Record Nr.	UNINA9910741147903321
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Titolo	Investigations into the Combustion Kinetics of Several Novel Oxygenated Fuels / / by Wenyu Sun
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2023
ISBN	981-9945-10-0
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (178 pages)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190- 5061
Disciplina	620.1
Soggetti	Materials
	Catalysis
	Force and energy
	Mass spectroscopy
	Chemical kinetics
	Materials for Energy and Catalysis
	Mass Spectrometry Reaction Kinotics
Lingua di pubblicazione	
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction Experimental and kinetic modeling methods High-
	temperature kinetics of carbonate and ketone fuels Low-
	oxygenated fuels on bydrocarbon premixed flames Conclusions and
	perspective.
Sommario/riassunto	In this thesis, attention was paid to several novel oxygenated fuels— carbonates, polyethers and ketones. Combustion kinetic investigations were performed for typical representative compounds, including dimethyl carbonate, diethyl carbonate, cyclopentanone, 3-pentanone, 1,2-dimethoxyethane and dimethoxymethane. For experiments, suitable diagnostic techniques were used to measure the detailed speciation information of the target fuels under different conditions.
	For kinetic modeling, rate coefficients for crucial elementary reactions were obtained through high-level theoretical calculations. Based on that, validated kinetic models with good predictive performances were

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developed. On the basis of experimental measurements and model interpretations, this work highlighted two important combustion characteristics regarding the practical use: the pollutant formation and the ignition performance. Besides, the correlation between oxygencontaining functional groups and the aforementioned combustion characteristics was revealed. To reveal the potential interactions between the reaction networks of oxygenated additives and the hydrocarbon base fuels during combustion. Chemical structures of laminar premixed flames fueled by binary fuels were measured, and by changing the initial fuel compositions, the addition effects of the oxygenates on the fuel consumption and pollutant formation behaviors were explored. It was found that complicated chemical interactions do not exist in the reaction networks under the investigated conditions.