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## Application of Optical Measurement Techniques for the Characterization of the Laser Ignition Process

### Abstract

Recent studies show that laser ignition is able to improve the engine efficiency and the cyclic variations while, at the same time, reducing the pollutant emissions. However, to exploit the full potential of the laser ignition, the mechanisms and the characteristics of the ignition process have to be known. The laser ignition process can be examined by optical measurement techniques. With these tools, a better understanding of the laser ignition process can be achieved. Therefore, the lecture introduces several techniques to characterize each step of the laser ignition process. The energy transfer from the laser to plasma, the plasma development and evolution, the shockwave propagation as well as the flame kernel development and propagation are involved in the laser ignition process. In part self-developed but also measurement techniques applied in the literature to characterize these processes are treated.

