

# The Science of World-Class packaging



# Research & Development



# History



# Research & Development

- **Founded in 1946**
- **Location: Epping, Cape Town**
- **Staff** **51**
  - Scientist 29
  - Engineer 2
  - Technologist 10
  - Technician 4
  - Support 6
- **Laboratories: 10 in 2 units**
- **Business Information Unit**
- **Finite Element Analysis/CAD Facility**
- **Innovation Centre**
- **Annual budget: R31.3m**  
**(US\$4.01m; £2.55m; €2.91m)**



# Management Team

Jacques  
Haarhoff

Johan  
Visser



Aneé  
Sieberhagen

Morongwa  
Themba

- **Scientific and Technical Expertise to:**
  - Development
  - Production
  - Use of packaging
- **To benefit, promote and add value for:**
  - Nampak's Divisions
  - Divisions' customers

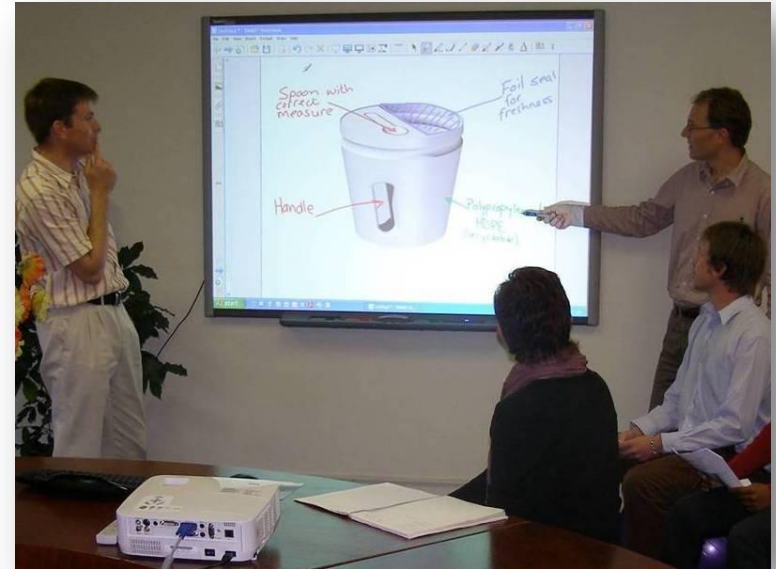


# Capabilities & Competencies

- **Materials and Process Knowledge**
- **Product, Packaging and Market Knowledge**
- **Food Science, Microbiology and Hygiene**
- **Package Performance**
- **FEA and CAD Modelling**
- **Chemical Analysis**
- **Spoilage Investigations**
- **Packaging Technology**
- **Problem Solving**
- **Packaging and Environment**
- **Innovation**

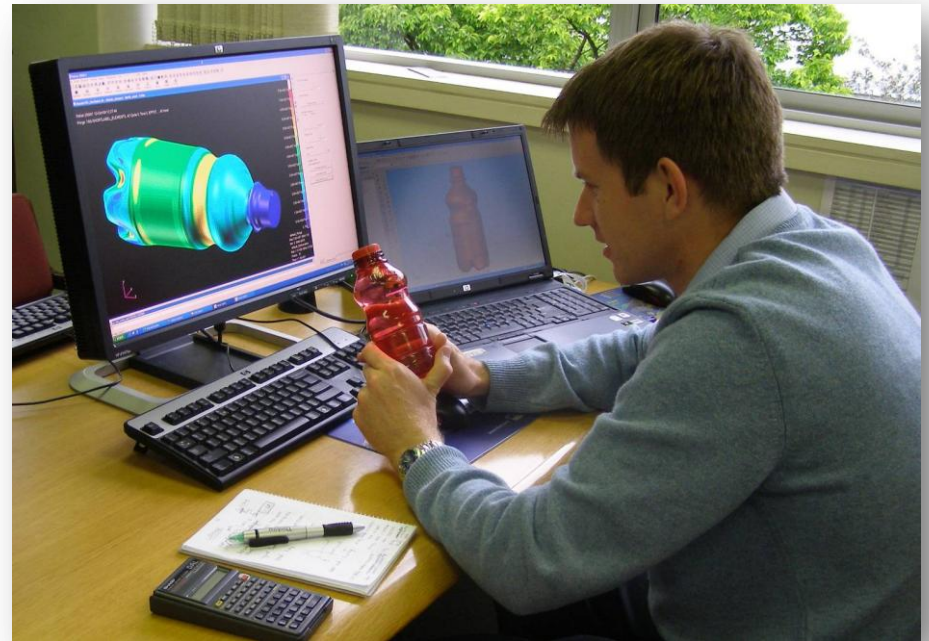


- **Trained staff form multi-disciplinary idea generation teams**
- **Facilitation of idea generation sessions for Nampak's divisions & customers**
- **Dedicated innovation venue**
- **Generation of 3D CAD concept models**
- **Work on products, processes & raw materials**
- **Business information resources used for global trends**



# Materials and Packaging Development

- ❖ Metallurgy
- ❖ Corrosion and surface studies
- ❖ Paper
- ❖ Plastics
- ❖ Coatings and Inks
- ❖ Container Development
- ❖ Finite Element Analysis & CAD

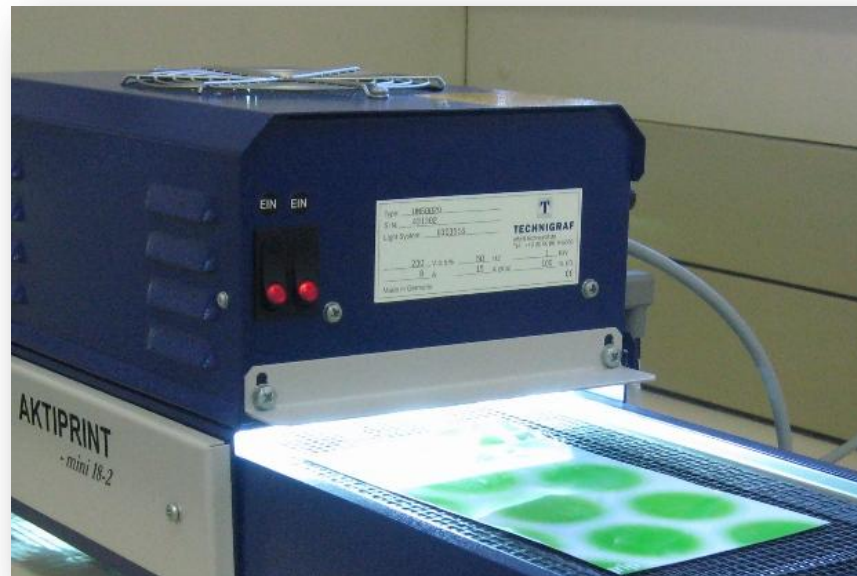


- **Qualification of new materials**
- **Failure investigations (metal packaging, tooling & engineering components)**
- **Liaison with raw material suppliers**
- **In-plant troubleshooting**
- **Specifications for metals**



# Coatings & Inks: Keith Isaacs

- Coating performance; Enameling, process resistance, flexibility, scuff-resistance etc.
- Qualification of new / modified coatings and inks
- Setting-up & evaluating Pack tests
- Problem investigations (Process, manufacturing, material-related)
- Supply of Electrolyte



# Corrosion and Surface Studies: Tankiso Thamahane

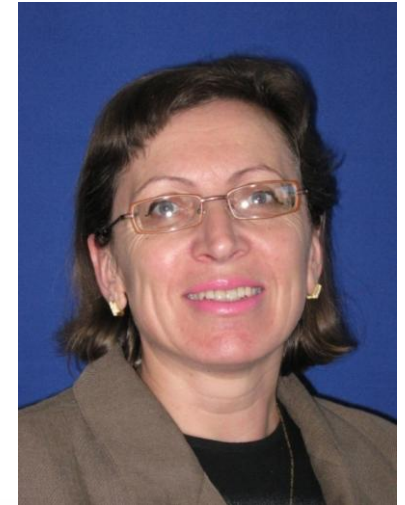
- **Scanning Electron Microscopy (SEM)**
- **X-ray Emission Spectroscopy**
- **Electrochemical Corrosion Tests (EPFSL / EIS)**



- **Properties of paper and board**
- **Characterisation of coated and laminated paper products**
- **Performance of liquid packaging cartons, sacks and folding boxes**
- **Performance of corrugated board and corrugated containers**
- **Evaluation of tissue products**
- **Trouble-shooting**



- Identification and characterisation of plastic materials
- Plastic containers failure investigations
- Evaluation of plastic films and laminates
- Advising on permeability and chemical resistance of plastic packaging materials
- Trouble-shooting

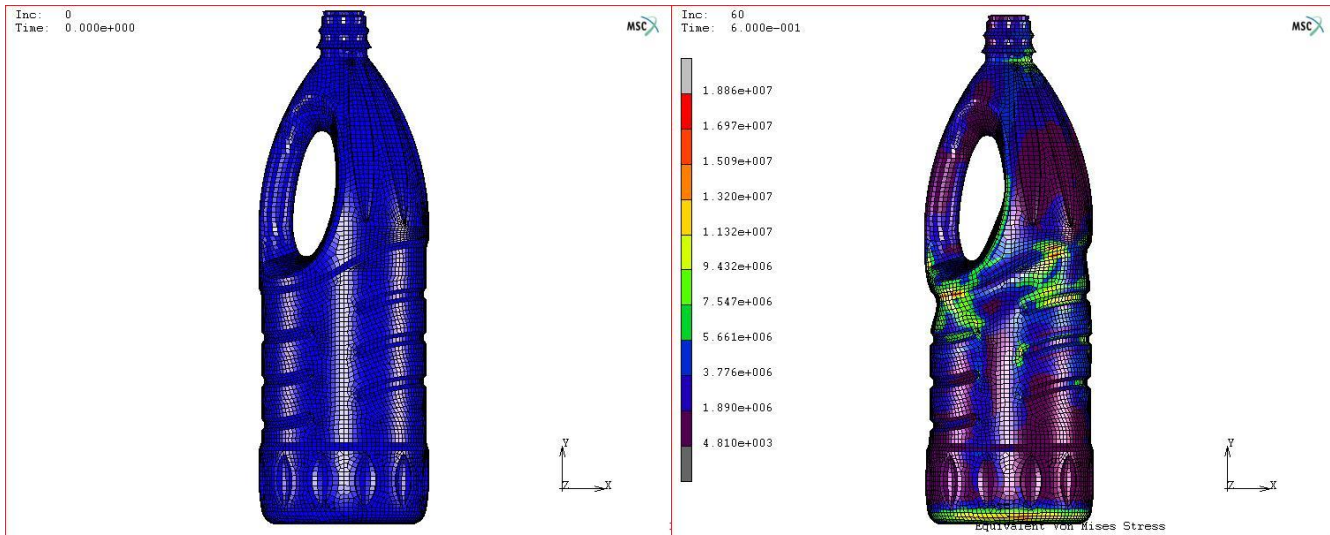


# Container Development: Simon Allsop

- **Physical testing of packaging materials**
- **Dimensioning / profiling**
- **Failure investigations**
- **Fatigue & Transport testing**
- **Qualification of new compounds**
- **Cap application / removal**
- **Double-seam evaluations**
- **Leak testing**
- **Evaluation of new / reformulated aerosol & general line products, packages and components**
- **Consultancy to aerosol sector**
- **Customer trouble-shooting and problem-solving**



# Computer Modeling / FEA: Justin Haschick



- **Product development through computer simulation**
- **Prediction of packaging performance under realistic loads**
- **Computer Aided Drawing (CAD)**
- **Finite element analysis (FEA)**
- **Materials modelled mainly rigid plastics, metals & flexibles**

- ❖ **Analytical Chemistry**
- ❖ **Microbiology**
- ❖ **Food & Beverage Technology**
- ❖ **Shelf-Life Studies**



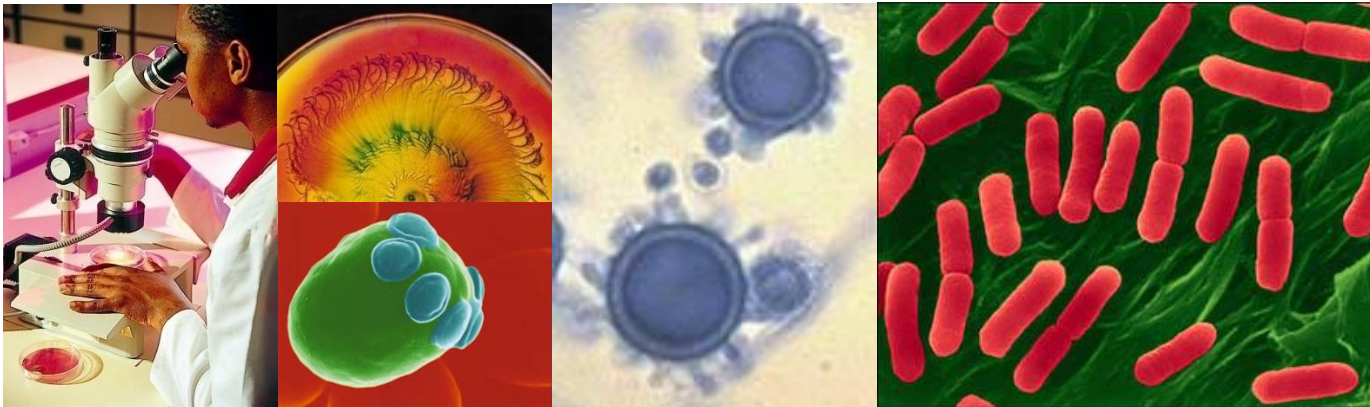
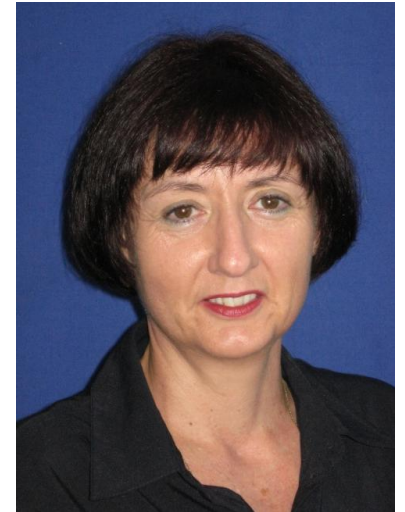
# Analytical Chemistry: Bronwyn Kroon

- **Material analysis**
  - Oxygen permeability / barrier evaluation
  - Polymer identification & characterisation
  - Contaminant analysis (iron pick-up)
- **Foodstuffs**
  - Elemental & nutrient analysis
  - Chemical composition, BADGE, Head space gas analysis



- **Other products**
  - Waxes / oils
  - Aerosols & household products
  - Foreign body identification with FTIR, DSC

- **Hygiene audits**
- **Sterility testing**
- **Container integrity evaluation**
- **Spoilage investigations**
- **Trouble-shooting**
- **Customer support**
- **Aseptic process validation**



# Food & Beverage Science: Susan Featherstone

- **Food Preservation Consultancy**
- **Thermal process validation**
- **Process failure investigations**



- **Process parameters and container specifications**
- **Customer problem identification and resolution**
- **HACCP / BRC / ABI recommendations**

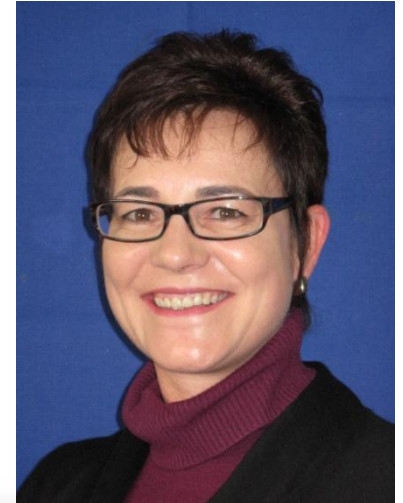
# Shelf Life Studies: Melanie Julius

- Performance of the packaging as well as the product is evaluated
- Storage rooms at 4°C, 21°C, 37°C, 55°C and tropical conditions are used to accelerate, validate & evaluate the shelf-life of different products and packaging
- Food products are assessed organoleptically at different points over the period of the shelf-life test
- Spray efficiency of aerosols such as deodorants and anti-perspirants are evaluated over the product's shelf-life



# Business Information: Aneé Sieberhagen

- **Technical information service to R&D**
- **Market knowledge**
- **Co-operative projects**
- **News alerts**
- **Knowledge link via intranet**
- **Development of information tools & technologies**
- **Network of contacts**
- **Document centre**
- **Technical library**
- **Regulations/Legislation**



**THANK YOU**