Supporting information to article "Shock Tube Study of Ignition Delay Characteristics of *n*-Nonane and *n*-Undecane in Argon"

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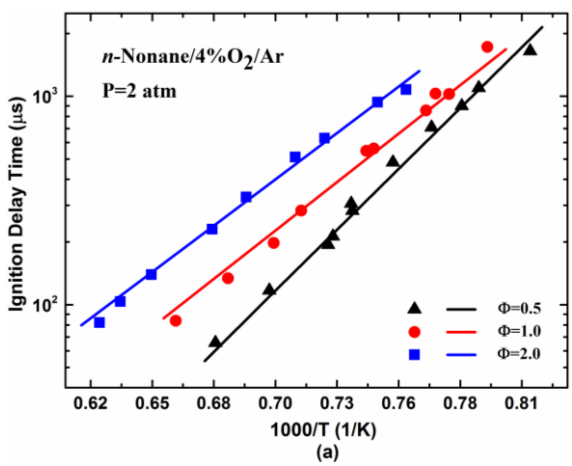
Table S1. Measured Ignition Delay Time for *n*-Nonane and *n*-Undecane at Different Equivalence Ratios

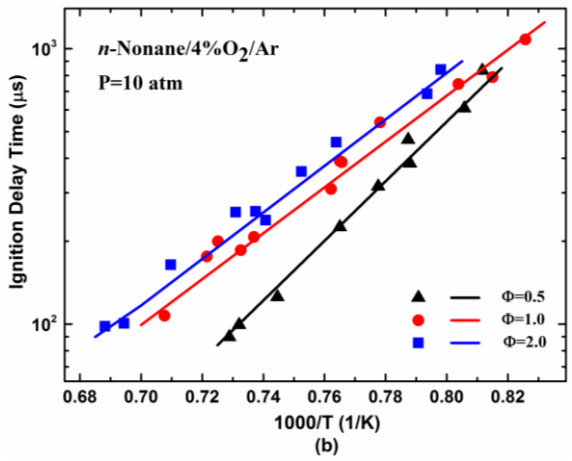
n-Nonane/4% O_2/Ar								
Φ=0.5			Φ=1.0			Φ=2.0		
T_5 (K)	P_5 (atm)	τ_{ign} (μs)	T_5 (K)	P_5 (atm)	τ_{ign} (μs)	T_5 (K)	P_5 (atm)	τ_{ign} (μs)
1229	2.22	1482	1258	2.05	1680	1317	2	1076
1264	2.1	1044	1285	2.09	980	1339	2.04	918
1276	2.11	850	1295	2.12	970	1382	2.06	610
1298	2.11	671	1302	2.15	795	1407	2.04	500
1327	2.11	456	1342	2.41	466	1451	2.05	320
1359	2.12	266	1348	2.3	476	1483	2	230
1360	2.18	280	1402	2.08	272	1544	1.99	140
1375	2.18	195	1426	2.03	195	1577	2.07	100
1379	2.06	188	1468	2.06	130	1600	2.05	80
1430	2.23	105	1519	2.12	79	1253	11.34	740
1480	2.15	61	1211	10.48	1030	1260	10.99	624
1232	11.03	755	1227	10.66	740	1309	10.37	441
1241	9.29	654	1244	10.49	709	1329	9.03	396
1269	10.22	375	1285	11.15	484	1350	9	265
1270	10.37	450	1306	10.9	355	1356	9.68	265
1286	10	316	1307	10.09	387	1368	9.3	274
1307	10	225	1312	10.12	306	1409	9.54	172
1343	10.27	122	1357	9.92	209	1440	10.05	100
1366	10.35	96	1365	10.26	181	1453	10.22	96
1372	10.81	83	1379	11.04	181	1199	20.34	846
1220	21.35	650	1386	10.67	165	1242	20.86	471
1243	20.9	398	1413	10.21	105	1250	20.24	424
1259	21.6	330	1195	19.99	758	1268	20.24	325
1275	20.12	230	1222	20.69	610	1306	20.88	228
1308	20.7	150	1245	21.14	463	1340	21.22	155
1321	20.4	121	1268	19.88	339	1358	20.88	130
1328	20.14	111	1317	21.21	195	1397	20.87	93
1374	21.02	64	1335	20.1	169			
			1363	21.14	114			
			1369	21.06	93			
n-Undecane/4% O_2/Ar								
Φ=0.5			Φ=1.0			Φ=2.0		
T_5 (K)	P_5 (atm)	τ_{ign} (μs)	T_5 (K)	P_5 (atm)	τ_{ign} (μs)	T_5 (K)	P_5 (atm)	τ_{ign} (μs)
1227	2.56	1355	1252	2.56	1175	1311	2.46	1280
1250	2.57	1055	1305	2.7	665	1338	2.57	995
1261	2.48	900	1332	2.65	556	1360	2.51	730
1296	2.47	580	1333	2.56	468	1436	2.6	388
1330	2.52	345	1373	2.57	278	1440	2.6	368
1351	2.6	205	1385	2.59	244	1444	2.49	366
1362	2.66	209	1392	2.62	283	1487	2.52	260
1402	2.49	129	1433	2.55	156	1493	2.53	220
1440	2.56	85	1433	2.44	134	1530	2.55	155

1206	10.55	900	1463	2.43	95	1572	2.7	109
1226	10.41	500	1467	2.51	88	1202	9.63	1550
1230	10.06	650	1218	10.27	767	1223	9.78	1039
1258	10.41	380	1250	9.2	636	1224	9.8	1035
1284	10.32	285	1264	10.49	480	1271	9.76	597
1303	10.36	200	1281	10.36	390	1317	10.38	390
1325	10.17	170	1300	10.94	256	1329	9.86	336
1346	10.29	104	1351	10.29	149	1357	10.37	266
1370	10.58	72	1365	10.67	115	1392	10.33	175
1377	10.35	66	1384	9.97	99	1414	9.85	140
1185	22.22	750	1168	20.63	920	1419	9.96	138
1201	21.49	580	1202	20.65	640	1449	9.99	101
1221	20.78	420	1234	19.58	353	1203	20.15	830
1243	20.73	350	1236	19.54	367	1239	20.34	568
1243	19.51	310	1267	20.76	265	1265	20.15	410
1253	20.75	276	1283	19.94	220	1316	19	215
1291	20.91	180	1332	20.6	121	1340	19.61	140
1328	20.95	90	1348	20.6	108	1370	20.2	110
1359	20.12	66	1408	21.14	51	1387	20.03	87
1390	20.56	45						

Table S2. Measured Ignition Delay Time for *n*-Heptane at Φ=2.0

n-Heptane/4%O_2/Ar		
Φ=2.0		
T_5 (K)	P_5 (atm)	τ_{ign} (μs)
1320	2.09	1240
1348	2.05	1015
1403	2.00	510
1430	1.99	400
1521	1.99	175
1500	1.85	244
1541	1.94	147





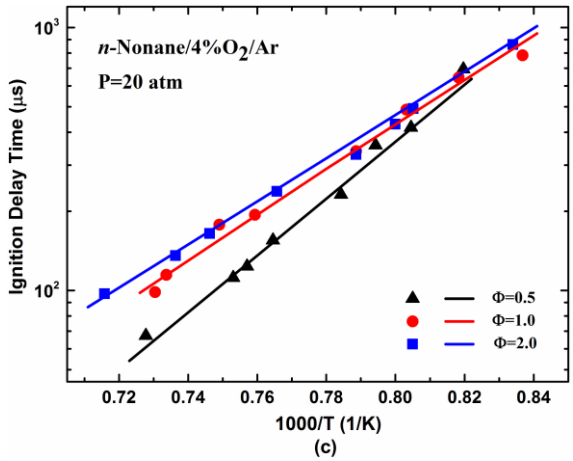


Figure S1. Effect of equivalence ratio on ignition delay time of *n*-undecane/O_2/Ar at 2 atm (a), 10 atm (b), and 20 atm (c)

Table S3. Correlation Parameters for *n*-Alkanes Ignition Time at Φ=0.5 Using $\tau_{ign} = AP^n e^{E_a/RT}$ Expression

Fuel	A	E_A (kcal·mol^{-1})	r^2	Refernces
n-Butane	1.02×10^{-5}	46.94	0.995	Horning et al.[32]
n-Pentane	6.75×10^{-6}	47.88	0.971	Davidson et al.[18]
n-Hexane	2.05×10^{-6}	49.88	0.992	Davidson et al.[18]
n-Heptane	7.24×10^{-6}	47.70	0.947	Horning et al.[32]
n-Octane	2.01×10^{-6}	49.64	0.996	Davidson et al.[18]
n-Nonane	5.26×10^{-6}	47.94	0.989	Current data
n-Undecane	5.80×10^{-6}	47.45	0.994	Current data

Table S4. Correlation Parameters for *n*-Alkanes Ignition Time at Φ=1.0 Using $\tau_{ign} = AP^n e^{E_a/RT}$ Expression

Fuel	A	E_A (kcal·mol^{-1})	r^2	Refernces
Propane	4.45×10^{-5}	45.23	0.994	Horning et al.[32]

n-Butane	5.30×10^{-5}	44.17	0.985	Horning et al.[32]
n-Pentane	6.12×10^{-5}	43.34	0.971	Davidson et al.[18]
n-Hexane	1.32×10^{-4}	41.20	0.990	Davidson et al.[18]
n-Heptane	1.86×10^{-4}	48.12	0.985	Horning et al.[32]
n-Octane	6.52×10^{-5}	42.86	0.975	Davidson et al.[18]
n-Nonane	4.79×10^{-5}	43.23	0.991	Current data
n-Decane	4.55×10^{-6}	50.24	0.982	Horning et al.[32]
n-Undecane	2.12×10^{-5}	44.55	0.977	Current data