OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Tissue Science & Regenerative Medicine

August 26-28, 2013 Raleigh-NC, USA

Laser ablating parylene-C for cell patterning applications

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Abstract

Cell patterning commonly employs photolithographic methods for the micro-fabrication of structures on silicon chip. This requires expensive photo-mask development and complex photolithographic processing. Laser based patterning for cell printing has been previously employed a low cost option to avoid such processing steps. Separate to this, laser ablation of polymers is an active area of research promising high aspect ratios. This seminar reports the first application of laser ablation as a means of ablating the biocompatible polymer parylene-C from SiO_2 substrates for the patterning of human brain cells, hence, removing the expensive photolithographic steps. The results demonstrate how this method provides a low cost, rapid prototyping option and high cell yield solution.

Biography

Charles Unsworth, Senior Lecturer, obtained his PhD in Physics at the University of St. Andrews, UK in 1997. He is an Ex. Higher Scientific Officer of the Defense Evaluation Research Agency (DERA) Ministry of Defense, UK. He completed a 3 year Postdoctoral Fellow at the University of Edinburgh in Radar Signal Processing and a 2 year Postdoctoral Mobility Fellow at Edinburgh University collaborating with the Royal Hospital of Sick Children, Edinburgh in Biomedical Signal Processing. He runs the 'Advanced Signal & Image Processing Group', at the University of Auckland specialising in Biomedical Signal Processing & Neuroengineering.