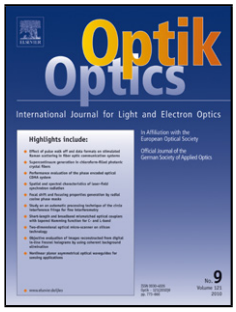

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NO_x emission on-line measurement for the diesel engine based on tunable diode laser absorption spectroscopy

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Abstract: An on-line measurement for the diesel engine NO_x emission based on tunable diode laser absorption spectroscopy (TDLAS) technique is realized. Two absorption lines 1900.07059cm^{-1} and 1626.91952cm^{-1} are chosen for NO and NO_2 measurement. Two ICL inter-band cascade (ICL) lasers are used to measure NO and NO_2 separated. In this work, we use the TDLAS system to research the NO_x emissions on a four-stroke four-cylinder diesel engine. Optical windows are installed on the exhaust pipe of the diesel engine symmetrical to realize the on-line measurement. The direct detection method is adopted in this work, which can avoid the effect from unknown concentration of particulate matter (PM) in the exhaust. The NO_x emission characteristic under different load power and different rotating speed is researched. This work can support the research on the combustion process of diesel engines.

Keyword: NO_x emission; on-line measurement; diesel engine; TDLAS.