



Professor Genevieve S. Langdon

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Blast Impact & Survivability Research Unit (BISRU)
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Biography:

Professor Genevieve Langdon investigates blast resistant materials and structures for use in structural and transportation applications. She seeks to make the world a safer place by improving our understanding of a structures' response to explosion loading (which could occur due to terrorism, landmine detonations or industrial accidents, for example). Her work has focused on determining the failure mechanisms involved in lightweight materials like composites, foams, lattices and metal/fibre hybrids. The goal is to improve materials selection and the design process when manufacturing items that face an explosion loading threat.

Most of the research into explosively loaded structures is limited to a small number of expensive field tests on overly complicated structures, or relies on substitute types of loading which do not represent a "real" explosion very well. Prof Langdon performs actual explosive detonations under carefully controlled conditions, making her work unique in the world. No other university research group in the world has similar capabilities – hence Prof Langdon performs a lot of collaborative research with partners across the globe.

She completed her PhD in Mechanical Engineering at the University of Liverpool in 2003. She is currently a Professor and Deputy Head of the Mechanical Engineering Department at the University of Cape Town.

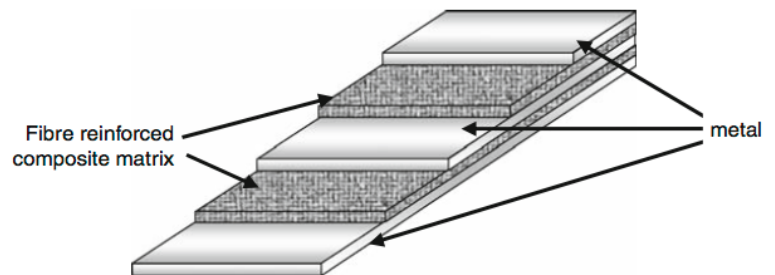


Fig. 9.1 Schematic showing the composition of a typical fiber–metal laminate structure

From: G.S. Langdon, G.N. Nurick, D. Karagiozova and W.J. Cantwell, "Fiber-metal laminate panels subjected to blast loading", Chapter 9 in *Cynamic Failure of Materials and Structures*, A. Shukla et al, (editors), Springer, 2010

Professor Genevieve Langdon has co-authored more than 50 journal articles, five book chapters and numerous conference papers. She is a founder member of the South African Young Academy of Science (SAYAS), a chartered (professional) engineer and holds an NRF rating. She was also recently a finalist in the National NSTF-BHP Billiton Awards, first runner up in the distinguished young research scientist category at the national Women in Science Awards and was the recipient of the British Association Medal (Silver) awarded by the S2A3 for outstanding contribution to science by a person under the age of 40 years (2014)

Selected Publications:

- G.S. Langdon, G.K. Schleyer, Inelastic deformation and failure of clamped aluminium plates under pulse pressure loading, *Int. J. Impact Eng.*, 28 (10) (2003), pp. 1107–1127
- Langdon GS, Cantwell WJ, Nurick GN. The blast response of novel thermoplastic-based fibre-metal laminates – some preliminary results and observations. *Composites Science and Technology* 2005; 65(6): 861–872.
- G.S. Langdon, S. Chung Kim Yuen, G.N. Nurick, Experimental and numerical studies on the response of quadrangular stiffened plates. Part II: subjected to localised load, *Int. J. Impact Eng.*, 31 (1) (2005), pp. 85–111
- G. S. Langdon and G. K. Schleyer, “Response of Quasi-statically Loaded Corrugated Panels with Partially Restrained Boundaries”, *Experimental Mechanics*, Vol. 47, No. 2, 2007, pp. 251–261
- Schleyer GK, Lowak MJ, Polcyn MA, Langdon GS. Experimental investigation of blast wall panels under shock pressure loading. *International Journal of Impact Engineering* 2007; 42(6): 1095–1118.
- Langdon GS, Lemanski SL, Nurick GN, Simmons MC, Cantwell WJ, Schleyer GK (2007a) Behaviour of fibre-metal laminates subjected to localised blast loading: Part I – experimental observations and failure analysis. *Int J Impact Eng* 34(7):1202–1222.
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- M. Y. Yahya, W. J. Cantwell, G. S. Langdon and G. N. Nurick: ‘The blast behaviour of fibre reinforced thermoplastic laminates’, *J. Compos. Mater.*, 2008, 42, 2275–2297.
- Nurick GN, Langdon GS, Chi Y, Jacob N (2009) Behavior of sandwich panels subjected to intense air blast – part 1: experiments. *Compos Struct* 91(4):433–441
- Karagiozova, D., Nurick, G., Langdon, G.. Behaviour of sandwich panels subject to intense air blasts-part 2: numerical simulation. *Composite Structures* 2009;91(4):442–450.
- Nurick, G., Chi, Y., Langdon, G., Bartle, S., Yuen, S., Karagiozova, D.. Response of flexible sandwichtype panels to blast loading. *Composites Science and Technology* 2009; 69(6): 754–763.
- G.S. Langdon, G.N. Nurick, D. Karagiozova and W.J. Cantwell, “Fiber-metal laminate panels subjected to blast loading”, Chapter 9 in *Cynamic Failure of Materials and Structures*, A. Shukla et al, (editors), Springer, 2010

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M. Saeed Ahmad, G.S. Langdon, G.N. Nurick, S. Chung and Kim Yuen, “A study on the response of single and double circular plates subjected to localized blast loading”, *Latin American Journal of Solids and Structures*, Vol. 15, No. 11, 15 pages, November 2018