

Anti-counterfeiting 3D printed parts via multiple material selective laser melting

Chao Wei^{1*}, Zhe Sun¹, Yihe Huang¹, Lin Li¹

1- Laser Processing Research Centre, School of Mechanical, Aerospace and Civil Engineering, The University of Manchester, Oxford Road, Manchester, M13 9PL, UK

Corresponding author: chao.wei@postgrad.manchester.ac.uk

Illegal copying of metallic components is a chronic problem in the industry that is becoming more unscrupulous due to the rapid growth of additive manufacturing technology. In this work, multiple material selective laser melting, developed at the University of Manchester, was applied to embedding security tagging features in 3D printed 316L stainless steel components. Infrared spectral imaging, X-ray film imaging, digital X-ray imaging, and X-ray fluorescence analyzing, were used to examine the safety features at different locations and different embedding depths up to 15 mm. The results indicated that X-ray imaging was the most sensitive and promising method to identify embedded Quick-Response (QR) code safety features. Related anti-counterfeiting feature design embedding guidelines were proposed.

Please send your completed Word document to: abstracts@ailu.org.uk