



Dr Melody Neaves (née van Rooyen)

LECTURER

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Short Bio

Dr Melody Neaves currently holds the position of Lecturer in the Mechanics division of the Department of Mechanical and Mechatronic Engineering at Stellenbosch University. She joined the Department and obtained her PhD in 2020. Her PhD focused on the development of material-efficient damage assessment techniques for service-retrieved high-energy steam piping that are exposed to creep conditions in South African fossil-fuelled power stations. These include using non-contact photomechanical techniques, such as Digital Image Correlation (DIC), over non-uniform material, stress and temperature fields. DIC results are compared with conventional and microstructural methods of damage assessment to give a holistic assessment of creep damage. She is currently involved in small-sample testing of high-energy materials in collaboration with the University of Bristol and the Open University in the United Kingdom by utilising her PhD work involving DIC available at Stellenbosch University.

Research Interests

Small-sample testing, digital image correlation, power plant steels, microstructural characterisation, additive manufacturing, weld characterisation, mechanical property measurement, novel experimental techniques.

Selected Publications

High-temperature tensile property measurements using digital image correlation over a non-uniform temperature field

Journal for Strain Analysis for Engineering Design

M. van Rooyen, T.H. Becker

<https://doi.org/10.1177/0309324717752029>

Creep damage assessment of ex-service 12% Cr power plant steel using digital image correlation and quantitative microstructural evaluation

MDPI Materials

M. van Rooyen, T.H. Becker, J.E. Westraadt, G. Marx

<https://doi.org/10.3390/ma12193106>

Heat treatment of Ti-6Al-4V produced by lasercusing

South African Journal of Industrial Engineering

T.H. Becker, M. van Rooyen, D. Dimitrov

<https://doi.org/10.7166/26-2-1161>

Teaching

Introductory Machine Design 254 (Mechanical/Mechatronic Engineering)

Materials Science A 244 (Mechanical/Mechatronic/Industrial Engineering)