistry in 2007 after which he went to work as a synthetic organic chemist for a fine chemicals manufacturing company in Pretoria (Jan 2008- Jun 2013). During this time he was instrumental in the development of a process for the production of a stable isomorph of a salicylanilide called Niclosamide which is used for the treatment of liver flukes in livestock. He joined the Uyilo EMTIP (E-mobility Technology Innovation Programme) in 2013 where he was appointed as a senior energy storage specialist and is currently involved with the setup of an accredited battery testing facility for the testing of lead-acid and lithium-ion battery technologies.</p>
<p>40 minutes 09h55 - 10h35</p>	<p><b>Changing lives using 3D Printing</b></p> 	 <p><b>Gerrie Booysen</b>  <b>Director</b>  <b>Centre for Rapid Prototyping and Manufacturing</b>  <b>Central University of Technology</b>  <b>Bloemfontein</b></p> <p>The Centre for Rapid Prototyping and Manufacturing (CRPM) at Central University of Technology, Free State (CUT) specializes in Additive Manufacturing (AM), better known as 3D printing. The CRPM was established 1997 as a centre for commercial work as well as research using Rapid Prototyping, Rapid Manufacturing, Rapid Tooling and Medical Product Development technologies. The AM technologies open the possibility to go directly from Computer-Aided Design (CAD) to a physical prototype/model. These prototypes are used by product/industrial designers for form and function test as well as final prototypes before tooling commences. The CRPM can manufacture prototypes in plastic, metal and sand.</p>
<p>30 minutes 10h40 – 11h10</p>	<p><b>Rhinos in Crisis</b>          Rhino Conservation Summit Feedback / Use of 3D Printing and Drones in the Field</p>	 <p><b>Glenwood House College Rhino Conservancy Action Group</b>  <b>Monh� van der Walt; Jacom� Pretorius; Danielle Marx; Jessica de Beer; Georgia Solomon; Elisma Schutte</b></p>
<p>30 minutes 11h10 – 11h40</p>	<p><b>Curbing Rhino Poaching through Actionable Intelligence</b>          Actionable intelligence is evidence-based information directly applied to specifically targeted objectives</p>	 <p><b>Joe van der Walt</b>  <b>FOCUS AFRICA</b>          As a former officer in the South African military intelligence, Joe has specialised in private-sector security in Africa and the Middle-East for the past 12 years. He has particular expertise in the oil, gas and mining sectors and has operated in Angola, the DRC, Liberia, Madagascar, Zambia, South Africa, Somalia and the oil fields of Kurdish-controlled Northern Iraq. He has also been responsible for the implementation and management of high level security for asset protection and personnel for a well-known United States communications company operating in Africa and the Middle-East.</p>
<p>30 minutes 11h50 – 12h20</p>	<p><b>Robotics brings 21<sup>st</sup> century skills to the next generation.</b>          Why robotics is being used in classrooms around the world to bring science, technology, engineering, and mathematics to life.</p>	 <p><b>Sarina Venter</b>  <b>EDRO ROBOTICS, CAPE TOWN</b>          Sarina Venter was previously a chemical engineer from SASOL and she is now spending her time inspiring children and facilitating robotics workshops for EDRO.</p>
<p>35 minutes 12h30 – 13h05</p>	<p><b>Algae and Biofuel</b></p>	 <p><b>Dr Shawn Gouws</b>  <b>Programme Coordinator for the Diploma Chemical Process Technology course at the Nelson Mandela Metropolitan University (Port Elizabeth)</b>          This course trains students to become process operators / technicians in the petrochemical, pharmaceutical and fine chemical production fields. I have completed my D Tech: Chemistry at the old PE Technikon (now NMMU) in 1999, and then spend a year in France Grenoble at the Joseph Fourier University doing a Post-Doctoral Fellowship in the ruthenium bidentate ligand electro chemical synthesis for the production of biosensors. In 2001 I re-joined the ex-PE Technikon as Prof Ben Zeelie’s research associate and has since been involved with industrial process projects. In 2007 - 2010 I headed up the hydrogen PEM (proton exchange membrane) fuel cell research as well as the PEM electrolyser research in which four master students have completed their research and 3 publications in various international journals where published. I also have presented this research papers at various national and international conferences. In 2012 I published a chapter in a book entitled "Electrolysis" by Vladimer Linkov; the chapter title was "Voltametric analysis of</p>

		<p>PEM Electrolyser", Intech, 2012. During the past 12 years I have been involved with several technology projects for industry such as the development of preserved roses, the synthesis of glyphosate (herbicide), and the development of an insect repellent that is safe for use on children and that can be used in lotions and other artefacts such as mosquito nets. In 2012 I took up the position of Programme Coordinator for the Diploma Chemical Process Technology course. I am lecturer in six of the course modules that are dealing with process equipment and their operations. In 2014 I received the award for the "Excellent Teacher of the year in the Science Faculty" - teaching must be a sense of wonderment to always learn more and to improve once ideas through innovation.</p>	
35 minutes 13h10 – 13h45	Sterling Heat Engine Technology	 <p><b>Sean Poole</b> EBEIT (NMMU Faculty of Engineering, the Built Environment and Information Technology) Sean Poole is a PhD student at NMMU studying mechanical engineering. His research focus is on optimizing small wind turbine blade designs. He is also involved with various other RE related projects at the Renewable Energy Research Group. The RE short courses offered at NMMU are co-ordinated by him.</p>	
30 minutes 13h55 – 14h30	The journey of developing a unique transdermal delivery system and discovering the wondrous workings of the epidermis in helping to heal skin disease.	 <p><b>Nic Brummer</b> Meyer Zall Laboratories This is the story of a group of local lads that took an idea and grew it into a pharmaceutical company. In the process they successfully developed a patent protected transdermal delivery system that improved the efficacy of active pharmaceutical ingredients. They then incorporated the delivery system into products that are available locally and internationally. During this journey the miracle of the epidermis, a structure of only 0.001 millimeter in diameter was discovered. From being considered inert or dead, the epidermis is now seen as playing an increasingly important role in ameliorating skin disease by virtue of the most phenomenal biochemical interplay one can imagine.</p>	
40 minutes 14h35 – 15h15	White shark research between conservation and public perception	 <p><b>Dr Enrico Gennari</b> Enrico Gennari's PhD on the thermal physio-ecology of the great white shark greatly enhanced our understanding of the trophic physio-ecology and behaviour of this species. He has been studying movement of large sharks using active and passive acoustic telemetry for more than 10 years. He is the Director of Research at Oceans Research in Mossel Bay and an Honorary Research Associated of the South African Institute for Aquatic Biodiversity (SAIAB) in Grahamstown. He is one of the funding member of the South African White Shark Research Group (SAWSRG) and the Southern African Movement Ecology Group. He has published 7 papers, has 4 in review and over 25 in process for the next couple of years. He has supervised 1 PhD, 7 MSc and 1 BSc (Hon) students, in collaboration with the University of Pretoria, the University of Cape Town, Rhodes University, Stellenbosch University, Sussex University (UK) and Dalhousie University (Canada).</p>	
40 minutes 15h20 – 16h00	Shepherding Back Biodiversity Alternative methods of predator control in agriculture	 <p><b>Dr. Bool Smuts</b> Director of Landmark Foundation Environmental Manager, Environmentalist, Project Manager, Fundraiser and Medical Doctor, B.Sc., MBChB, DCH, MPhil (Environmental Management) Bool Smuts practices as a sustainable development expert, with environmental management, socio-economic development and environmental auditing and risk management expertise. He has special interests in renewable energies, protected areas development and management, tourism, species conservation, resource utilisation, and related conservation economy development. He focuses on the initiation of large projects and developing innovative models to expand, consolidate, commercialise and manage conservation areas and initiatives, and related socio-economic development.</p>	
16h00	Wrap up	Programme Coordinator	
18h30 ACADEMIC INDABA	<b>MAIN PRESENTATION</b>		
	 <p><b>Gerrie Booysen</b> Director CRPM, CUT, BFN</p>	<b>PANEL DISCUSSION</b> The future of advanced 3D printing and other technological advances in the medical field	
<b>FRIDAY 31 JULY 2015</b>			
30 minutes 09h00 – 09h30	The journey of developing a unique transdermal delivery system and discovering the wondrous workings of the epidermis in helping to heal skin disease.	 <p><b>Nic Brummer</b> Meyer Zall Laboratories</p>	Repeat Presentation
40 minutes 09h40 – 10h20	Innovations in Sustainable Energy	 <p><b>Dr Shawn Gouws</b> Programme Coordinator for the Diploma Chemical Process Technology course at the Nelson Mandela Metropolitan University (Port Elizabeth)</p>	
30 minutes 10h30 – 11h00	3D Printing: Past, Present, and Future	 <p><b>Glenwood House College Information Technology Class Grade 11</b> Mr B Wurdeman; Joseph Rautenbach; Francis Hage</p>	
40 minutes 11h10 – 11h50	Changing lives using 3D Printing	 <p><b>Gerrie Booysen</b> Director Centre for Rapid Prototyping and Manufacturing (CUT – Bloemfontein)</p>	Repeat Presentation
40 minutes 12h00 – 12h40	Solar Energy	 <p><b>Sean Poole</b> EBEIT (NMMU Faculty of Engineering, the Built Environment and Information Technology)</p>	
20 minutes 12h40 – 13h00	Formal Closing Announcing SCIE <sup>X</sup> 2016 Theme	 <p><b>Mr Dennis Symes</b> Headmaster: Glenwood House School</p>	