

SEMINAR SERIES

Additive Manufacturing at Deakin University

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Bernard Rolfe
Deakin University

Bernard Rolfe completed a combined Economics and Engineering degree with honours in 1995 from the Australian National University (ANU). During his degree he was employed as a graduate research engineer at the BHP Research Labs, investigating control systems for hot strip steel mills. After he obtained his degree he worked for several years as a Business Systems consultant with Andersen Consulting (Accenture) before returning to the ANU to pursue a PhD in novel methods of inverse modeling metal forming processes (completed in 2002). This research included an IMechE award winning journal paper. In 2005 Bernard joined Deakin as a Lecturer in Mechanical Engineering. In 2008 Bernard led the Deakin's successful team for "Creating the Model-T for the 21st Century – a Global University Challenge". This vehicle concept outclassed several other top Universities around the world to be awarded joint winner along with the concept from the University of Aachen (RWTH), along with \$25,000 prize money. In 2015 Bernard received the Vice Chancellor's award for Industry Engagement.

Currently, Bernard is an Associate Professor (Mechanical) at Deakin University in Australia. He has been a part of over fifteen successful nationally competitive large research grants, totaling over \$15 million in awarded funds. He has published over 150 refereed articles. He is the light weighting theme leader at the Automotive Technology Cooperative Research Centre, and on the Academic Advisory Board of FISITA. **His current research focus is the design and forming of light weight structures, including the development of better material models for predicting performance.**

Deakin University is a young institution (43 years old), but has several quality research centres in the field of engineering. The Institute for Frontier Materials (IFM) at Deakin University is a multidisciplinary research centre addressing the future material needs of manufacturing. In 2015 the IFM was ranked by an independent Australian Government research assessment exercise (ERA2015) as a World Leader (5 out of 5) in materials research. This ranking makes the IFM one of the three top materials research schools in Australia. In 2015 the IFM published over 260 quality journal papers and had a research income of over \$13.2 million. The IFM has over 250 researchers within the following research fields (Steels, Light metals, Computational Modelling, Biomaterials, Polymers, Corrosion, and Nanotechnology). The Centre for Advanced Design and Engineering Training (CADET) is a teaching and research centre aimed at developing new engineering skills in engineering design.

Additive manufacturing at Deakin University is a growing research area. Prof Ian Gibson is well known in the polymer additive manufacturing circles, and has written one of the definitive textbooks on additive with his international colleagues (Brent Stucker and David Rosen). Deakin has a polymer additive manufacturing suite and is working on integrating engineering and design, particularly for medical and sporting applications. Deakin has a small metal additive suite, with a SLM 125 and a Optomec LENS machines. We have some emerging work in high entropy alloy cladding as well as topology optimisation software specifically for additive manufacturing, developed in conjunction with Monash University.

This talk will outline some of the work being undertaken at Deakin in the additive research space.



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