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Optical fabrication technology; where are we? and where are we going?

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Optics and photonics technologies have variety of commercial, industrial and research applications. Optical elements such as lenses and prisms form the basis of optical systems in optics and photonics technologies, with each components' characteristics designed and fabricated to maximize throughput of the system. Traditional fabrication processes of optical components which involve sawing and drilling of optical glass and loose abrasive grinding and polishing methods have been developed as a result of empirical experience and has been sufficient in achieving specifications. The advent of the laser and laser interferometric tests, computer numerically controlled (CNC) machines with diamond turning tools has enabled more accurate, efficient, and automated precision manufacturing capabilities and provide more accurate measurement techniques of manufactured optical components. CNC machines have increased the demand for new and diverse components for optical systems with high tolerance specifications, the use of new raw materials and enabled high-volume manufacturability. Despite the advantages of CNC machines, along with budget constraints, there exists limitations in their use and traditional fabrication methods are preferred when manufacturing certain optical components. Along with the addition of thin film coatings applied to optical components to optimize performance, there exists many other factors that influence the manufacturing processes of optical components. An overview of optical fabrication processes will be outlined, along with the limitations and factors that influence manufacturing and industrialization procedures. An insight will be given into the research, development, constraints, and implementation of
fabrication of new components are outlined

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No

Level for award;(Hons, MSc, PhD, N/A)?

N/A

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