

Shock tube study of n-decane ignition at low pressures

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Abstract Ignition delay times for n-decane/O₂/Ar mixtures were measured behind reflected shock waves using endwall pressure and CH* emission measurements in a heated shock tube. The initial postshock conditions cover pressures of 0.09--0.26MPa, temperatures of 1227--1536K, and oxygen mole fractions of 3.9%--20.7% with an equivalence ratio of 1.0. The correlation formula of ignition delay dependence on pressure, temperature, and oxygen mole fraction was obtained. The current data are in good agreement with available low-pressure experimental data, and they are then compared with the prediction of a kinetic mechanism. The current measurements extend the kinetic modeling targets for the n-decane combustion at low pressures.

Keywords: Ignition delay time n-Decane Heated shock tube

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