CONFOCAL RAMAN MICROSPECTROSCOPIC IMAGING OF TISSUES IN A PDMS MICROBIOREACTOR

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ABSTRACT

New technology is developed to observe, *in situ* and *in vivo* development of tissues from cultured cells [1]. Cells after seeding grow on bioactive degradable scaffolds that provide the physical and chemical cues to guide differentiation and assembly into three dimensional (3D) tissues. The tissue is grown in a bioreactor, where the proper conditions for growth and differentiation are maintained [2]. We have designed and developed a novel microbioreactor in PDMS (Polydimethylsiloxane). In order to assess the growth conditions through out the tissue, the non-invasive, 3D-spatial resolution of confocal Raman imaging is used to measure chemical parameters in the tissue in a label-free manner. We will present first results of a specially designed micro-bioreactor integrated with a hyper spectral Raman microscope.

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