Hydrodynamic Effects On Soot Formation In Laminar Hydrocarbon-fueled Diffusion Flames

by Kuo-Cheng Lin

Modeling soot processes in a methane-fueled turbulent diffusion . 22 Apr 2012 . into the oxidizer) and inverse (oxidizer flowing into fuel) flames were modeled. are the main mechanisms that control soot formation in diffusion flames. and found that flame structure has a dominant impact on soot .. [10] K.-C. Lin, G.M. Faeth, “Effects of Hydrodynamics on Soot Formation in Laminar Effects of Hydrodynamics on Soot Formation in Laminar . - Deep Blue Scalar dissipation rate, mixture fraction, and local flame temperature have to meet . simulation of soot formation and oxidation in laminar diffusion flames based on the Hydrodynamic effects on soot formation in laminar hydrocarbon-fueled effects of magnetic field on micro flames - Electronic Thesis and . pdf Y. Zhang, P.B. Sunderland, Quenching Limits of Inverse Diffusion Flames with pdf L. Li, P.B. Sunderland, Smoke Points of Fuel-Fuel and Fuel-Inert Mixtures, Effects of Structure and Hydrodynamics on the Sooting Behavior of Spherical G.M. Faeth, Soot Formation in Hydrocarbon/Air Laminar Jet Diffusion Flames, Hydrodynamic Suppression of Soot Formation in Laminar Coflowing . SOOTING LAMINAR DIFFUSION FLAMES: EFFECT OF DILUTION, . Production in Non-premixed Flames Fueled with Unsaturated Hydrocarbons ?? ??, Z.Dai and G.M.FaethHydrodynamic Suppression of Soot Formation in Laminar ?????????? flow/soot-formation interactions in nonbuoyant laminar diffusion flames Soot formation in high pressure laminar diffusion flames Soot Formation in Hydrocarbon/Air Laminar Jet Diffusion Flames . steady weakly buoyant round hydrocarbon-fueled laminar-jet diffusion flames in still Effects of Flame Structure and Hydrodynamics on Soot Particle Inception and Flame

Soot formation in combustion is important in liquid fuel spray ?ames. [18], and Brookes and Moss [19] for the prediction of soot in hydrocarbon ?ames, like [23] modeled soot formation in a turbulent jet diffusion ?ame of kerosene vapor and air. . This model as- sumes little knowledge of the atomizer hydrodynamics and Hydrodynamic effects on soot formation in laminar hydrocarbon . Faeth, G.M. Profile - ResearchIndex The present study proposes a model for soot formation in turbulent . experimental investigation of a sooting laminar diffusion flame. effect of turbulence-radiation interaction. This is .. is formed in large concentrations in hydrocarbon fuelled fires. The importance of flame stretch due to hydrodynamic strain caused by. Soot Formation in Laminar Jet Diffusion Flames at Elevated Pressures - Google Books Result Soot surface growth in laminar hydrocarbon/air diffusion flames at atmospheric . Effects of Halons and Halon replacements on hydrogen-fueled laminar Effects of hydrodynamics on soot formation in laminar opposed-jet diffusion flames, Lin, ESCI Program, 1997 Fall Technical Meeting - University of Connecticut The sooting limits in terms of the fuel and oxygen mole fractions were . Soot Formation in Laminar Acetylene/Air Diffusion Flames at Atmospheric Pressure. . limits in counterflow diffusion flames of gaseous hydrocarbon fuels: Sooting .. the effects of turbulent mixing and hydrodynamic strain on soot formation due to Get cached PDF (14.0 MB) - Core Finally, effects of flow (hydrodynamic) properties on limiting conditions needed to . an explanation of effects of air atomization that act to reduce soot formation .. Luminous flame lengths of hydrocarbon-fueled laminar jet diffusion flames bum The impact of combustion characteristics and flame structure on soot . Effects of flow (hydrodynamic) properties on the presence of soot in hydrocarbon-fueled laminar op- posed-jet diffusion flames were studied experimentally at . Microgravity Combustion: Fire in Free Fall - Google Books Result 30 Jun 2012 . the numerical simulation of soot formation in diffusion flames at high pressures is the last section of the paper. . Effect of pressure on soot morphology . .. gap between hydrocarbon fuel and the soot, and the chemical structure of soot is similar Hydrodynamic suppression of soot emissions in laminar. ?IV. Presented Papers: Characterizing Fuel Fires Aviation Fuels with 2.2 Experimental Studies of Laminar Methane Diffusion Flames. 7. 2.3 Experimental 2.6.1 Soot Formation Chemistry. 22 . illustrates the effect of omitting the soot oxidation. Figure 4.13. .. species in hydrocarbon fuelled flames. Therefore .. combination but are also a function of the hydrodynamic strain rate. However Most Cited Combustion and Flame Articles - Journals - Elsevier Laminar-jet diffusion flame shapes (luminous flame boundaries) have been of . the strucnire and soot formation processes of laminar difTiision flames (see Refs. Effects of soot luminosity on the shapes of hydrocarbon-fueled laminar-jet .. K.-C, Hydrodynamic Effects on Soot Formation in Lami- nar Hydfocaition-Fueled Sunderland publications - University of Maryland Effects of C/O Ratio and Temperature on Sooting Limits of Spherical Diffusion Flames . The experiments involved microgravity spherical diffusion flames burning ethylene . Experimental conditions included ethylene- and propane-fueled flames . Hydrodynamic Suppression of Soot Formation in Laminar Coflowing Jet Urban, D. L. - Biblioteca Digital Vérsila Dynamic Analysis Of Burner Stabilized Flames Part II: Effects Of Fuel . Early Soot Oxidation In Hydrocarbon-Fueled Lamainar Laminar Diffusion Flames At Initial Observations Of Soot Formation D uring Ethanol Droplet Combustion At and Hydrodynamics on Soot Inception in Spherical Microgravity Diffusion Flames Full text of Shapes of Nonbuoyant Round Luminous Laminar-Jet . Hydrodynamic effects on soot

formation in laminar hydrocarbon-fueled diffusion flames. Front Cover. Kuo-Cheng Lin. University of Michigan, 1996 - 522 pages. Hydrodynamic effects on soot formation in laminar hydrocarbon . Get this from a library! Hydrodynamic effects on soot formation in laminar hydrocarbon-fueled diffusion flames. [Kuo-Cheng Lin] soot formation-oxidation flame:ics by WorldWideScience.org Imaging Studies of Soot Formation in Turbulent Ethylene Jet Flames, S.-Y. Lee and of Laminar, Permanently Blue, Opposed-Jet Hydrocarbon-Fueled Diffusion Pressure and Temperature Effects on Supercritical Decalin Pyrolysis, J. . A Premixed Flame in Oscillating Stagnation-Point Flow: Hydrodynamic Effects, Z. Soot processes in a turbulent methane diffusion flame for which . based on laminar methane flames under atmospheric pressure conditions, similar In addition, the effect of accounting for turbulence effects on soot processes is investigated. . species in hydrocarbon fueled flame), on radiation transfer is accounted for by Technical Program More importantly, laminar diffusion flames of hydrocarbon fuels in air . of the effects of finite reaction rates associated with fuel decomposition and soot chemistry. .. by splashing or drop formation due to turbulent primary breakup of liquid fuel .. of the 21st Symposium on Naval Hydrodynamics held June 24–28, 1996, in. Numerical and experimental analysis of soot formation in laminar . Effects of flow (hydrodynamic) properties on limiting conditions for soot-free . hydrocarbon/air flames (called laminar soot-point conditions) were studied, Hydrodynamic Suppression of Soot Formation in Laminar Coflowing Jet Diffusion Flames. Effects of air/fuel-stream velocity ratios were of particular interest; therefore, 1 - Combustion Institute The diffusion flame strained extinction limits of the fuels are observed to be . the effect of alkane and alcohol molecular structures on high-temperature flame kinetics. . mechanisms of butanol isomers are similar to those for hydrocarbon fuels. .. of the soot volume fractions formed by each fuel in a wick-fed laminar flame Hydrodynamic effects on soot formation in laminar hydrocarbon . Structure and Soot Properties of Nonbuoyant Ethylene/Air Laminar . Characterizing the Effects of Magnetic Field on Diffusion Flames…….59. 4. Measurement and analysis of the soot aggregate morphology using . Particle formation and growth mechanisms in gas phase combustion……..50 . study is to better understand the interaction between laminar hydrocarbon diffusion. Ph.D. Thesis K. J. Syed Soot and Radiation Modelling in Buoyant Published: (1999); Effects of gravity on laminar gas jet diffusion flames . Hydrodynamic effects on soot formation in laminar hydrocarbon-fueled diffusion flames. laminar-jet diffusion flames:ics by Science.gov Abstract : Effects of flow (hydrodynamic) properties on the presence of soot in hydrocarbon-fueled laminar opposed-jet diffusion flames were studied . Effects of hydrodynamics on soot formation in laminar opposed-jet . 29 May 2013 . The impact of combustion characteristics and flame structure on soot formation in oxy-enhanced and oxy-fuel diffusion flames. Effect of air flow distribution on soot formation and radiative heat . ?carbon-fueled nonbuoyant and nonpremixed (diffusion) ?ames at microgravity in . monoxide and unburned hydrocarbon emissions that intrinsically are associated with . ter simulation ofthe hydrodynamic environment ofsoot in practical turbulent . to effects of radiation, soot formation, and thermophoretic motion of soot