

Education

- Title: PhD Mechanical Engineering
- Final project title: Thermal power plant steel creep deformation measurement using Digital Image Correlation
- Institution(s) and dates: Stellenbosch University (February 2016 — present)
University of Bristol: visiting researcher (August 2017 – December 2017 and June 2018 – December 2018)
- Title: MEng Research (cum laude – upgrade to PhD)
- Final project title: Thermal power plant steel creep deformation measurement using stereo Digital Image Correlation
- Institution(s): Stellenbosch University
- Dates: January 2014—February 2016
- Title: BEng in Mechanical Engineering (cum laude)
- Final project title: Mechanical engineering final year project: Material characterisation of LaserCused-manufactured Ti-6Al-4V
- Institution(s): Stellenbosch University
- Dates: February 2009 - February 2011
February 2012 - November 2013
- Title: BSc in Nuclear Physics
- Institution: Stellenbosch University
- Dates: February 2011 - November 2011

LinkedIn:
www.linkedin.com/in/melody-van-rooyen

Publons:
publons.com/researcher/1535718/melody-van-rooyen/peer-review/

ResearchGate:
researchgate.net/profile/Melody_Van_Rooyen

Address: 14 Cynaroides Street
Suburb: Heldervue
Town/ City: Somerset West

Postal code: 7130

Phone: +27 73 240 1258

Email: melzvanrooyen@sun.ac.za

Research Interests

- Using Digital Image Correlation to study material behaviour and measure material properties at high temperatures
- Power plant steels, especially 9-12 % Cr steels
- Creep behaviour of materials and the resulting microstructural evolution

Awards, Fellowships, Bursaries

- Member of Golden Key International Honour Society
- Top BEng Mechanical Engineering Graduate (2013)

- Best Mechanical Engineering Final Year Project with a mark of 90% (2013)
- Recipient of the South African National Aerospace Centre Bursary (2012 – 2013)
- Rector’s award for excellent academic achievement (2013)
- Rector’s award for excellent academic achievement (2014)
- Simera award for Most Responsible and Innovative Post-Graduate Student for Practical Structural Laboratory Work (2015)
- Recipient of the Frank Wilhelm Bursary Fund (2016 - 2019)

Positions held

Title:	Lecturer
Company:	Stellenbosch University, Mechanical and Mechatronic Engineering Department
Dates:	January 2020—present
Title:	Laboratory technician (part-time)
Company:	Stellenbosch University, Mechanical and Mechatronic Engineering Department
Dates:	January—December 2014, January —February 2019
Description:	Assist Final Year and Master students with mechanical testing and metallography work. Induction training on tensile testing machines and advised on grip and experimental design
Title:	Mechanical Engineering Intern
Company:	Volkswagen South Africa
Dates:	July 2010 November—December 2012
Description:	Exposure to cost-saving schemes. Observation of quality assurance processes in final assembly lines. Performed dynamometer and vehicle sound testing. Setup of product revision presentations to management
Title:	Teaching assistant and tutor (part-time)
Company:	Stellenbosch University, Mechanical and Mechatronic Engineering Department
Dates:	Jan 2014 – June 2018

Description: Aided during tutorials and practicals of undergraduate modules Machine Design A314 (one semester), Material Science A244 (3 semesters) and Strength of Materials W334 (5 semesters). Presented lectures occasionally for Strength of Materials W334. Assisted in marking and establishing memorandums for postgraduate subject Numerical Methods 876 (2 semesters)

Publications/conference outputs

- Article title: Creep damage assessment of ex-service 12% Cr power plant steel using digital image correlation and quantitative microstructural evaluation
- Journal: MDPI Materials
- Article title: High-temperature tensile property measurements using digital image correlation over a non-uniform temperature field
- Journal: The Journal of Strain Analysis for Engineering Design (2018, vol. 53, iss.3, pp. 117-129)
- Article title: Heat treatment of Ti-6Al-4V produced by laserCUSING
- Journal: South African Journal of Industrial Engineering (2015, vol. 26, iss. 2, pp. 93-103)
- Extended abstract title: A 3D-DIC method for high temperature application
- Conference: BSSM 10th International Conference on Advances in Experimental Mechanics, 1-3 September 2015, Heriot-Watt University, UK
- Extended abstract title: Accelerated creep strain measurement using high-temperature Digital Image Correlation
- Conference: BSSM 11th International Conference on Advances in Experimental Mechanics, 5-7 September 2016, University of Exeter, UK
- Extended abstract title: Characterising creep damage directly from Digital Image Correlation displacement data
- Conference: BSSM 12th International Conference on Advances in Experimental Mechanics, 29-31 August 2017, University of Sheffield, Sheffield, UK

Skills

Languages: Fluent in English and Afrikaans

Computer literacy

Microsoft Word, Excel, and PowerPoint, ImageJ, Python, MATLAB, Blender, LaVision DaVis, AutoDesk Inventor Professional, Abaqus

Laboratory practices

Tensile and creep testing, Gleeble testing, Digital Image Correlation (DIC), small punch creep testing, hardness measurements, steel and titanium metallographic preparation for Scanning Electron Microscopy (SEM), operation of SEM and Energy Dispersive X-Ray Spectroscopy (EDX)

References

Professor Robert Knutsen, Head of Department
Department of Mechanical Engineering
University of Cape Town
021 650 4959
robert.knutsen@uct.ac.za

Dr Mahmoud Mostafavi, Reader in Structural Integrity
Mechanical Engineering
University of Bristol, United Kingdom
+44 7916 434406
m.mostafavi@bristol.ac.uk

Prof Thorsten Becker, Senior Lecturer and Current Supervisor
Department of Mechanical and Mechatronic Engineering
University of Stellenbosch
021 808 4045
tbecker@sun.ac.za