An Experimental Kinetics Study of Isopropanol Pyrolysis and Oxidation behind Reflected Shock Waves

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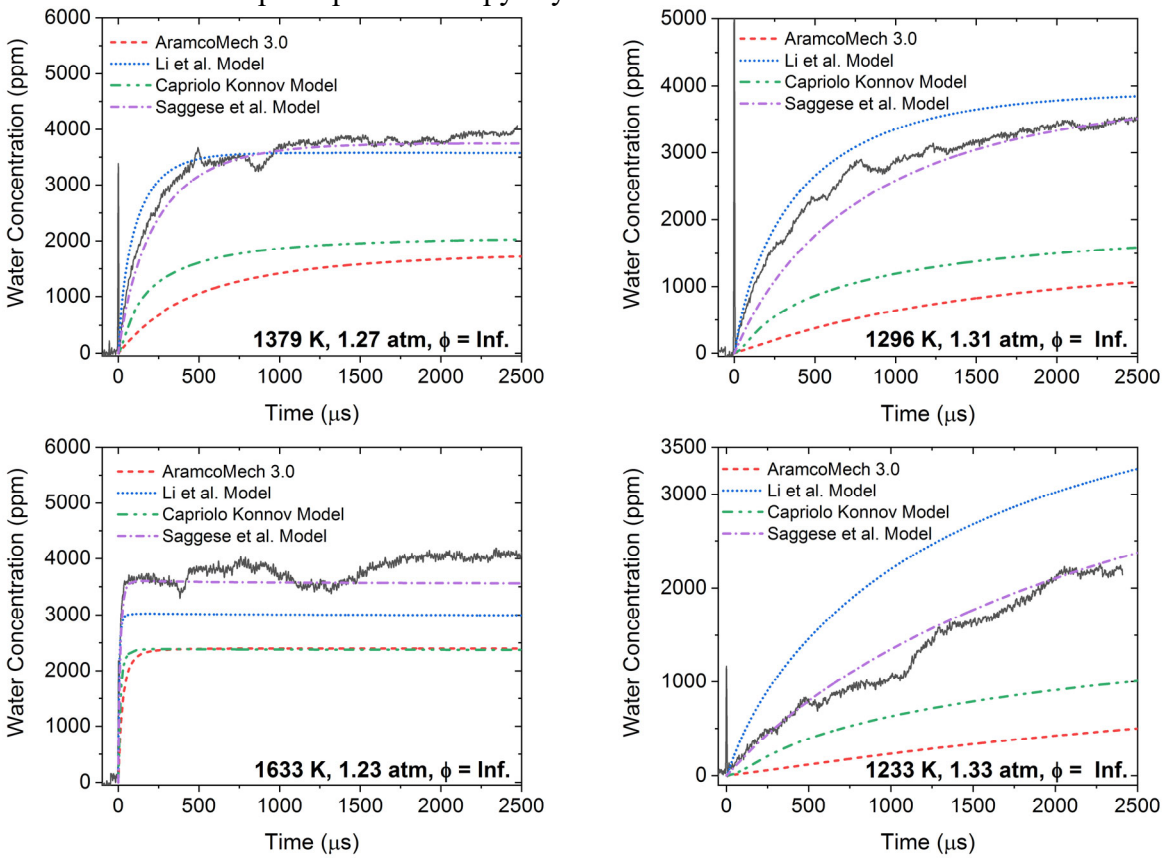
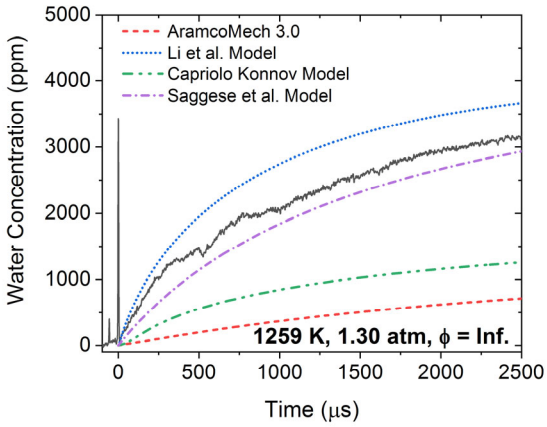
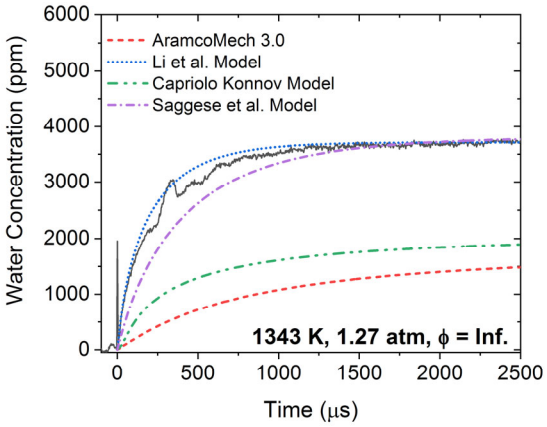
Supplemental Material Section

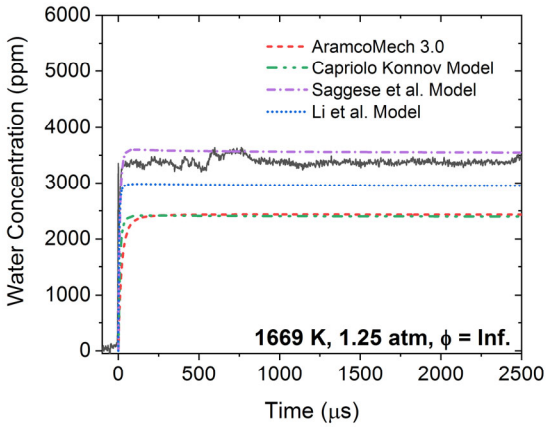
A/ H_2O laser absorption profiles

A.1/ H_2O laser absorption profiles for pyrolysis

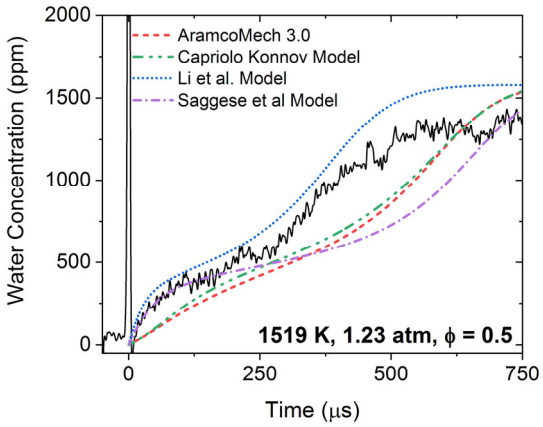


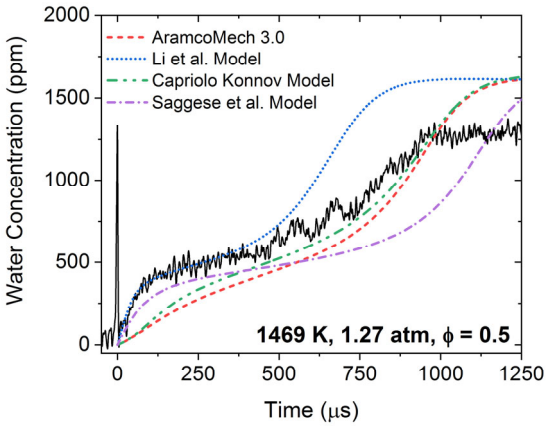


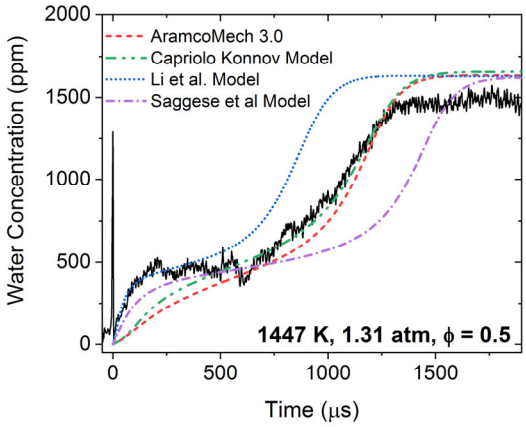


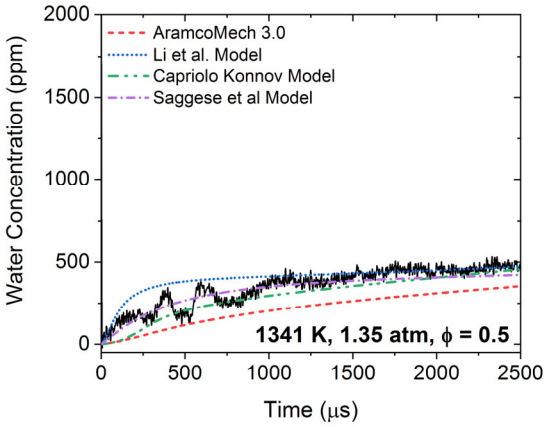


A.2/ H_2O laser absorption profiles for $\varphi = 0.5$

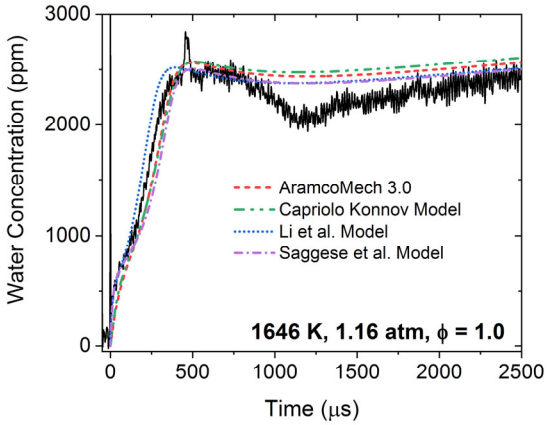


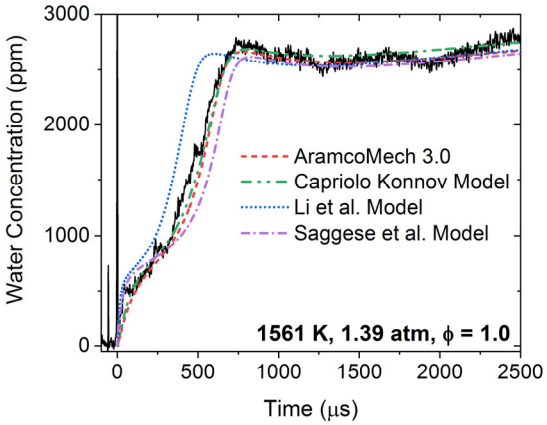


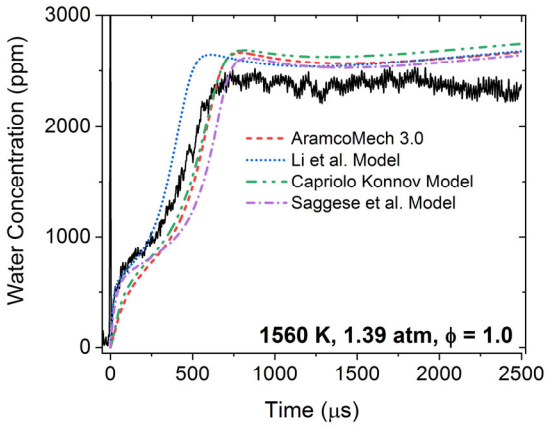


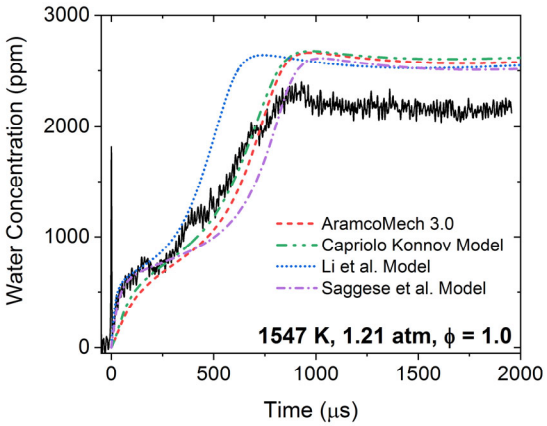


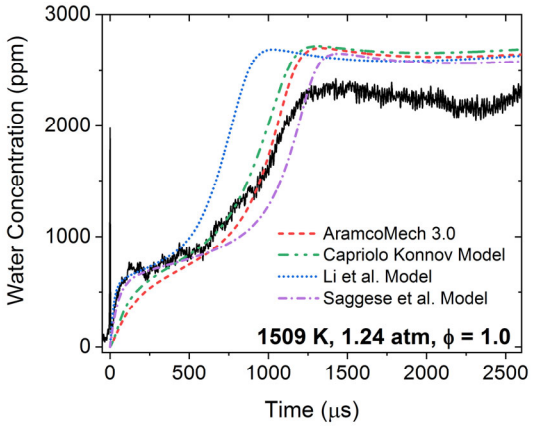
A.3/ H_2O laser absorption profiles for φ = 1.0

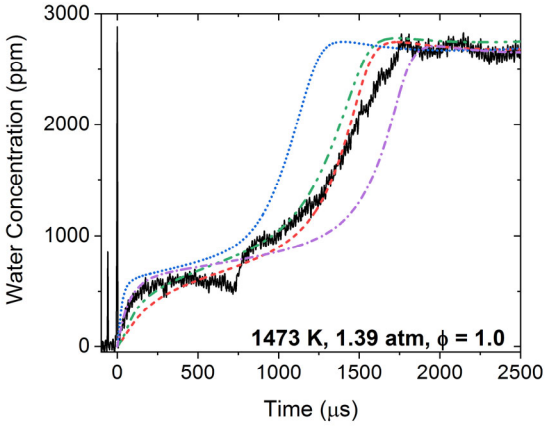




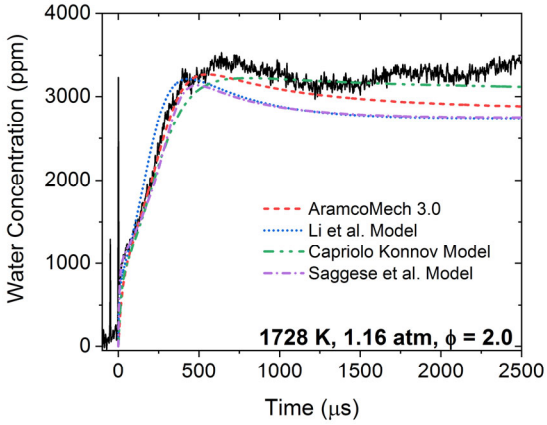


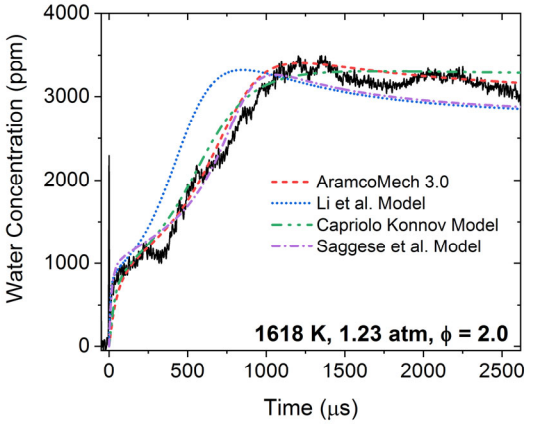


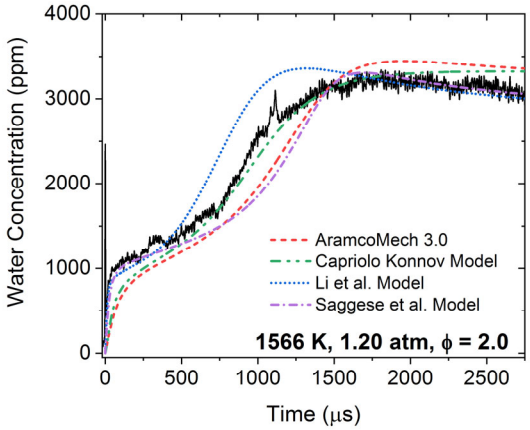


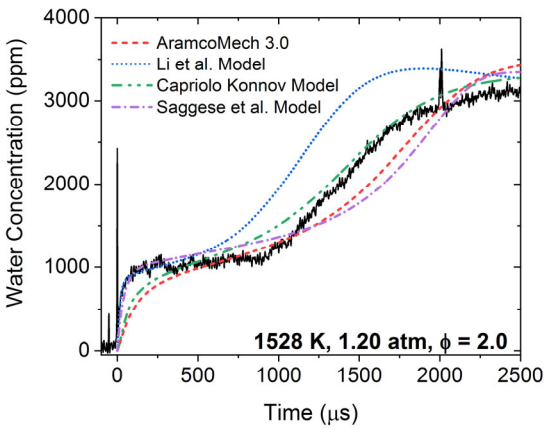


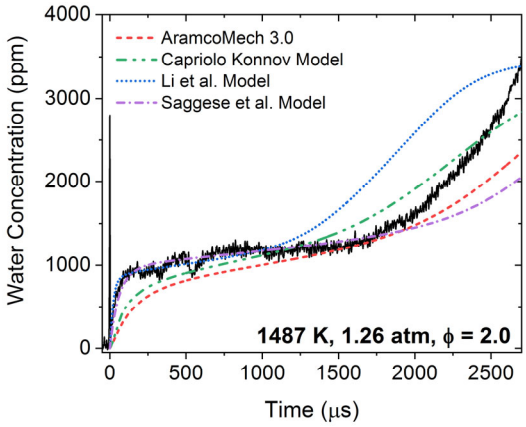
A.4/ H_2O laser absorption profiles for φ = 2.0

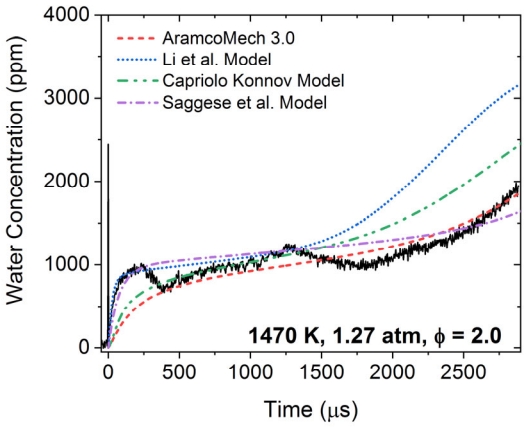






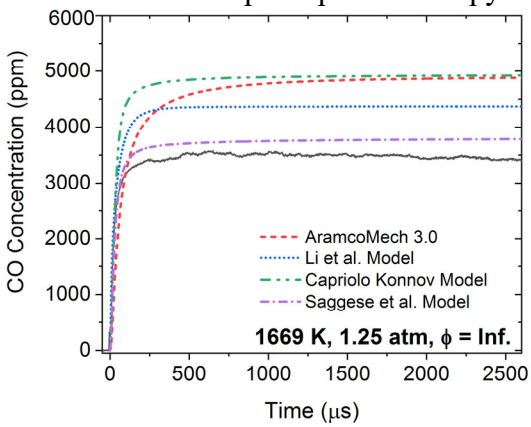


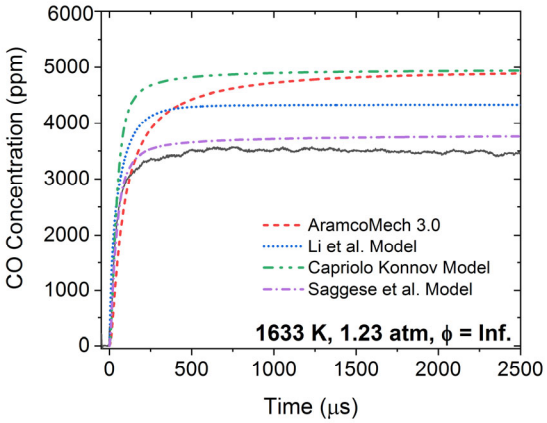


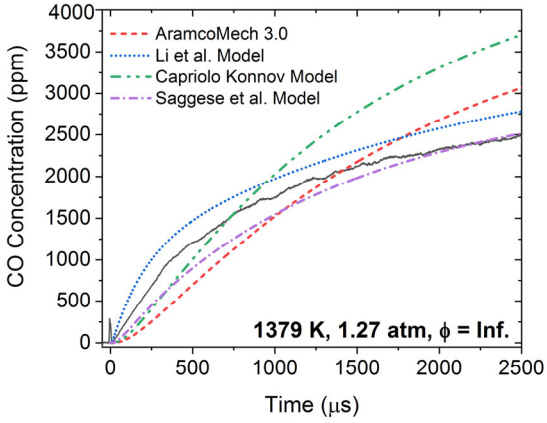


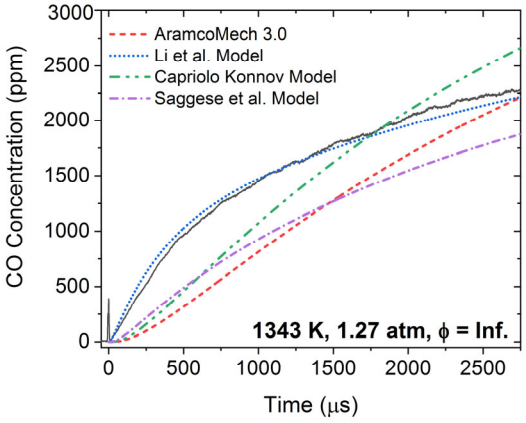
B/ CO laser absorption profiles

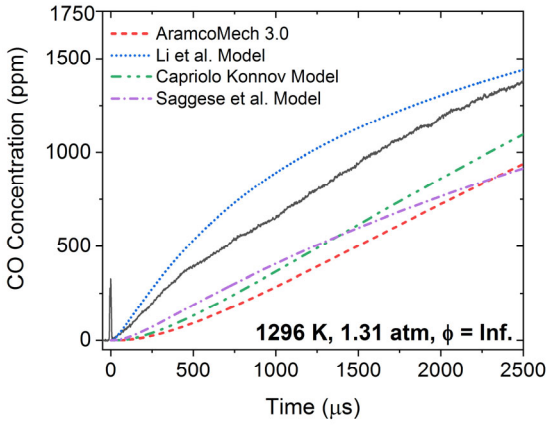
B.1/ CO laser absorption profiles for pyrolysis

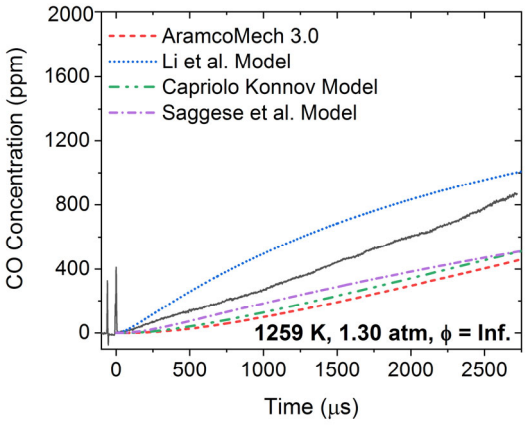


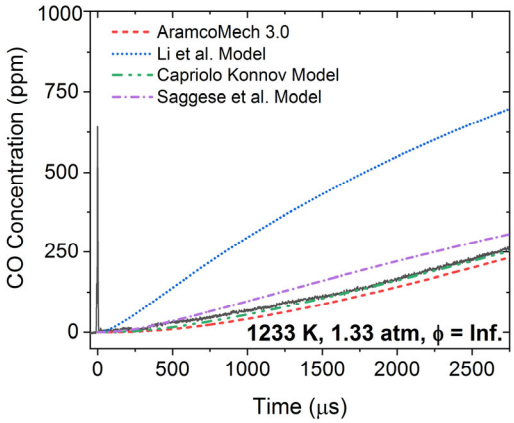




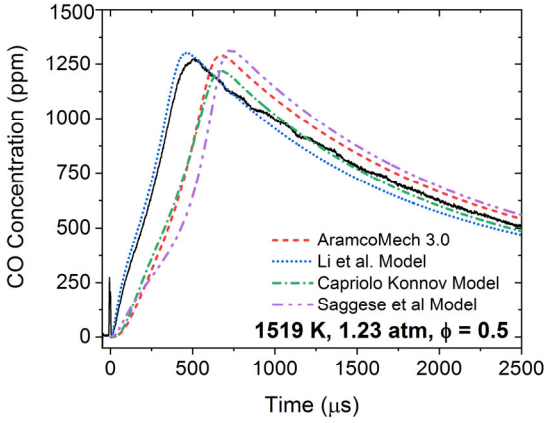


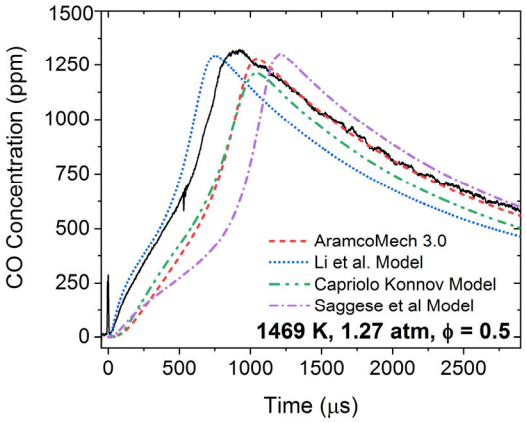


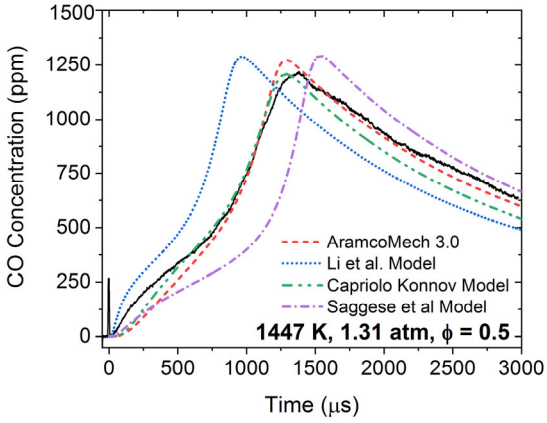


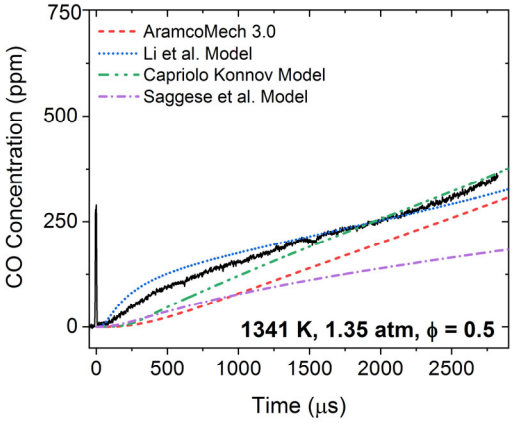


B.2/ CO laser absorption profiles for φ = 0.5

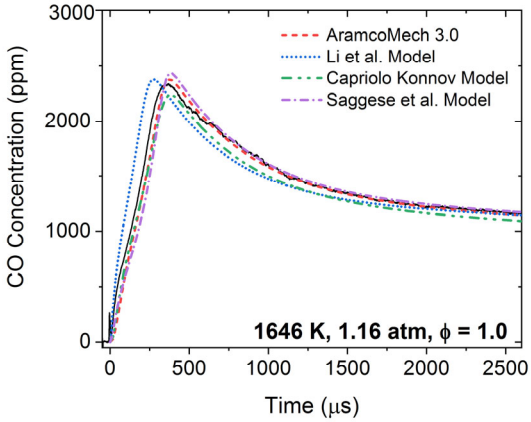


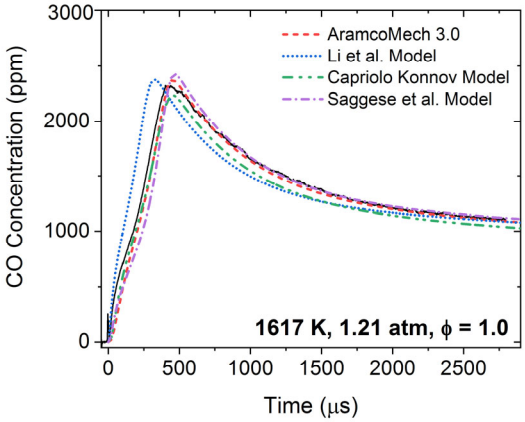


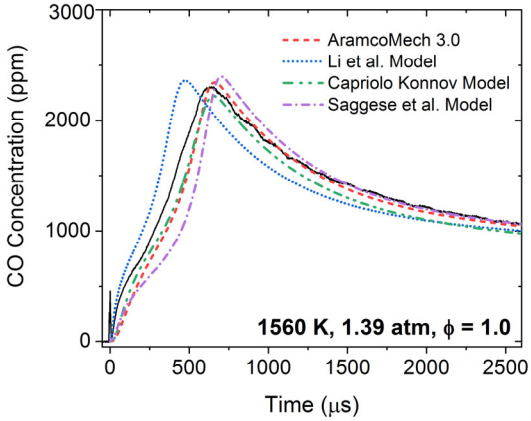


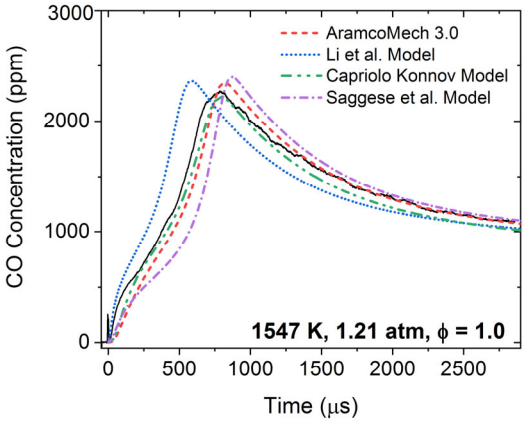


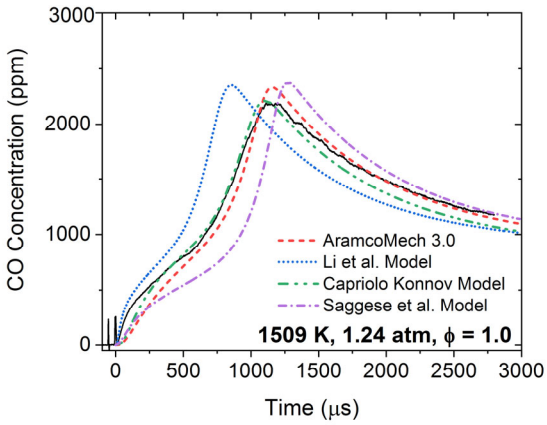
B.3/ CO laser absorption profiles for φ = 1.0

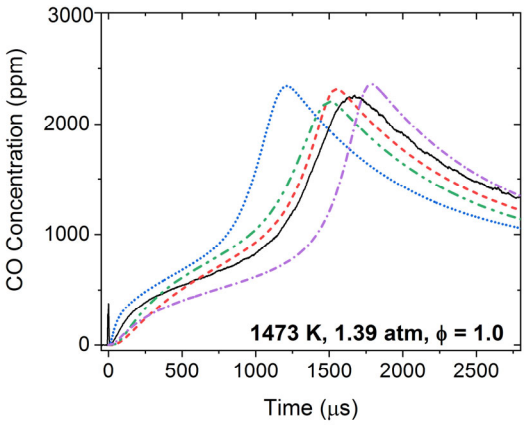


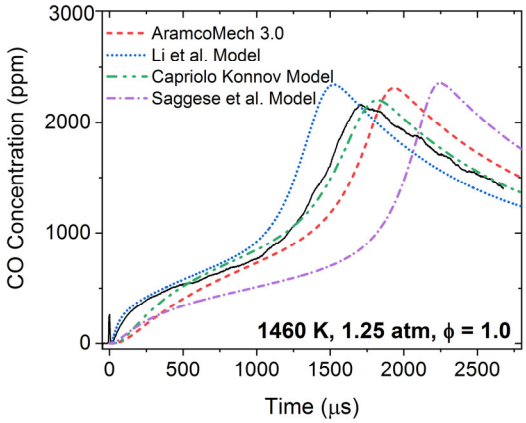







CO Concentration (ppm)
Time (μs)
AramcoMech 3.0
Li et al. Model
Capriolo Konnov Model
Saggese et al. Model
1509 K, 1.24 atm, ϕ = 1.0


CO Concentration (ppm)
Time (μs)
1473 K, 1.39 atm, ϕ = 1.0


CO Concentration (ppm)
Time (μs)
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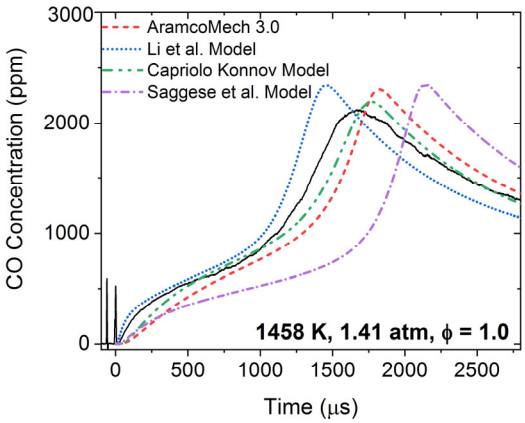
Li et al. Model
Capriolo Konnov Model
Saggese et al. Model
1460 K, 1.25 atm, ϕ = 1.0


CO Concentration (ppm)
Time (μs)
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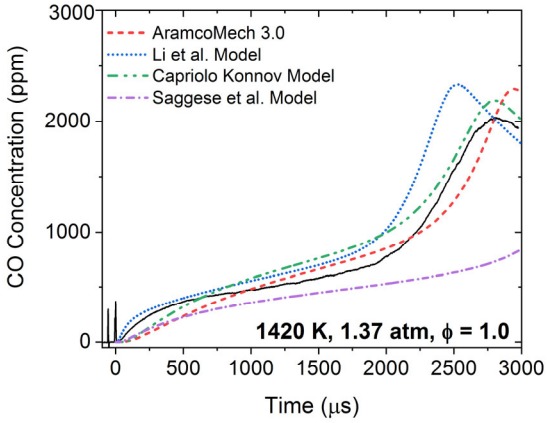
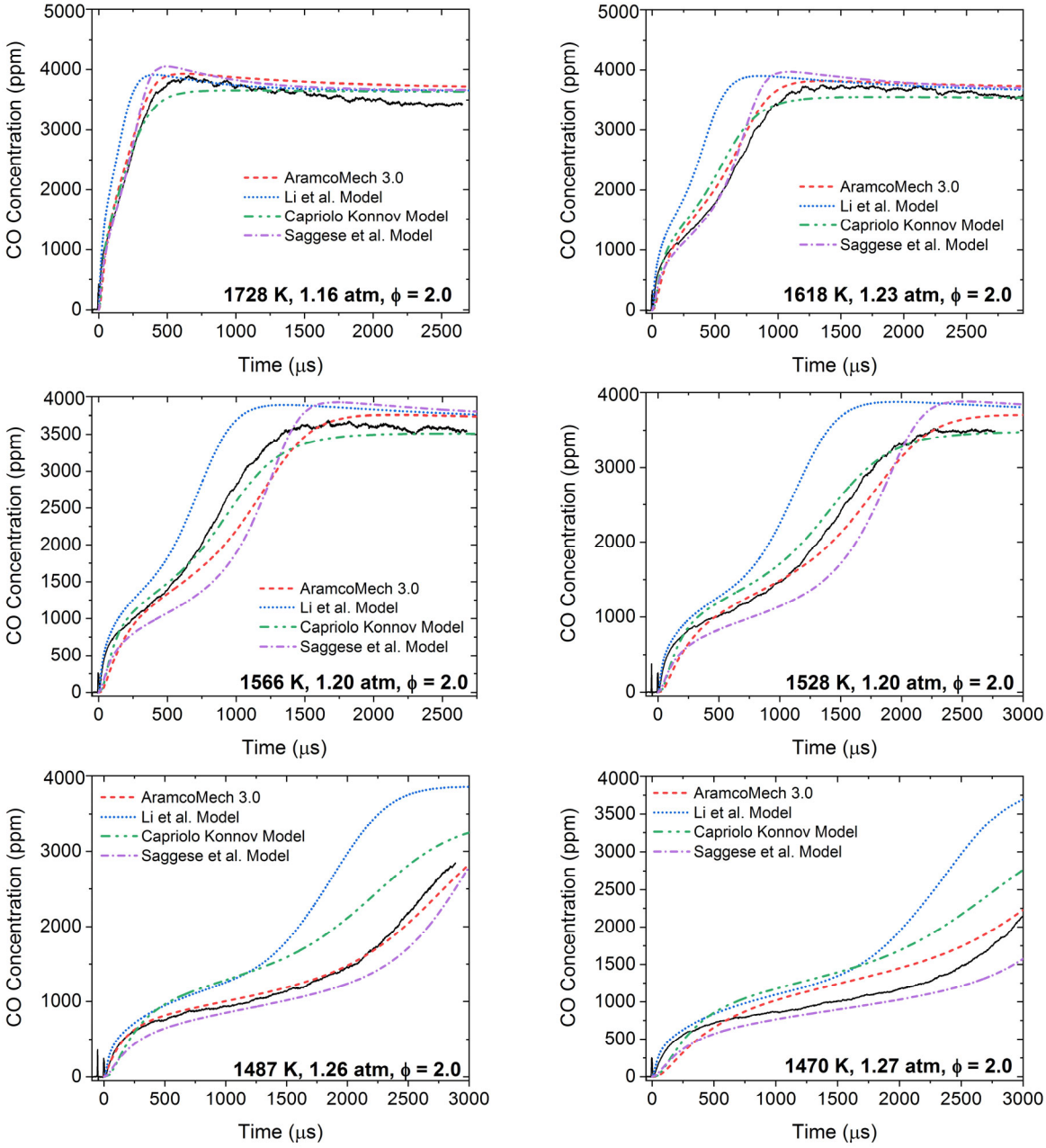
Li et al. Model
Capriolo Konnov Model
Saggese et al. Model
1458 K, 1.41 atm, ϕ = 1.0


CO Concentration (ppm)
Time (μs)
AramcoMech 3.0
Li et al. Model
Capriolo Konnov Model
Saggese et al. Model
1420 K, 1.37 atm, ϕ = 1.0

B.4/ CO laser absorption profiles for φ = 2.0



C/ Ignition delay times

Table S1: Ignition delay time results at 10 atm in stoichiometric and $\phi = 0.5$, real fuel-air mixtures 7 and 8.

ϕ	P_5 (atm)	T_5 (K)	τ_{ign} (µs)
1.0	10.6	1022	2023
1.0	10.4	1034	1540
1.0	10.5	1071	1048
1.0	10.8	1128	520
1.0	9.95	1175	381
1.0	9.35	1267	184
1.0	9.65	1370	78
1.0	8.99	1428	57

ϕ	P_5 (atm)	T_5 (K)	τ_{ign} (µs)
0.5	11.0	1068	1795
0.5	10.8	1103	1160
0.5	10.4	1105	1080
0.5	10.1	1115	1014
0.5	9.94	1168	550
0.5	9.81	1206	371
0.5	9.85	1266	192
0.5	10.1	1320	105
0.5	9.83	1410	51

Table S2: Ignition delay time results at 25 atm in stoichiometric and $\phi = 0.5$, real fuel-air mixtures 7 and 8.

ϕ	P_5 (atm)	T_5 (K)	τ_{ign} (µs)
1.0	29.6	942	2204
1.0	28.3	984	1324
1.0	27.2	1000	1010
1.0	26.1	1065	388
1.0	24.9	1093	330
1.0	23.9	1128	258
1.0	24.5	1134	253
1.0	23.3	1186	150

ϕ	P_5 (atm)	T_5 (K)	τ_{ign} (µs)
0.5	26.8	995	1876
0.5	26.8	1026	1140
0.5	26.2	1053	820
0.5	25.8	1089	555
0.5	24.9	1115	414
0.5	23.5	1142	348
0.5	23.1	1192	211
0.5	22.0	1244	140
0.5	21.1	1311	75

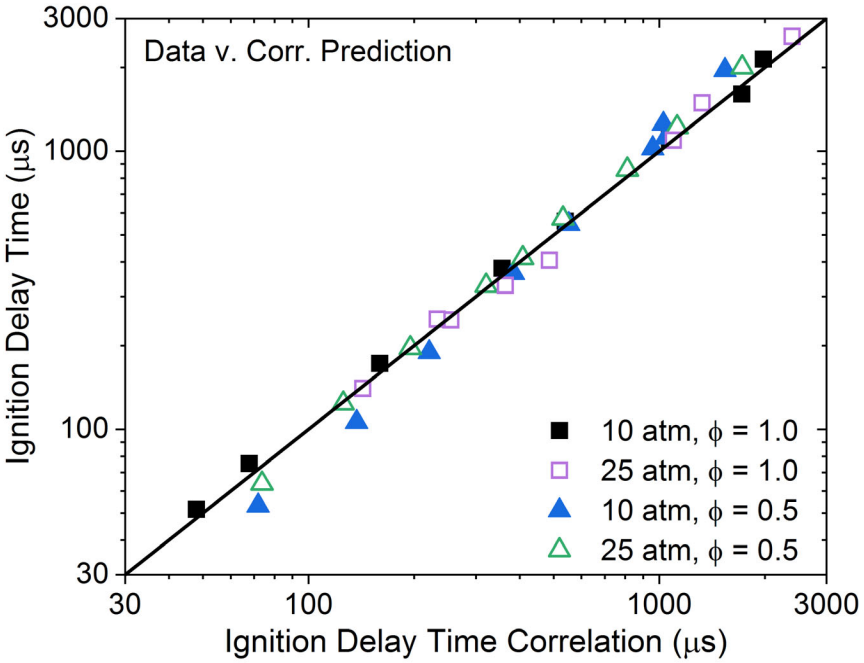


Figure S1: Comparison of ignition delay time measurements to the predictions of the correlation presented in the manuscript.