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Nota di contenuto	Introduction -- Experimental method and kinetic modeling -- Experimental and modeling study of cyclohexane combustion -- Experimental and modeling study of methylcyclohexane combustion -- Experimental and modeling study of ethylcyclohexane combustion -- Combustion kinetics of cyclohexane and C1-C2 mono-alkyl cyclohexanes -- Conclusions and perspective.
Sommario/riassunto	This thesis investigates the combustion chemistry of cyclohexane, methylcyclohexane, and ethylcyclohexane on the basis of state-of-the-art synchrotron radiation photoionization mass spectrometry experiments, quantum chemistry calculations, and extensive kinetic modeling. It explores the initial decomposition mechanism and distribution of the intermediates, proposes a novel formation mechanism of aromatics, and develops a detailed kinetic model to predict the three cycloalkanes’ combustion properties under a wide

range of conditions. Accordingly, the thesis provides an essential basis for studying much more complex cycloalkanes in transport fuels and has applications in engine and fuel design, as well as emission control.