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Heat and mass flows in laser metal deposition additive manufacturing

Laser metal depsoition (LMD) is an established additive manufacuring process for the 3D printing of large metallic components and for engineering component repairs. This presentation reports the fundamental research work carried out in the Laser Processing Research Centre of The University of Manchester over the last 20 years in understanding the heat and mass flows in the LMD process using analytical modelling, filament element modelling and computational fluid dynamic modelling techniques. The effects of process parameter and material interactions on the component properties including gometry, microstructure, mechanical properties, residual stresses and distortion are discussed.

Biography

Lin Li completed his PhD in laser cladding from Imperial College, London, UK in 1989. He is currently Director of Laser Processing Research Centre at The University of Manchester, UK. He has published more than 350 scientific papers in peer reviewed journals and has been serving as an Editorial Board Member in 12 international journals including *Light:Science and Applications, IMechE Journal of Mechancial Engineering and Sciences, IMechE Journal of Engineering Manufacturing and Optics and Laser Technology.* He has served as the President of Laser Institute of America, President of International Academy of Potonics and Laser Engineering and President of Associate of Industrial Laser Users. He is an Elected Fellow of Royal Academy of Engineering, UK and Fellow of Internal Academy of Production Engineering. He has received numerous awards including Arther Charles Main Award from Institute of Mechanical Engineers, Sir Frank Whittle Medal from Royal Academy of Engineering and Researcher of the Year from The University of Manchester, UK.

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