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| Title:                  | Optical Micro-ct for micro-machining                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Authors:                | <a href="#">Agarwal, Agrima</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Keywords:               | Optical Micro<br>micro-machining                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| Abstract:               | X-Ray Computed tomography has been used for more than half a century to visualise organs inside the human body. Optical projection tomography is the optical analogue of X-Ray CT. It has emerged as a throbbing field for visualizing transparent species of animals in 3D with several advantages over X-Ray CT such as no dosage danger and significantly reduced costs. We have shifted our focus from living organisms to micro-machined objects, specifically optical fiber-based sensors which is an upcoming field of research with applications ranging from chemical based sensors to therapeutic uses. A crucial step in manufacturing of these sensors is to analyse them for the structural accuracy of the modifications made on the tip. In this thesis, we discuss about Micro-Optical Projection Tomography with a brand new application- 3D reconstruction of micro-machined objects. We have successfully reconstructed air cavity based, etched tip and micro-sphere based optical fibers which are preliminaries for manufacturing most fiber based sensors. With our setup, we can clearly see the three dimensional shape of the optical fiber tip at any depth with micrometer level resolution. |
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