Accurate Predictions of Fuel Effects on Combustion and Emissions in Engines Using CFD Simulations With Detailed Fuel Chemistry

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Detailed fuel models provide predictions that are otherwise unattainable

Library of detailed reaction mechanisms

– 40+ fuel components (thousands of species)
– Combustion and emissions chemistry

aromatics
olefins
c-paraffins
i-paraffins
n-paraffins

Model Fuels Consortium

Generate smaller but accurate fuel models

Fuel specific Surrogate blend formulation

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Reduction of detailed reaction mechanism

- **Hundreds of species**

Use accurate fuel models with advanced CFD

● **Validation using various engines and fuels**

– Engines: HCCI, LTC
– Fuels: PRF-ethanol, diesel

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