

# **ANALYSIS OF THE EFFECT OF DIESEL ENGINE OPERATING CONDITIONS ON SOOT FORMATION BY SPECTROSCOPIC INVESTIGATION**

M. Costa, S.S. Merola, B.M. Vaglieco, S. Consales, G. Formisano  
Istituto Motori, CNR  
Viale Marconi, 8– 80125, Naples, Italy

**ABSTRACT.** Multi-wavelength UV-visible extinction measurements are carried out on an optically accessible divided-chamber diesel engine with the purpose of studying the process of soot formation. Various operating conditions are considered, by changing the fuel amount and start of injection in order to vary the relative importance of the premixed to diffusive stages in the combustion process. The link between the soot volume fraction and the in-chamber concentration of the OH radicals, detected in the extinction spectra, is analysed to the aim of highlighting the OH oxidizing action. This last is also correlated to the amount of soot measured at the exhaust.