

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

Sibendu Som*, Douglas E. Longman

Argonne National Laboratory

Zhaoyu Luo, Max Plomer, Tianfeng Lu

University of Connecticut

S. Mani Sarathy

King Abdullah University of Science and Technology

William J. Pitz

Lawrence Livermore National Laboratory

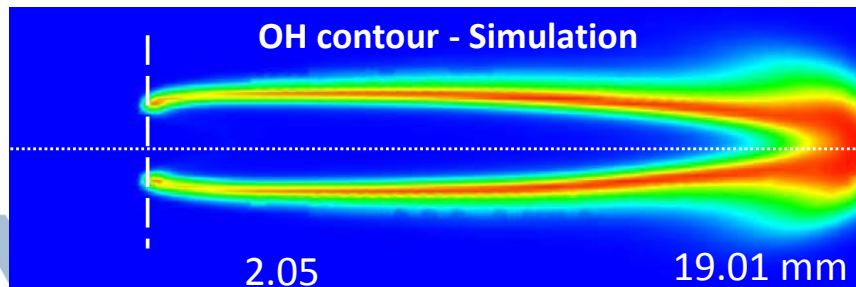
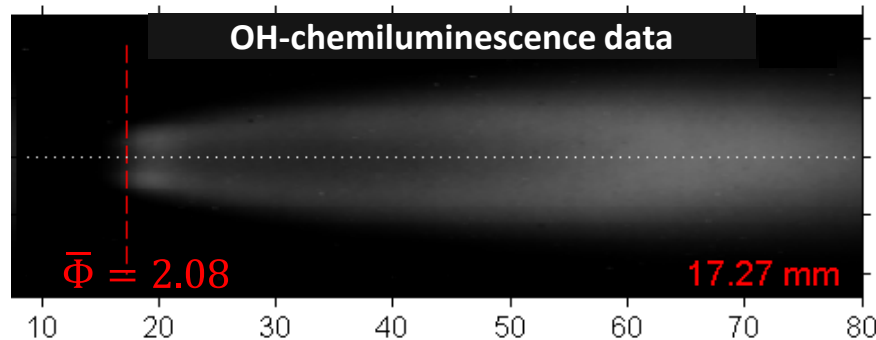
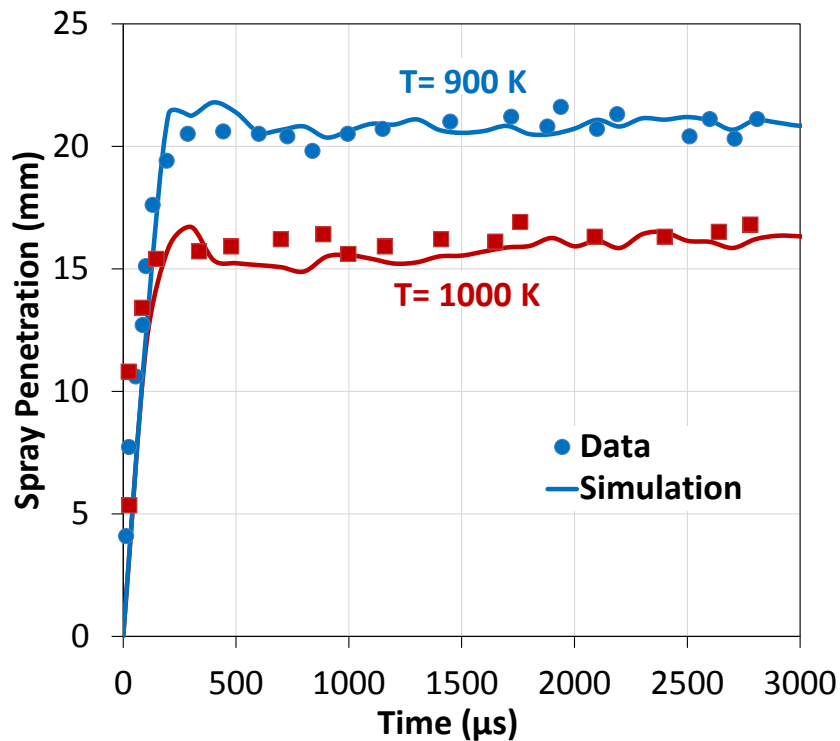
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- ☐ Biodiesel is a mixture of long-chain, oxygenated, unsaturated components ($\text{C}_{19}\text{H}_{38}\text{O}_2$ etc.)
- ☐ Reaction mechanism for a 3-component **biodiesel surrogate mixture*** consisting of methyl decanoate ($\text{C}_{11}\text{H}_{22}\text{O}_2$), methyl 9-decenoate ($\text{C}_{11}\text{H}_{20}\text{O}_2$), 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