TIME RESOLVED FTIR ANALYSIS OF COMBUSTION OF ETHANOL AND GASOLINE COMBUSTION IN AN INTERNAL COMBUSTION ENGINE

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In order to pursue In Situ measurements in an internal combustion engine, a MegaTech Mark III transparent spark ignition engine was modified with a sapphire combustion chamber. This modification will allow the transmission of infrared radiation for time-resolved spectroscopic measurements by an infrared spectrometer. By using a Step-scan equipped Fourier transform spectrometer, temporally resolved infrared spectral data were acquired and compared for combustion in the modified Mark III engine. Measurements performed with the FTIR system provide insight into the energy transfer vectors that precede combustion and also provides an in situ measurement of the progress of combustion. Measurements were performed using ethanol and gasoline.