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Table 5. The reaction set

Number	Reaction											$\Delta\nu$	A	n	E	Reference
1	H	+	H	+	H_2	$\longrightarrow$	H_2	+	H_2			-1	8.72E-33	-0.60	0.0	CBT
2	H	+	H_2			$\longrightarrow$	H	+	H	+	H	1	3.75E-08	-0.50	53280.0	R95
3	H	+	H	+	H	$\longrightarrow$	H	+	H_2			-1	1.83E-31	-1.00	0.0	CBT
4	H	+	C_2			$\longrightarrow$	C	+	CH			0	4.67E-10	0.50	30450.0	R95
5	H	+	CH			$\leftrightarrow$	C	+	H	+	H	1	6.00E-09	0.00	40200.0	R95
6	H	+	CH			$\longrightarrow$	C	+	H_2			0	4.98E-11	0.00	0.0	R95
7	H	+	C_2H_2			$\longrightarrow$	C_2H	+	H_2			0	1.00E-10	0.00	14000.0	Baulch92
8	H	+	CH_2			$\longrightarrow$	H_2	+	CH			0	2.70E-10	0.00	0.0	R95
9	H	+	CH_3			$\longrightarrow$	H_2	+	CH_2			0	1.00E-10	0.00	7600.0	R95
10	H	+	H_2S			$\longrightarrow$	HS	+	H_2			0	3.08E-12	2.10	352.0	R95
11	H	+	HS			$\longrightarrow$	H_2	+	S			0	2.50E-11	0.00	0.0	R95
12	H	+	CH_4			$\longrightarrow$	H_2	+	CH_3			0	5.82E-13	3.00	4045.0	R95
13	H	+	NH			$\longrightarrow$	N	+	H_2			0	1.73E-11	0.50	2400.0	R95
14	H	+	HCN			$\longrightarrow$	CN	+	H_2			0	6.31E-10	0.00	12400.0	R95
15	H	+	NS			$\longrightarrow$	HS	+	N			0	7.27E-11	0.50	15700.0	R95
16	H	+	NS			$\longrightarrow$	NH	+	S			0	7.27E-11	0.50	20735.0	R95
17	H	+	S_2			$\longrightarrow$	HS	+	S			0	2.25E-10	0.50	8355.0	R95
18	H	+	NH_2			$\longrightarrow$	H_2	+	NH			0	5.25E-12	0.80	2200.0	R95
19	H	+	N_2			$\longrightarrow$	N	+	NH			0	8.59E-11	0.50	71450.0	NIST
20	H	+	SiH			$\leftrightarrow$	Si	+	H_2			0	2.00E-11	0.00	0.0	Mackay
21	H	+	SiH_2			$\leftrightarrow$	SiH	+	H_2			0	2.00E-11	0.00	0.0	Mackay
22	H	+	SiH_3			$\leftrightarrow$	SiH_2	+	H_2			0	2.00E-11	0.00	0.0	Mackay
23	H	+	SiH_4			$\leftrightarrow$	SiH_3	+	H_2			0	6.80E-12	0.00	717.0	Mackay
24	H	+	OH			$\longrightarrow$	H_2	+	O			0	7.00E-14	2.80	1950.0	R95
25	H	+	OH			$\leftrightarrow$	O	+	H	+	H	1	6.00E-09	0.00	50900.0	R95
26	H	+	H_2O			$\longrightarrow$	OH	+	H_2			0	6.83E-12	1.60	9720.0	R95
27	H	+	H_2O			$\leftrightarrow$	OH	+	H	+	H	1	5.80E-09	0.00	52900.0	R95
28	H	+	CO			$\longrightarrow$	C	+	OH			0	1.10E-10	0.50	77700.0	R95
29	H	+	HCO			$\leftrightarrow$	CO	+	H_2			0	1.50E-10	0.00	0.0	R95
30	H	+	NO			$\longrightarrow$	NH	+	O			0	9.29E-10	-0.10	35220.0	R95
31	H	+	NO			$\longrightarrow$	OH	+	N			0	2.82E-10	0.00	24560.0	R95
32	H	+	H_2CO			$\longrightarrow$	HCO	+	H_2			0	1.50E-11	1.10	1650.0	R95
33	H	+	O_2			$\longrightarrow$	O	+	OH			0	3.30E-10	0.00	8460.0	R95
34	H	+	O_2			$\leftrightarrow$	O	+	O	+	H	1	6.00E-09	0.00	52300.0	R95
35	H	+	CO_2			$\longrightarrow$	OH	+	CO			0	2.50E-10	0.00	13300.0	R95
36	H	+	SO			$\longrightarrow$	HS	+	O			0	1.73E-11	0.50	19930.0	R95
37	H	+	SO			$\longrightarrow$	OH	+	S			0	5.90E-10	-0.30	11100.0	R95
38	H	+	C_4H_2			$\longrightarrow$	C_4H	+	H_2			0	2.62E-11	0.00	704.0	NIST
39	H	+	C_2H			$\leftrightarrow$	C_2	+	H_2			0	6.00E-11	0.00	14223.0	NIST
40	H	+	NH_3			$\longrightarrow$	NH_2	+	H_2			0	7.80E-12	2.40	4990.0	R95
41	H_2	+	H_2			$\longrightarrow$	H	+	H	+	H_2	1	1.50E-09	0.00	48350.0	R95
42	H_2	+	C			$\longrightarrow$	CH	+	H			0	6.64E-10	0.00	11700.0	R95
43	H_2	+	C_2H			$\longrightarrow$	C_2H_2	+	H			0	1.83E-11	0.00	1442.0	CBT
44	H_2	+	CH			$\longrightarrow$	CH_2	+	H			0	2.38E-10	0.00	1760.0	R95
45	H_2	+	CH			$\leftrightarrow$	C	+	H	+	H_2	1	6.00E-09	0.00	40200.0	R95
46	H_2	+	CH_2			$\longrightarrow$	CH_3	+	H			0	5.18E-11	0.20	6400.0	R95
47	H_2	+	HS			$\longrightarrow$	H_2S	+	H			0	6.52E-12	0.10	8050.0	R95
48	H_2	+	S			$\longrightarrow$	H	+	HS			0	1.03E-10	0.10	9620.0	R95
49	H_2	+	CH_3			$\longrightarrow$	H	+	CH_4			0	6.86E-14	2.70	4740.0	R95
50	H_2	+	N			$\longrightarrow$	H	+	NH			0	4.65E-10	0.50	16606.0	R95

Table 5. – *continued*

51	H_2	+	CN	$\longrightarrow$	H	+	HCN			0	3.53E-13	3.30	756.0	R95
52	H_2	+	NH	$\longrightarrow$	NH_2	+	H			0	5.96E-11	0.00	7782.0	R95
53	H_2	+	N_2	$\longrightarrow$	NH	+	NH			0	0.			
54	H_2	+	NH_2	$\longrightarrow$	H	+	NH_3			0	2.09E-12	0.00	4277.0	R95
55	H_2	+	OH	$\longrightarrow$	H	+	H_2O			0	1.55E-12	1.60	1660.0	R95
56	H_2	+	OH	$\leftrightarrow$	O	+	H	+	H_2	1	6.00E-09	0.00	50900.0	R95
57	H_2	+	H_2O	$\leftrightarrow$	OH	+	H	+	H_2	1	5.80E-09	0.00	52900.0	R95
58	H_2	+	O_2	$\leftrightarrow$	OH	+	OH			0	3.16E-10	0.00	21890.0	R95
59	H_2	+	O_2	$\leftrightarrow$	O	+	O	+	H_2	1	6.00E-09	0.00	52300.0	R95
60	H_2	+	CO_2	$\leftrightarrow$	H_2O	+	CO			0	2.90E-14	0.50	7550.0	R95
61	H_2	+	HCO	$\longrightarrow$	H	+	H_2CO			0	2.66E-13	2.00	8972.0	NIST
62	H_2	+	C_4H	$\longrightarrow$	C_4H_2	+	H			0	1.83E-11	0.00	1442.0	CBT
63	H_2	+	O	$\longrightarrow$	H	+	OH			0	3.43E-13	2.70	3160.0	R95
64	C	+	CH	$\longrightarrow$	C_2	+	H			0	1.73E-11	0.50	0.0	R95
65	C	+	CH_2	$\leftrightarrow$	H	+	C_2H			0	5.00E-11	0.50	0.0	R95
66	C	+	HS	$\longrightarrow$	S	+	CH			0	1.20E-11	0.60	5880.0	R95
67	C	+	HS	$\leftrightarrow$	CS	+	H			0	2.00E-11	0.00	0.0	R95
68	C	+	CS	$\longrightarrow$	C_2	+	S			0	1.44E-11	0.50	20435.0	R95
69	C	+	NH	$\longrightarrow$	CH	+	N			0	1.73E-11	0.50	4000.0	R95
70	C	+	NH	$\leftrightarrow$	CN	+	H			0	1.10E-10	0.50	0.0	R95
71	C	+	CN	$\longrightarrow$	C_2	+	N			0	4.98E-10	0.00	18116.0	R95
72	C	+	N_2	$\longrightarrow$	CN	+	N			0	1.05E-10	0.00	23160.0	R95
73	C	+	SiH	$\leftrightarrow$	SiC	+	H			0	5.00E-11	0.50	0.0	R95
74	C	+	SiH_2	$\leftrightarrow$	HCSi	+	H			0	5.00E-11	0.50	0.0	R95
75	C	+	SiH_3	$\leftrightarrow$	$SiCH_2$	+	H			0	5.00E-11	0.50	0.0	R95
76	C	+	S_2	$\leftrightarrow$	CS	+	S			0	1.73E-11	0.50	0.0	R95
77	C	+	NS	$\longrightarrow$	CN	+	S			0	2.00E-11	0.50	0.0	R95
78	C	+	NS	$\longrightarrow$	CS	+	N			0	1.73E-11	0.50	4000.0	R95
79	C	+	OH	$\longrightarrow$	H	+	CO			0	1.10E-10	0.50	0.0	R95
80	C	+	OH	$\longrightarrow$	CH	+	O			0	2.25E-11	0.50	14800.0	R95
81	C	+	CO	$\longrightarrow$	C_2	+	O			0	2.94E-11	0.50	58025.0	R95
82	C	+	HCO	$\leftrightarrow$	CH	+	CO			0	1.00E-11	0.00	0.0	R95
83	C	+	NO	$\longrightarrow$	CN	+	O			0	4.80E-11	0.00	0.0	R95
84	C	+	NO	$\leftrightarrow$	CO	+	N			0	1.73E-11	0.50	4000.0	R95
85	C	+	O_2	$\leftrightarrow$	CO	+	O			0	3.30E-11	0.00	0.0	R95
86	C	+	SO	$\leftrightarrow$	CO	+	S			0	7.20E-11	0.00	0.0	R95
87	C	+	SO	$\longrightarrow$	CS	+	O			0	1.70E-10	0.00	0.0	R95
88	C	+	C_2H	$\leftrightarrow$	C_3	+	H			0	1.72E-11	0.50	0.0	ER95 (C+CH=C_2+H)
89	C	+	C_2H_2	$\leftrightarrow$	C_3H	+	H			0	2.00E-10	0.00	0.0	R95
90	C	+	CH_2	$\leftrightarrow$	CH	+	CH			0	2.69E-12	0.00	23500.0	NIST
91	C	+	NH_2	$\leftrightarrow$	NH	+	CH			0	9.62E-13	0.00	10517.0	NIST
92	C	+	H_2O	$\leftrightarrow$	CH	+	OH			0	1.20E-12	0.00	19776.0	NIST
93	O	+	NH	$\longrightarrow$	H	+	NO			0	1.16E-10	0.00	0.0	R95
94	O	+	OH	$\longrightarrow$	H	+	O_2			0	4.34E-11	-0.50	30.0	R95
95	O	+	HS	$\longrightarrow$	H	+	SO			0	2.32E-10	0.00	0.0	R95
96	O	+	CH	$\longrightarrow$	C	+	OH			0	2.52E-11	0.00	2381.0	R95
97	O	+	C_2	$\longrightarrow$	C	+	CO			0	5.00E-11	0.50	0.0	R95
98	O	+	CN	$\longrightarrow$	C	+	NO			0	3.81E-11	0.50	14545.0	R95
99	O	+	CS	$\longrightarrow$	C	+	SO			0	4.68E-11	0.50	28940.0	R95
100	O	+	NH	$\longrightarrow$	N	+	OH			0	1.16E-11	0.00	0.0	R95
101	O	+	N_2	$\longrightarrow$	N	+	NO			0	1.88E-12	1.00	20820.0	R95
102	O	+	NO	$\longrightarrow$	N	+	O_2			0	1.88E-12	1.00	20820.0	R95
103	O	+	NS	$\longrightarrow$	N	+	SO			0	1.73E-11	0.50	4000.0	R95
104	O	+	NH_2	$\longrightarrow$	NH	+	OH			0	1.16E-11	0.00	0.0	R95
105	O	+	CH	$\leftrightarrow$	CO	+	H			0	6.60E-11	0.00	0.0	R95
106	O	+	CH_2	$\leftrightarrow$	CH	+	OH			0	4.98E-10	0.00	6000.0	R95

Table 5. – *continued*

107	O	+	CH_2	↔	H	+	HCO			0	1.44E-11	0.50	2000.0	R95
108	O	+	CH_2	↔	CO	+	H	+	H	1	2.00E-10	0.00	0.0	R95
109	O	+	CH_3	↔	H_2CO	+	H			0	1.40E-10	0.00	0.0	R95
110	O	+	CH_4	⟶	CH_3	+	OH			0	8.32E-12	1.60	4270.0	R95
111	O	+	NH_3	⟶	OH	+	NH_2			0	1.60E-11	0.00	3670.0	R95
112	O	+	H_2O	⟶	OH	+	OH			0	1.85E-11	1.00	8571.0	R95
113	O	+	C_2H	↔	CO	+	CH			0	1.70E-11	0.00	0.0	R95
114	O	+	CN	⟶	CO	+	N			0	1.70E-11	0.00	50.0	R95
115	O	+	C_2H_2	↔	C_2H	+	OH			0	5.30E-09	0.00	8520.0	R95
116	O	+	C_2H_2	↔	CH_2	+	CO			0	3.49E-12	1.50	850.0	R95
117	O	+	HCN	⟶	OH	+	CN			0	3.66E-13	1.60	13386.0	R95
118	O	+	SiH	↔	SiO	+	H			0	4.00E-15	0.50	0.0	R95
119	O	+	HCO	↔	CO_2	+	H			0	5.00E-11	0.00	0.0	R95
120	O	+	HCO	↔	OH	+	CO			0	5.00E-11	0.00	0.0	R95
121	O	+	SiH_2	↔	SiO	+	H	+	H	1	5.00E-11	0.50	0.0	R95
122	O	+	H_2CO	↔	HCO	+	OH			0	1.78E-11	0.60	1390.0	R95
123	O	+	HS	⟶	OH	+	S			0	1.00E-12	0.00	4000.0	R95
124	O	+	H_2S	↔	HS	+	OH			0	1.40E-11	0.00	1920.0	R95
125	O	+	C_3	↔	CO	+	C_2			0	5.00E-11	0.50	0.0	R95
126	O	+	C_3H	↔	CO	+	C_2H			0	1.00E-10	0.00	250.0	R95
127	O	+	SiC	↔	SiO	+	C			0	2.50E-11	0.50	0.0	R95
128	O	+	SiC	↔	Si	+	CO			0	2.50E-11	0.50	0.0	R95
129	O	+	HCSi	↔	SiO	+	CH			0	4.00E-11	0.00	0.0	R95
130	O	+	SiN	↔	SiO	+	N			0	2.50E-11	0.50	0.0	R95
131	O	+	SiN	⟶	NO	+	Si			0	2.50E-11	0.50	0.0	R95
132	O	+	CS	↔	CO	+	S			0	2.70E-10	0.00	760.0	R95
133	O	+	CO_2	⟶	CO	+	O_2			0	2.80E-11	0.00	26500.0	R95
134	O	+	NS	⟶	NO	+	S			0	5.00E-11	0.50	0.0	R95
135	O	+	SO	⟶	S	+	O_2			0	6.60E-13	0.00	2760.0	R95
136	O	+	C_4H	↔	CO	+	C_3H			0	1.00E-10	0.00	250.0	R95
137	O	+	SiC_2	↔	SiC	+	CO			0	4.00E-11	0.00	0.0	R95
138	O	+	S_2	⟶	SO	+	S			0	1.73E-11	0.50	0.0	R95
139	O	+	SiH_4	↔	OH	+	SiH_3			0	6.64E-12	0.00	800.0	NIST
140	O	+	CH_3	↔	CO	+	H_2	+	H	1	5.60E-11	0.00	0.0	NIST
141	O	+	C_4H_2	↔	C_3H_2	+	CO			0	4.48E-11	0.00	866.0	NIST
142	O	+	NH_2	↔	NO	+	H_2			0	1.16E-11	0.00	0.0	NIST
143	O	+	HCN	↔	NH	+	CO			0	8.88E-13	1.20	3850.0	NIST
144	O	+	H_2CO	↔	CO	+	OH	+	H	1	1.00E-10	0.00	0.0	NIST
145	N	+	NH	⟶	N_2	+	H			0	4.98E-11	0.00	0.0	R95
146	N	+	HS	⟶	H	+	NS			0	1.73E-11	0.50	0.0	R95
147	N	+	C_2	⟶	C	+	CN			0	5.00E-11	0.50	0.0	R95
148	N	+	CN	⟶	C	+	N_2			0	3.00E-10	0.00	0.0	R95
149	N	+	HCS	↔	HCN	+	S			0	1.70E-11	0.00	0.0	R95
150	N	+	CH	↔	CN	+	H			0	2.10E-11	0.50	0.0	R95
151	N	+	CH_2	↔	HCN	+	H			0	2.00E-11	0.50	0.0	R95
152	N	+	CH_2	↔	NH	+	CH			0	1.00E-12	0.00	20400.0	R95
153	N	+	CH_3	↔	HCN	+	H_2			0	1.30E-11	0.50	0.0	R95
154	N	+	SiH	↔	SiN	+	H			0	5.00E-11	0.50	0.0	R95
155	N	+	SiH_2	↔	HNSi	+	H			0	5.00E-11	0.50	0.0	R95
156	N	+	SiH_3	↔	HNSi	+	H_2			0	5.00E-11	0.50	0.0	R95
157	N	+	HS	⟶	NH	+	S			0	1.73E-11	0.50	9060.0	R95
158	N	+	SiC	↔	SiN	+	C			0	2.50E-11	0.50	0.0	R95
159	N	+	SiC	↔	CN	+	Si			0	2.50E-11	0.50	0.0	R95
160	N	+	CS	⟶	CN	+	S			0	3.80E-11	0.50	1160.0	R95
161	N	+	NS	⟶	N_2	+	S			0	1.73E-11	0.50	0.0	R95

Table 5. – *continued*

162	N	+	OH	$\longrightarrow$	H	+	NO			0	5.32E-11	-0.30	0.0	R95
163	N	+	OH	$\longrightarrow$	O	+	NH			0	1.88E-11	0.10	10700.0	R95
164	N	+	HCO	$\leftrightarrow$	NH	+	CO			0	5.71E-12	0.50	1000.0	R95
165	N	+	HCO	$\leftrightarrow$	O	+	HCN			0	1.70E-10	0.00	0.0	R95
166	N	+	NO	$\longrightarrow$	O	+	N_2			0	3.10E-11	0.00	0.0	R95
167	N	+	O_2	$\longrightarrow$	NO	+	O			0	1.50E-11	0.00	3750.0	R95
168	N	+	CO_2	$\leftrightarrow$	NO	+	CO			0	3.20E-13	0.00	1700.0	R95
169	N	+	SO	$\longrightarrow$	NO	+	S			0	1.73E-11	0.50	750.0	R95
170	N	+	SO	$\longrightarrow$	O	+	NS			0	4.68E-11	0.50	8254.0	R95
171	N	+	H_2O	$\longrightarrow$	OH	+	NH			0	6.03E-11	1.20	19300.0	NIST
172	N	+	CO	$\longrightarrow$	O	+	CN			0	3.83E-09	0.00	35990.0	NIST
173	N	+	CH_4	$\leftrightarrow$	HCN	+	H	+	H_2	1	2.50E-11	0.00	0.0	NIST (300K ONLY)
174	N	+	NH_2	$\leftrightarrow$	NH	+	NH			0	2.99E-13	0.00	7598.0	NIST
175	N	+	S_2	$\leftrightarrow$	NS	+	S			0	1.75E-11	0.50	3750.0	R95
176	Si	+	HS	$\leftrightarrow$	SiS	+	H			0	2.00E-11	0.50	0.0	ER95 (C+HS=H+CS)
177	Si	+	CH_2	$\leftrightarrow$	HCSi	+	H			0	4.00E-11	0.50	0.0	R95
178	Si	+	CS	$\leftrightarrow$	SiC	+	S			0	1.44E-11	0.50	20435.0	ER95 (C+CS=S+C_2)
179	Si	+	CH	$\leftrightarrow$	SiC	+	H			0	1.73E-11	0.50	0.0	ER95 (C+CH=C_2+H)
180	Si	+	C_2H	$\leftrightarrow$	SiC_2	+	H			0	1.73E-11	0.50	0.0	ER95 (C+CH=C_2+H)
181	Si	+	NS	$\leftrightarrow$	S	+	SiN			0	2.00E-11	0.50	0.0	ER95 (C+NS=CN+S)
182	Si	+	CH_3	$\leftrightarrow$	$SiCH_2$	+	H			0	4.00E-11	0.50	0.0	R95
183	Si	+	S_2	$\leftrightarrow$	SiS	+	S			0	2.70E-10	0.50	0.0	ER95 (C+S_2=CS+S)
184	Si	+	NO	$\longrightarrow$	O	+	SiN			0	4.80E-11	0.00	0.0	ER95 (C+NO=CO+N)
185	Si	+	OH	$\leftrightarrow$	SiO	+	H			0	2.00E-11	0.50	0.0	R95
186	Si	+	O_2	$\leftrightarrow$	SiO	+	O			0	2.70E-10	0.50	0.0	R95
187	Si	+	CO_2	$\leftrightarrow$	SiO	+	CO			0	1.10E-11	0.00	0.0	NIST (300K ONLY)
188	S	+	HS	$\longrightarrow$	H	+	S_2			0	2.32E-10	0.00	0.0	ER95 (O+HS=H=SO)
189	S	+	NH	$\longrightarrow$	H	+	NS			0	1.73E-11	0.50	0.0	R95
190	S	+	SiC	$\leftrightarrow$	C	+	SiS			0	2.50E-11	0.50	0.0	ER95 (O+SiC=SiO+C)
191	S	+	CH	$\longrightarrow$	HS	+	C			0	1.73E-11	0.50	4000.0	R95
192	S	+	CH	$\leftrightarrow$	CS	+	H			0	1.10E-12	0.00	0.0	R95
193	S	+	HCSi	$\leftrightarrow$	SiS	+	CH			0	4.00E-11	0.00	0.0	ER95 (O+HCSi=SiO+CH)
194	S	+	C_2	$\longrightarrow$	C	+	CS			0	1.73E-11	0.50	0.0	ER95 (O+C_2=CO+C)
195	S	+	C_3	$\leftrightarrow$	C_2	+	CS			0	5.00E-11	0.50	0.0	ER95 (O+C_3=CO+C_2)
196	S	+	SiC_2	$\leftrightarrow$	SiC	+	CS			0	4.00E-11	0.00	0.0	ER95 (O+SiC_2=SiC+CO)
197	S	+	CN	$\longrightarrow$	C	+	NS			0	5.71E-11	0.50	32010.0	R95
198	S	+	NH	$\longrightarrow$	N	+	HS			0	1.73E-11	0.50	4000.0	R95
199	S	+	CN	$\longrightarrow$	N	+	CS			0	1.73E-11	0.50	0.0	R95
200	S	+	N_2	$\longrightarrow$	N	+	NS			0	1.88E-12	1.00	20820.0	ER95 (O+N_2=NO+N)
201	S	+	NH_2	$\leftrightarrow$	NH	+	HS			0	1.16E-11	0.00	0.0	ER95 (O+NH_2=NO+OH)
202	S	+	CH_4	$\leftrightarrow$	CH_3	+	HS			0	8.32E-12	1.60	4270.0	ER95 (O+CH_4=CH_3+OH)
203	S	+	NH_3	$\leftrightarrow$	HS	+	NH_2			0	1.60E-11	0.00	3672.0	ER95 (O+NH_3=OH+NH_2)
204	S	+	C_2H_2	$\leftrightarrow$	C_2H	+	HS			0	5.30E-09	0.00	8520.0	ER95 (O+C_2H_2=C_2H+OH)
205	S	+	HCN	$\leftrightarrow$	HS	+	CN			0	3.65E-11	1.60	13386.0	ER95 (O+HCN=OH+CN)
206	S	+	SiH	$\leftrightarrow$	SiS	+	H			0	1.10E-12	0.50	0.0	ER95 (O+SiH=SiO+H)
207	S	+	SiH_2	$\leftrightarrow$	SiS	+	H	+	H	1	5.00E-11	0.50	0.0	ER95 (O+SiH_2=SiO+H+H)
208	S	+	C_3H	$\leftrightarrow$	CS	+	C_2H			0	1.00E-10	0.00	250.0	ER95 (O+C_3H=CO+C_2H)
209	S	+	SiN	$\leftrightarrow$	SiS	+	N			0	2.50E-11	0.50	0.0	ER95 (O+SiN=SiO+N)
210	S	+	CH_2	$\leftrightarrow$	HCS	+	H			0	3.98E-11	0.50	0.0	R95
211	S	+	OH	$\longrightarrow$	H	+	SO			0	6.60E-11	0.00	0.0	R95
212	S	+	OH	$\longrightarrow$	O	+	HS			0	6.60E-11	0.00	0.0	R95
213	S	+	NO	$\longrightarrow$	O	+	NS			0	2.94E-11	0.50	17465.0	R95
214	S	+	O_2	$\longrightarrow$	O	+	SO			0	2.28E-12	0.50	0.0	R95
215	S	+	SO	$\longrightarrow$	O	+	S_2			0	1.73E-11	0.50	11500.0	R95

Table 5. – *continued*

216	S	+	NO	$\longrightarrow$	N	+	SO			0	1.14E-11	0.50	17260.0	R95
217	S	+	N_2	$\leftrightarrow$	S	+	NS			0	1.75E-11	0.50	3750.0	R95
218	CH	+	N	$\longrightarrow$	C	+	NH			0	2.94E-11	0.50	6995.0	R95
219	CH	+	N_2	$\leftrightarrow$	HCN	+	N			0	1.00E-12	0.00	7000.0	R95
220	CH	+	CH_4	$\leftrightarrow$	CH_2	+	CH_3			0	2.28E-11	0.70	3000.0	R95
221	CH	+	HCO	$\leftrightarrow$	CH_2	+	CO			0	2.87E-12	0.70	500.0	R95
222	CH	+	O_2	$\leftrightarrow$	HCO	+	O			0	1.44E-11	0.50	3000.0	R95
223	CH	+	CO_2	$\leftrightarrow$	HCO	+	CO			0	2.94E-13	0.50	3000.0	R95
224	CH	+	O_2	$\leftrightarrow$	CO	+	OH			0	8.00E-11	0.00	0.0	NIST
225	CH	+	NO	$\leftrightarrow$	CO	+	NH			0	2.50E-10	0.00	0.0	NIST (300K ONLY)
226	CH	+	OH	$\leftrightarrow$	HCO	+	H			0	1.44E-11	0.50	5000.0	R95
227	CH_2	+	CH_2	$\leftrightarrow$	C_2H_2	+	H	+	H	1	2.00E-10	0.00	400.0	R95
228	CH_2	+	CH_2	$\leftrightarrow$	CH	+	CH_3			0	4.00E-11	0.00	5000.0	R95
229	CH_3	+	CH_3	$\leftrightarrow$	CH_2	+	CH_4			0	7.13E-12	0.00	5050.0	R95
230	CH_2	+	HCO	$\leftrightarrow$	CH_3	+	CO			0	3.00E-11	0.00	0.0	R95
231	CH_2	+	H_2CO	$\leftrightarrow$	CH_3	+	HCO			0	3.30E-13	0.00	3270.0	R95
232	CH_2	+	O_2	$\leftrightarrow$	CO_2	+	H	+	H	1	3.73E-10	-3.30	1442.0	NIST
233	CH_2	+	CO_2	$\leftrightarrow$	H_2CO	+	CO			0	3.90E-14	0.00	0.0	NIST
234	CH_2	+	N_2	$\leftrightarrow$	HCN	+	NH			0	8.00E-12	0.00	18000.0	NIST
235	CH_2	+	O_2	$\leftrightarrow$	CO_2	+	H_2			0	2.99E-11	-3.30	1443.0	NIST
236	CH_2	+	O_2	$\leftrightarrow$	H_2O	+	CO			0	2.54E-10	-3.30	1443.0	NIST
237	CH_2	+	NO	$\leftrightarrow$	H_2CO	+	N			0	2.70E-12	0.00	3500.0	R95
238	CH_3	+	O_2	$\leftrightarrow$	HCO	+	H_2O			0	1.66E-12	0.00	0.0	NIST
239	CH_3	+	OH	$\leftrightarrow$	H_2CO	+	H_2			0	2.59E-13	-0.50	5440.0	NIST
240	CH_3	+	NO	$\leftrightarrow$	HCN	+	H_2O			0	1.50E-12	0.00	7540.0	NIST
241	CH_3	+	NH_3	$\longrightarrow$	NH_2	+	CH_4			0	9.55E-14	0.00	4890.0	R95
242	CH_3	+	H_2O	$\leftrightarrow$	CH_4	+	OH			0	1.20E-14	2.90	7480.0	R95
243	CH_3	+	HCO	$\leftrightarrow$	CH_4	+	CO			0	2.00E-10	0.00	0.0	R95
244	CH_3	+	H_2CO	$\longrightarrow$	CH_4	+	HCO			0	6.80E-12	0.00	4450.0	R95
245	CH_3	+	SiH_4	$\leftrightarrow$	CH_4	+	SiH_3			0	1.29E-12	0.00	3512.0	NIST
246	CH_3	+	C_2H_2	$\longrightarrow$	CH_4	+	C_2H			0	3.00E-13	0.00	8700.0	NIST
247	CH_3	+	O_2	$\leftrightarrow$	H_2CO	+	OH			0	5.50E-13	0.00	4500.0	R95
248	CH_4	+	HCO	$\longrightarrow$	CH_3	+	H_2CO			0	1.36E-11	2.90	11330.0	NIST
249	CH_4	+	C_2H	$\longrightarrow$	C_2H_2	+	CH_3			0	3.00E-12	0.00	250.0	NIST
250	OH	+	CH_3	$\longrightarrow$	O	+	CH_4			0	3.22E-13	2.20	2240.0	R95
251	OH	+	CO	$\longrightarrow$	H	+	CO_2			0	1.00E-13	0.00	0.0	R95
252	OH	+	NH_2	$\longrightarrow$	O	+	NH_3			0	3.13E-13	0.40	250.0	R95
253	OH	+	OH	$\longrightarrow$	O	+	H_2O			0	1.65E-12	1.10	50.0	R95
254	OH	+	CN	$\longrightarrow$	O	+	HCN			0	5.30E-14	0.00	1500.0	R95
255	OH	+	CH_2	$\leftrightarrow$	CH_3	+	O			0	1.44E-11	0.50	3000.0	R95
256	OH	+	CH_2	$\leftrightarrow$	H_2O	+	CH			0	1.44E-11	0.50	3000.0	R95
257	OH	+	CH_2	$\leftrightarrow$	H_2CO	+	H			0	3.00E-11	0.00	0.0	R95
258	OH	+	CH_3	$\leftrightarrow$	H_2O	+	CH_2			0	5.42E-11	0.70	1000.0	R95
259	OH	+	NH_3	$\longrightarrow$	NH_2	+	H_2O			0	7.55E-13	1.60	480.0	R95
260	OH	+	C_2H_2	$\leftrightarrow$	H_2O	+	C_2H			0	1.30E-13	2.70	6060.0	R95
261	OH	+	HCN	$\longrightarrow$	H_2O	+	CN			0	1.50E-11	0.00	5400.0	R95
262	OH	+	HCO	$\leftrightarrow$	H_2O	+	CO			0	1.70E-10	0.00	0.0	R95
263	OH	+	H_2CO	$\longrightarrow$	H_2O	+	HCO			0	4.98E-11	1.00	601.0	R95
264	OH	+	H_2S	$\leftrightarrow$	H_2O	+	HS			0	6.30E-12	0.00	80.0	R95
265	OH	+	C_2H	$\leftrightarrow$	CH_2	+	CO			0	3.00E-11	0.00	0.0	NIST
266	OH	+	HCN	$\leftrightarrow$	CO	+	NH_2			0	1.07E-13	0.00	5892.0	NIST
267	H_2O	+	CN	$\longrightarrow$	OH	+	HCN			0	1.25E-11	0.00	3719.0	NIST
268	H_2O	+	HCO	$\longrightarrow$	OH	+	H_2CO			0	8.54E-13	1.40	13146.0	NIST
269	NH	+	NH	$\longrightarrow$	H_2	+	N_2			0	1.70E-11	0.00	0.0	R95
270	NH	+	OH	$\longrightarrow$	H_2O	+	N			0	3.09E-12	1.20	0.0	R95
271	NH	+	OH	$\longrightarrow$	NH_2	+	O			0	2.93E-12	0.10	5800.0	R95

Table 5. – *continued*

272	NH	+	H_2O	↔	NH_2	+	OH			0	1.81E-12	1.60	14090.0	R95
273	NH	+	NO	↔	N_2	+	O	+	H	1	5.00E-11	0.00	0.0	R95
274	NH	+	O_2	↔	NO	+	OH			0	7.47E-11	0.00	5000.0	NIST
275	NH_2	+	NH_2	↔	NH_3	+	NH			0	8.30E-11	0.00	5052.0	NIST
276	NH_2	+	NO	↔	N_2	+	H_2O			0	1.70E-11	0.00	0.0	R95
277	NH_2	+	H_2O	⟶	OH	+	NH_3			0	2.09E-13	1.90	5720.0	NIST
278	NH_2	+	CH_4	⟶	CH_3	+	NH_3			0	1.77E-12	0.00	4716.0	NIST
279	SiH	+	NO	↔	SiO	+	H			0	2.50E-10	0.00	0.0	NIST (300k ONLY)
280	SiH_3	+	SiH_3	↔	SiH_2	+	SiH_4			0	2.99E-11	0.00	0.0	NIST
281	SiH_4	+	OH	↔	H_2O	+	SiH_3			0	1.44E-11	0.00	48.0	NIST
282	SiH_4			↔	SiH_2	+	H_2			1	6.68E+14	0.00	28680.0	NIST
283	HS	+	HS	↔	H_2S	+	S			0	1.30E-11	0.00	0.0	R95
284	C_2H	+	C_2H_2	↔	H	+	C_4H_2			0	6.64E-11	0.00	0.0	CBT
285	C_2H	+	O_2	↔	HCO	+	CO			0	4.00E-12	0.00	0.0	R95
286	C_2H	+	C_4H_2	↔	C_2H_2	+	C_4H			0	3.32E-11	0.00	0.0	CBT
287	C_2H	+	C_2H	↔	C_2H_2	+	C_2			0	3.00E-12	0.00	0.0	NIST
288	C_2H	+	CH_2	↔	CH	+	C_2H_2			0	3.00E-11	0.00	0.0	NIST
289	CN	+	CH_2	↔	CH	+	HCN			0	5.30E-12	0.00	2500.0	R95
290	CN	+	CH_3	↔	HCN	+	CH_2			0	9.21E-13	0.70	1500.0	R95
291	CN	+	CH_4	↔	HCN	+	CH_3			0	3.14E-12	1.50	504.0	R95
292	CN	+	NH_3	↔	HCN	+	NH_2			0	2.60E-11	-1.10	0.0	R95
293	CN	+	CN	↔	C_2	+	N_2			0	2.67E-09	0.00	22090.0	NIST
294	CN	+	C_2H_2	↔	C_2H	+	HCN			0	2.20E-10	0.00	0.0	NIST (300k ONLY)
295	HCN	+	HCO	↔	H_2CO	+	CN			0	1.00E-11	0.00	17200.0	NIST
296	CO	+	O_2	⟶	O	+	CO_2			0	4.20E-12	0.00	24000.0	Baulch92
297	CO	+	C_2H_2	↔	C_2H	+	HCO			0	8.00E-10	0.00	53700.0	NIST
298	HCO	+	HCO	↔	H_2CO	+	CO			0	5.00E-11	0.00	0.0	R95
299	NO	+	Si	↔	SiO	+	N			0	5.30E-11	0.00	1775.0	NIST
300	NO	+	NO	↔	N_2	+	O_2			0	5.10E-12	0.50	30455.0	R95

Table 5. – *continued (Gas collider reactions)*

301	C_2	+	M			↔	C	+	C	+	M	1	6.17E-10	0.00	69823.0	NIST
302	C_3	+	M			↔	C_2	+	C	+	M	1	1.00E-10	0.00	48600.0	E
303	CH	+	M			↔	C	+	H	+	M	1	3.16E-10	0.00	33700.0	NIST
304	CH_2	+	M			↔	CH	+	H	+	M	1	6.64E-09	0.00	41800.0	NIST
305	CH_2	+	M			↔	H_2	+	C	+	M	1	2.16E-10	0.00	29700.0	NIST
306	CH_3	+	M			↔	CH	+	H_2	+	M	1	1.15E-09	0.00	41500.0	NIST
307	CH_3	+	M			↔	CH_2	+	H	+	M	1	1.70E-08	0.00	45600.0	Baulch92
308	CH_3	+	H	+	M	⟶	CH_4	+	M			-1	9.62E-31	-1.80	3231.0	Baulch92
309	CH_4	+	M			⟶	CH_3	+	H	+	M	1	1.20E-06	0.00	47000.0	Baulch92
310	C_2H	+	M			↔	C_2	+	H	+	M	1	3.74E-10	0.00	50040.0	NIST
311	C_3H	+	M			↔	C_3	+	H	+	M	1	1.00E-10	0.00	48600.0	E
312	C_2H_2	+	M			↔	C_2	+	H_2	+	M	1	7.59E-17	0.00	2069.0	NIST
313	C_2H_2	+	M			↔	H	+	C_2H	+	M	1	6.97E-08	0.00	54434.0	CBT
314	C_3H_2	+	M			↔	C_3H	+	H	+	M	1	1.00E-10	0.00	48600.0	E
315	C_4H_2	+	M			↔	C_4H	+	H	+	M	1	5.91E-07	0.00	40292.0	NIST
316	CS	+	M			↔	C	+	S	+	M	1	1.00E-10	0.00	48600.0	E
317	HCS	+	M			↔	H	+	CS	+	M	1	1.00E-10	0.00	48600.0	E
318	CN	+	M			↔	C	+	N	+	M	1	3.32E-10	0.00	74989.0	NIST
319	HCN	+	M			↔	H	+	CN	+	M	1	2.08E-08	0.00	54630.0	NIST
320	S_2	+	M			↔	S	+	S	+	M	1	7.95E-11	0.00	38749.0	NIST
321	HS	+	M			↔	S	+	H	+	M	1	1.00E-10	0.00	48600.0	E
322	H_2S	+	M			↔	HS	+	H	+	M	1	7.70E-10	0.00	41500.0	NIST
323	SO	+	M			↔	O	+	S	+	M	1	6.61E-10	0.00	53885.0	NIST
324	N_2	+	M			↔	N	+	N	+	M	1	9.21E-05	-2.50	113240.0	NIST
325	NH	+	M			↔	N	+	H	+	M	1	4.40E-10	0.00	38000.0	NIST
326	NH_2	+	M			↔	NH	+	H	+	M	1	1.00E-10	0.00	48600.0	E
327	NH_3	+	M			↔	NH_2	+	H	+	M	1	3.46E-08	0.00	46740.0	NIST
328	NH_3	+	M			↔	NH	+	H_2	+	M	1	1.05E-09	0.00	47000.0	NIST
329	NS	+	M			↔	S	+	N	+	M	1	1.00E-10	0.00	48600.0	E
330	NO	+	M			↔	O	+	N	+	M	1	4.10E-09	0.00	75380.0	NIST
331	SiH	+	M			↔	Si	+	H	+	M	1	1.00E-10	0.00	48600.0	E
332	SiH_2	+	M			↔	Si	+	H_2	+	M	1	7.60E-08	-1.80	19219.0	NIST
333	SiH_3	+	M			↔	SiH	+	H_2	+	M	1	4.98E-10	0.00	4534.0	NIST
334	SiH_4	+	M			↔	SiH_3	+	H	+	M	1	1.00E-10	0.00	48600.0	E
335	SiH_4	+	M			↔	SiH_2	+	H_2	+	M	1	1.00E-10	0.00	48600.0	E
336	SiC	+	M			↔	Si	+	C	+	M	1	1.00E-10	0.00	48600.0	E
337	SiC_2	+	M			↔	Si	+	C_2	+	M	1	1.00E-10	0.00	48600.0	E
338	HCSi	+	M			↔	SiC	+	H	+	M	1	1.00E-10	0.00	48600.0	E
339	$SiCH_2$	+	M			↔	HCSi	+	H	+	M	1	1.00E-10	0.00	48600.0	E
340	SiN	+	M			↔	Si	+	N	+	M	1	1.00E-10	0.00	48600.0	E
341	HNSi	+	M			↔	H	+	SiN	+	M	1	1.00E-10	0.00	48600.0	E
342	SiS	+	M			↔	Si	+	S	+	M	1	1.00E-10	0.00	48600.0	E
343	SiO	+	M			↔	O	+	Si	+	M	1	1.00E-10	0.00	48600.0	E
344	O_2	+	M			↔	O	+	O	+	M	1	5.16E-10	0.00	58410.0	NIST
345	OH	+	M			↔	H	+	O	+	M	1	4.00E-09	0.00	50000.0	NIST
346	OH	+	H	+	M	⟶	H_2O	+	M			-1	6.86E-31	-2.00	0.0	NIST
347	H_2O	+	M			⟶	OH	+	H	+	M	1	5.80E-09	0.00	52920.0	Baulch92
348	CO	+	M			↔	O	+	C	+	M	1	1.00E-10	0.00	48600.0	E
349	CO_2	+	M			↔	CO	+	O	+	M	1	8.01E-11	0.00	26900.0	NIST
350	HCO	+	M			↔	CO	+	H	+	M	1	2.39E-10	0.00	8133.0	NIST
351	H_2CO	+	M			↔	HCO	+	H	+	M	1	2.10E-08	0.00	39200.0	NIST
352	H_2CO	+	M			↔	CO	+	H_2	+	M	1	3.95E-09	0.00	17500.0	NIST