

Development and Validation of a Reduced Mechanism for Biodiesel Surrogates for Compression Ignition Engine Applications

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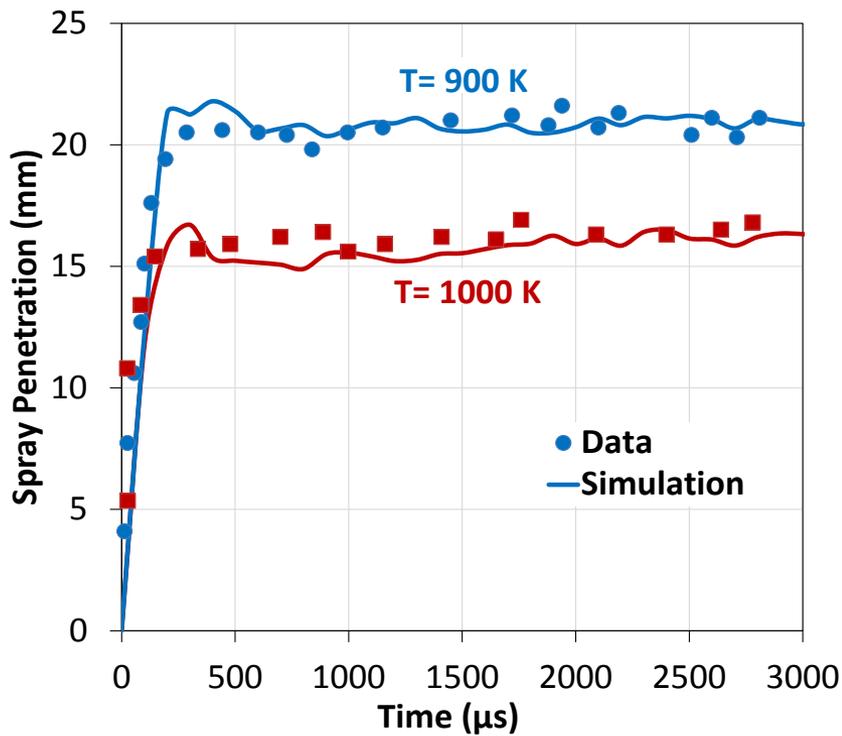
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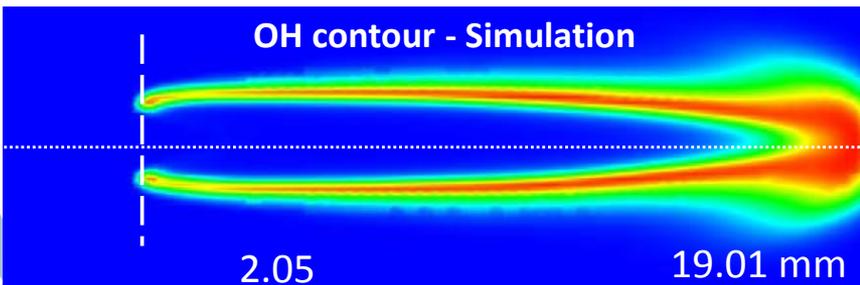
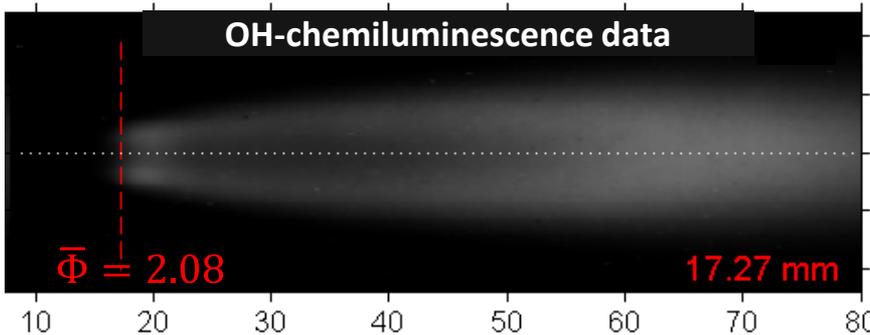
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- ❑ Biodiesel is a mixture of long-chain, oxygenated, unsaturated components ($C_{19}H_{38}O_2$ etc.)
- ❑ Reaction mechanism for a 3-component **biodiesel surrogate mixture*** consisting of methyl decanoate ($C_{11}H_{22}O_2$), methyl 9-decenoate ($C_{11}H_{20}O_2$), and n-heptane (C_7H_{16}) developed
 - Original: 3329 species, 10806 reactions
 - **New Reduced: 115 species, 460 reactions**
- ❑ The simulations can capture:
 - ✓ Spray behavior
 - ✓ Combustion characteristics
 - ✓ Soot distribution



Experimental data: JG Nerva, CL Genzale, S Kook, JMG Oliver, LM Pickett. International J. of Engine Research 2012.

* Z. Luo, M. Plomer, T. Lu, **S. Som**, D.E. Longman, S.M. Sarathy, W.J. Pitz, *Fuel* 99: 143-153, 2012

