

**Master 2021**

**Mr. Akash Ingle**

**Examination of a modified polymer optical fiber for textile integration for use as a sensor.**

***ABSTRACT - Masterthesis***

The research work includes the study of modified perfluorinated graded-index polymer optical fibers (PPOFs). The main objective of the thesis is to find out if the modified PPOFs (modPPOFs) integrated into textiles can be used as sensor textiles to measure pressure and deformation. To achieve this, the unmodified PPOFs are first integrated into textile samples using different integration techniques. And then the integrated unmodified PPOFs are put into the solvent  $\text{CCL}_2\text{H}_2$  to remove their over-cladding layer so that they can be modified.

After performing the experiments on these modPPOFs under different scenarios, it is found that the integration of modPPOF into textile in warp direction in plain pattern is the integration technique with least loss among the integration techniques studied and analyzed in this work. And with this integration technique the textiles with integrated modPPOF can be used as a pressure and deformation sensor. Further research can be done with the integration techniques not used in this work. With modifications according to the requirement, these textile sensors can be used in different medical and military applications.