

Supplementary Material

Table-S1.txt contains our chemical kinetics list for ion-molecule reactions.

Column 1: reaction #

Column 2-11: reaction reactants and products

Column 12: branching ratio

Column 13: rate coefficient ($\text{cm}^3 \cdot \text{s}^{-1}$)

Column 14: temperature at which the rate coefficient was measured

Column 15: reference as listed in I10013-refs-S1.doc

* indicates that the reaction rate coefficient and products have been estimated from thermochemical considerations

Refs-S1.txt contains the reference list for ion-molecule reactions.

Table-S2.txt contains our chemical kinetics list for electron recombination reactions.

Column 1: reaction #

Column 2: reactant

Columns 3-4: rate coefficient $\alpha = a (300/T_e)^b \text{ cm}^3 \text{ s}^{-1}$

(a and b in column 3 and 4, respectively)

Column 5: reference as listed in I10013-refs-S2.doc

* indicates that the reaction rate coefficient has been estimated

Refs-S2.txt contains the reference list for electron recombination reactions.

Table-S1.txt

1	H+	+ H2	= H3+	+ hv	+ -	-	1	1.30E-16	80	[41]
2	H+	+ CH4	= CH3+	+ H2	+ -	-	0.82	4.15E-09	300	[8]
3	H+	+ CH4	= CH4+	+ H	+ -	-	0.18	4.15E-09	300	[8]
4	H+	+ C2H2	= C2H2+	+ H	+ -	-	1	5.40E-10	300	[125]
5	H+	+ C2H4	= C2H4+	+ H	+ -	-	0.2	4.90E-09	300	[125]
6	H+	+ C2H4	= C2H3+	+ H2	+ -	-	0.6	4.90E-09	300	[125]
7	H+	+ C2H4	= C2H2+	+ H2	+ H	-	0.2	4.90E-09	300	[125]
8	H+	+ C2H6	= C2H5+	+ H2	+ -	-	0.05	4.70E-09	300	[125]
9	H+	+ C2H6	= C2H4+	+ H2	+ H	-	0.3	4.70E-09	300	[125]
10	H+	+ C2H6	= C2H3+	+ H2	+ H2	-	0.6	4.70E-09	300	[125]
11	H+	+ C2H6	= CH3+	+ CH4	+ -	-	0.05	4.70E-09	300	[125]
12	H+	+ CH3C2H	= C3H4+	+ H	+ -	-	0.5	4.00E-09	-	[135]
13	H+	+ CH3C2H	= c-C3H3+	+ H2	+ -	-	0.5	4.00E-09	-	[135]
14	H+	+ C4H2	= C4H2+	+ H	+ -	-	0.5	4.00E-09	-	[135]
15	H+	+ C4H2	= C4H+	+ H2	+ -	-	0.5	4.00E-09	-	[135]
16	H+	+ CH3C4H	= C5H4+	+ H	+ -	-	0.5	4.00E-09	-	[135]
17	H+	+ CH3C4H	= C5H3+	+ H2	+ -	-	0.5	4.00E-09	-	[135]
18	H+	+ C6H2	= C6H2+	+ H	+ -	-	0.5	4.00E-09	-	[135]
19	H+	+ C6H2	= C6H+	+ H2	+ -	-	0.5	4.00E-09	-	[135]
20	H+	+ CH3C6H	= C7H4+	+ H	+ -	-	0.5	4.00E-09	-	[135]
21	H+	+ CH3C6H	= C7H3+	+ H2	+ -	-	0.5	4.00E-09	-	[135]
22	H+	+ C8H2	= C8H2+	+ H	+ -	-	0.5	4.00E-09	-	[135]
23	H+	+ C8H2	= C8H+	+ H2	+ -	-	0.5	4.00E-09	-	[135]
24	H+	+ NH3	= NH3+	+ H	+ -	-	1	3.70E-09	300	[125]
25	H+	+ CH3NH2	= CH3NH2+	+ H	+ -	-	0.5	7.35E-09	-	[86]
26	H+	+ CH3NH2	= CH2NH2+	+ H2	+ -	-	0.5	7.35E-09	-	[86]
27	H+	+ CH2NH	= CH2+	+ NH2	+ -	-	0.5	2.00E-09	-	[135]

28	H+	+ CH2NH	= NH2+	+ CH2	+ -	-	0.5	2.00E-09	-	[135]
29	H+	+ HCN	= HCN+	+ H	+ -	-	1	1.10E-08	300	[8]
30	H+	+ CH3CN	= C2H3N+	+ H	+ -	-	0.7	1.20E-08	300	[125]
31	H+	+ CH3CN	= HC2NH+	+ H2	+ -	-	0.05	1.20E-08	300	[125]
32	H+	+ CH3CN	= CH3+	+ HCN	+ -	-	0.25	1.20E-08	300	[125]
33	H+	+ C3H3N	= HC3NH+	+ H2	+ -	-	1	7.50E-09	-	[135]
34	H+	+ HC3N	= HC3N+	+ H	+ -	-	1	4.00E-09	-	[135]
35	H+	+ C4H3N	= CH3+	+ HC3N	+ -	-	1	8.00E-09	-	[135]
36	H+	+ HC5N	= HC5N+	+ H	+ -	-	1	4.00E-09	-	[135]
37	H+	+ C6H3N	= CH3+	+ HC5N	+ -	-	1	9.00E-09	-	[135]
38	H+	+ H2O	= H2O+	+ H	+ -	-	1	6.90E-09	300	[125]
39	H2+	+ H	= H+	+ H2	+ -	-	1	6.40E-10	298	[52]
40	H2+	+ H2	= H3+	+ H	+ -	-	1	2.00E-09	298	[8]
41	H2+	+ CH4	= CH5+	+ H	+ -	-	0.03	3.80E-09	298	[53]
42	H2+	+ CH4	= CH4+	+ H2	+ -	-	0.37	3.80E-09	298	[53]
43	H2+	+ CH4	= CH3+	+ H2	+ H	-	0.6	3.80E-09	298	[53]
44	H2+	+ C2H2	= C2H3+	+ H	+ -	-	0.09	5.30E-09	298	[53]
45	H2+	+ C2H2	= C2H2+	+ H2	+ -	-	0.91	5.30E-09	298	[53]
46	H2+	+ C2H4	= C2H4+	+ H2	+ -	-	0.45	4.90E-09	298	[53]
47	H2+	+ C2H4	= C2H3+	+ H2	+ H	-	0.37	4.90E-09	298	[53]
48	H2+	+ C2H4	= C2H2+	+ H2	+ H2	-	0.18	4.90E-09	298	[53]
49	H2+	+ C2H6	= C2H6+	+ H2	+ -	-	0.06	4.90E-09	298	[53]
50	H2+	+ C2H6	= C2H5+	+ H2	+ H	-	0.28	4.90E-09	298	[53]
51	H2+	+ C2H6	= C2H4+	+ H2	+ H2	-	0.48	4.90E-09	298	[53]
52	H2+	+ C2H6	= C2H3+	+ H2	+ H2	H	0.14	4.90E-09	298	[53]
53	H2+	+ C2H6	= C2H2+	+ H2	+ H2	-	0.04	4.90E-09	298	[53]
54	H2+	+ N	= NH+	+ H	+ -	-	1	1.90E-09	-	[86]
55	H2+	+ N2	= N2H+	+ H	+ -	-	1	2.00E-09	298	[8]
56	H2+	+ HCN	= HCN+	+ H2	+ -	-	1	2.70E-09	-	[135]
57	H2+	+ NH3	= NH3+	+ H2	+ -	-	1	5.70E-09	298	[53]
58	H2+	+ H2O	= H3O+	+ H	+ -	-	0.47	7.30E-09	298	[53]

59	H2+	+ H2O	= H2O+	+ H2	+ -	-	0.53	7.30E-09	298	[53]
60	H3+	+ CH4	= CH5+	+ H2	+ -	-	1	2.40E-09	296	[8]
61	H3+	+ C2H2	= C2H3+	+ H2	+ -	-	1	3.20E-09	297	[8]
62	H3+	+ C2H4	= C2H3+	+ H2	+ H2	-	0.7	2.90E-09	300	[8]
63	H3+	+ C2H4	= C2H5+	+ H2	+ -	-	0.3	2.90E-09	300	[8]
64	H3+	+ C2H6	= C2H5+	+ H2	+ H2	-	1	2.90E-09	298	[8]
65	H3+	+ CH3C2H	= C3H5+	+ H2	+ -	-	0.7	3.00E-09	300	[82]
66	H3+	+ CH3C2H	= C2H3+	+ CH4	+ -	-	0.3	3.00E-09	300	[82]
67	H3+	+ C3H6	= C2H3+	+ CH4	+ H2	-	0.3	3.10E-09	300	[82]
68	H3+	+ C3H6	= C3H5+	+ H2	+ H2	-	0.7	3.10E-09	300	[82]
69	H3+	+ C3H8	= products	+ -	+ -	-	1	3.00E-09	300	[82]
70	H3+	+ C4H2	= C4H3+	+ H2	+ -	-	1	2.60E-09	300	[29]
71	H3+	+ CH3C4H	= C5H5+	+ H2	+ -	-	1	2.50E-09	-	[135]
72	H3+	+ C6H2	= C6H3+	+ H2	+ -	-	1	2.00E-09	-	[135]
73	H3+	+ CH3C6H	= C7H5+	+ H2	+ -	-	1	2.50E-09	-	[135]
74	H3+	+ C6H6	= C6H7+	+ H2	+ -	-	1	3.30E-09	300	[82]
75	H3+	+ C7H8	= C7H9+	+ H2	+ -	-	0.75	3.90E-09	300	[82]
76	H3+	+ C7H8	= C7H7+	+ H2	+ H2	-	0.2	3.90E-09	300	[82]
77	H3+	+ C7H8	= C6H5+	+ CH4	+ H2	-	0.05	3.90E-09	300	[82]
78	H3+	+ C8H2	= C8H3+	+ H2	+ -	-	1	2.00E-09	-	[135]
79	H3+	+ NH3	= NH4+	+ H2	+ -	-	1	4.40E-09	300	[8]
80	H3+	+ CH3NH2	= CH3NH3+	+ H2	+ -	-	0.16	1.00E-09	300	[46]
81	H3+	+ CH3NH2	= CH3NH2+	+ H2	+ H	-	0.07	1.00E-09	300	[51]
82	H3+	+ CH3NH2	= CH2NH2+	+ H2	+ H2	-	0.76	1.00E-09	300	[126]
83	H3+	+ CH3NH2	= CH3+	+ NH3	+ H2	-	0.01	1.00E-09	300	[25]
84	H3+	+ C3H3N	= C3H3NH+	+ H2	+ -	-	0.9	9.10E-09	300	[82]
85	H3+	+ C3H3N	= HCNH+	+ H2	+ C2H2	-	0.1	9.10E-09	300	[82]
86	H3+	+ N2	= N2H+	+ H2	+ -	-	1	1.86E-09	300	[8]
87	H3+	+ H2O	= H3O+	+ H2	+ -	-	1	5.30E-09	297	[8]
88	H3+	+ HCN	= HCNH+	+ H2	+ -	-	1	7.50E-09	300	[8]
89	H3+	+ CH3CN	= C2H3NH+	+ H2	+ -	-	1	8.90E-09	300	[8]

90	H3+	+ C3H5N	= C3H5NH+	+ H2	+ -	-	1	8.90E-09	300	[138]
91	H3+	+ HC3N	= HC3NH+	+ H2	+ -	-	1	9.80E-09	296	[8]
92	H3+	+ C4H3N	= C4H3NH+	+ H2	+ -	-	1	9.00E-09	-	[135]
93	H3+	+ HC5N	= HC5NH+	+ H2	+ -	-	1	8.00E-09	-	[135]
94	H3+	+ C6H3N	= C6H3NH+	+ H2	+ -	-	1	9.00E-09	-	[135]
95	H3+	+ C2N2	= C2N2H+	+ H2	+ -	-	1	2.80E-09	296	[8]
96	C+	+ H2	= CH+	+ H	+ -	-	1	1.20E-16	300	[8]
97	C+	+ CH4	= C2H2+	+ H2	+ -	-	0.28	1.30E-09	300	[8]
98	C+	+ CH4	= C2H3+	+ H	+ -	-	0.72	1.30E-09	300	[8]
99	C+	+ C2H2	= C3H+	+ H	+ -	-	1	2.63E-09	300	[8]
100	C+	+ C2H4	= C2H3+	+ CH	+ -	-	0.08	1.50E-09	300	[8]
101	C+	+ C2H4	= C2H4+	+ C	+ -	-	0.15	1.50E-09	300	[8]
102	C+	+ C2H4	= C3H+	+ H2	+ H	-	0.05	1.50E-09	300	[8]
103	C+	+ C2H4	= C3H2+	+ H2	+ -	-	0.29	1.50E-09	300	[8]
104	C+	+ C2H4	= c-C3H3+	+ H	+ -	-	0.42	1.50E-09	300	[8]
105	C+	+ C2H6	= C2H2+	+ CH4	+ -	-	0.05	1.65E-09	300	[8]
106	C+	+ C2H6	= C2H3+	+ CH3	+ -	-	0.3	1.65E-09	300	[8]
107	C+	+ C2H6	= C2H4+	+ CH2	+ -	-	0.07	1.65E-09	300	[8]
108	C+	+ C2H6	= C2H5+	+ CH	+ -	-	0.14	1.65E-09	300	[8]
109	C+	+ C2H6	= C3H2+	+ H2	+ H2	-	0.005	1.65E-09	300	[8]
110	C+	+ C2H6	= c-C3H3+	+ H2	+ H	-	0.43	1.65E-09	300	[8]
111	C+	+ CH3C2H	= C4H2+	+ H2	+ -	-	0.3	1.90E-09	300	[19]
112	C+	+ CH3C2H	= C3H4+	+ C	+ -	-	0.3	1.90E-09	300	[19]
113	C+	+ CH3C2H	= c-C3H3+	+ CH	+ -	-	0.2	1.90E-09	300	[19]
114	C+	+ CH3C2H	= C2H2+	+ C2H2	+ -	-	0.1	1.90E-09	300	[19]
115	C+	+ CH3C2H	= C2H3+	+ CCH	+ -	-	0.1	1.90E-09	300	[19]
116	C+	+ C3H6	= C2H3+	+ CHCH2	+ -	-	0.3	2.00E-09	300	[19]
117	C+	+ C3H6	= C3H5+	+ CH	+ -	-	0.2	2.00E-09	300	[19]
118	C+	+ C3H6	= c-C3H3+	+ CH3	+ -	-	0.15	2.00E-09	300	[19]
119	C+	+ C3H6	= C2H2+	+ C2H4	+ -	-	0.15	2.00E-09	300	[19]
120	C+	+ C3H6	= C3H6+	+ C	+ -	-	0.1	2.00E-09	300	[19]

121	C+	+ C3H6	= C4H3+	+ H2	+ H	-	0.1	2.00E-09	300	[19]
122	C+	+ C3H8	= C2H3+	+ CH3CH2	+ -	-	0.35	1.80E-09	300	[44]
123	C+	+ C3H8	= C3H7+	+ CH2	+ -	-	0.3	1.80E-09	300	[44]
124	C+	+ C3H8	= c-C3H3+	+ CH4	+ H	-	0.2	1.80E-09	300	[44]
125	C+	+ C3H8	= C3H8+	+ C	+ -	-	0.1	1.80E-09	300	[44]
126	C+	+ C3H8	= C4H5+	+ H2	+ H	-	0.05	1.80E-09	300	[44]
127	C+	+ C4H2	= C5H+	+ H	+ -	-	0.5	2.90E-09	300	[29]
128	C+	+ C4H2	= C4H2+	+ C	+ -	-	0.45	2.90E-09	300	[29]
129	C+	+ C4H2	= C3H+	+ CCH	+ -	-	0.05	2.90E-09	300	[29]
130	C+	+ CH3C4H	= C5H3+	+ CH	+ -	-	0.21	3.50E-09	-	[135]
131	C+	+ CH3C4H	= C6H2+	+ H2	+ -	-	0.21	3.50E-09	-	[135]
132	C+	+ CH3C4H	= C6H3+	+ H	+ -	-	0.58	3.50E-09	-	[135]
133	C+	+ C6H2	= C7+	+ H2	+ -	-	0.5	2.40E-09	-	[135]
134	C+	+ C6H2	= C7H+	+ H	+ -	-	0.5	2.40E-09	-	[135]
135	C+	+ CH3C6H	= C7H3+	+ CH	+ -	-	0.21	3.50E-09	-	[135]
136	C+	+ CH3C6H	= C8H2+	+ H2	+ -	-	0.21	3.50E-09	-	[135]
137	C+	+ CH3C6H	= C8H3+	+ H	+ -	-	0.58	3.50E-09	-	[135]
138	C+	+ C6H6	= C6H6+	+ C	+ -	-	0.67	2.40E-09	300	[19]
139	C+	+ C6H6	= C5H3+	+ CHCH2	+ -	-	0.17	2.40E-09	300	[19]
140	C+	+ C6H6	= C7H5+	+ H	+ -	-	0.1	2.40E-09	300	[19]
141	C+	+ C6H6	= c-C3H3+	+ CH2CCCCH	+ -	-	0.06	2.40E-09	300	[19]
142	C+	+ C8H2	= C9+	+ H2	+ -	-	0.5	2.40E-09	-	[135]
143	C+	+ C8H2	= C9H+	+ H	+ -	-	0.5	2.40E-09	-	[135]
144	C+	+ NH3	= NH3+	+ C	+ -	-	0.32	2.30E-09	300	[8]
145	C+	+ NH3	= HCN+	+ H2	+ -	-	0.05	2.30E-09	300	[8]
146	C+	+ NH3	= HCNH+	+ H	+ -	-	0.63	2.30E-09	300	[8]
147	C+	+ HCN	= C2N+	+ H	+ -	-	1	2.95E-09	300	[8]
148	C+	+ CH3NH2	= CH3+	+ HCN	+ H	-	0.01	3.20E-09	300	[8]
149	C+	+ CH3NH2	= HCNH+	+ CH3	+ -	-	0.03	3.20E-09	300	[8]
150	C+	+ CH3NH2	= CH2NH2+	+ CH	+ -	-	0.27	3.20E-09	300	[8]
151	C+	+ CH3NH2	= CH3NH2+	+ C	+ -	-	0.69	3.20E-09	300	[8]

152	C+	+ CH3CN	= C2H3+	+ CN	+ -	-	1	5.60E-09	-	[135]
153	C+	+ C3H3N	= C3H2+	+ HCN	+ -	-	0.24	4.10E-09	300	[94,97]
154	C+	+ C3H3N	= c-C3H3+	+ CN	+ -	-	0.44	4.10E-09	300	[94,97]
155	C+	+ C3H3N	= HC4NH+	+ H	+ -	-	0.29	4.10E-09	300	[94,97]
156	C+	+ C3H3N	= C4H3N+	+ hv	+ -	-	0.03	4.10E-09	300	[94,97]
157	C+	+ HC3N	= C3+	+ HCN	+ -	-	0.05	5.50E-09	300	[8]
158	C+	+ HC3N	= C3H+	+ CN	+ -	-	0.7	5.50E-09	300	[8]
159	C+	+ HC3N	= C2N+	+ CCH	+ -	-	0.02	5.50E-09	300	[8]
160	C+	+ HC3N	= C4N+	+ H	+ -	-	0.23	5.50E-09	300	[8]
161	C+	+ C4H3N	= C2H3+	+ C3N	+ -	-	0.29	7.00E-09	-	[135]
162	C+	+ C4H3N	= C4H3+	+ CN	+ -	-	0.71	7.00E-09	-	[135]
163	C+	+ HC5N	= C5H+	+ CN	+ -	-	1	6.00E-09	-	[135]
164	C+	+ C6H3N	= C6H3+	+ CN	+ -	-	1	5.00E-09	-	[135]
165	C+	+ C2N2	= CNC+	+ CN	+ -	-	0.11	1.90E-09	300	[8]
166	C+	+ C2N2	= C2N+	+ CN	+ -	-	0.89	1.90E-09	300	[8]
167	C+	+ H2O	= H2O+	+ C	+ -	-	0.1	2.40E-09	300	[8]
168	CH+	+ H	= C+	+ H2	+ -	-	1	7.50E-10	300	[33,34]
169	CH+	+ H2	= CH2+	+ H	+ -	-	1	1.20E-09	300	[8]
170	CH+	+ CH4	= C2H2+	+ H2	+ H	-	0.11	1.30E-09	300	[8]
171	CH+	+ CH4	= C2H3+	+ H2	+ -	-	0.84	1.30E-09	300	[8]
172	CH+	+ CH4	= C2H4+	+ H	+ -	-	0.05	1.30E-09	300	[8]
173	CH+	+ C2H2	= C3H2+	+ H	+ -	-	1	2.40E-09	300	[6]
174	CH+	+ C2H6	= products	+ -	+ -	-	1	2.60E-09	300	[83]
175	CH+	+ N	= CN+	+ H	+ -	-	1	1.90E-10	300	[8]
176	CH+	+ N	= H+	+ CN	+ -	-	0	1.90E-10	300	[8]
177	CH+	+ NH3	= HCNH+	+ H2	+ -	-	0.68	2.70E-09	300	[119]
178	CH+	+ NH3	= NH3+	+ CH	+ -	-	0.17	2.70E-09	300	[119]
179	CH+	+ NH3	= NH4+	+ C	+ -	-	0.15	2.70E-09	300	[119]
180	CH+	+ H2O	= H3O+	+ C	+ -	-	0.25	2.90E-09	300	[117,118]
181	CH+	+ HCN	= HCNH+	+ C	+ -	-	0.75	2.80E-09	298	[8]
182	CH+	+ HCN	= C2N+	+ H2	+ -	-	0.15	2.80E-09	298	[8]

183	CH+	+ HCN	= HC2N+	+ H	+ -	-	0.1	2.80E-09	298	[8]
184	CH+	+ CH3NH2	= CH2NH2+	+ CH2	+ -	-	0.5	2.20E-09	300	[1,120,121]
185	CH+	+ CH3NH2	= CH3NH2+	+ CH	+ -	-	0.1	2.20E-09	300	[1,120,121]
186	CH+	+ CH3NH2	= CH3NH3+	+ C	+ -	-	0.4	2.20E-09	300	[1,120,121]
187	CH2+	+ H2	= CH3+	+ H	+ -	-	1	1.16E-09	300	[8]
188	CH2+	+ CH4	= C2H4+	+ H2	+ -	-	0.7	1.30E-09	300	[8]
189	CH2+	+ CH4	= C2H5+	+ H	+ -	-	0.3	1.30E-09	300	[8]
190	CH2+	+ C2H2	= c-C3H3+	+ H	+ -	-	1	2.50E-09	300	[6]
191	CH2+	+ C2H6	= products	+ -	+ -	-	1	2.60E-09	300	[83]
192	CH2+	+ N	= CN+	+ H2	+ -	-	0.5	2.20E-10	300	[136]
193	CH2+	+ N	= HCN+	+ H	+ -	-	0.5	2.20E-10	300	[136]
194	CH2+	+ NH3	= NH4+	+ CH	+ -	-	0.33	2.66E-09	298	[8]
195	CH2+	+ NH3	= CH2NH2+	+ H	+ -	-	0.67	2.66E-09	298	[8]
196	CH2+	+ HCN	= HC2NH+	+ H	+ -	-	1	1.80E-09	300	[6]
197	CH2+	+ CH3NH2	= CH2NH2+	+ CH3	+ -	-	0.55	2.10E-09	300	[1,120,121]
198	CH2+	+ CH3NH2	= CH3NH2+	+ CH2	+ -	-	0.35	2.10E-09	300	[1,120,121]
199	CH2+	+ CH3NH2	= CH3NH3+	+ CH	+ -	-	0.1	2.10E-09	300	[1,120,121]
200	CH2+	+ CH3CN	= products	+ -	+ -	-	1	2.58E-09	300	[39]
201	CH2+	+ C3H5N	= products	+ -	+ -	-	1	3.12E-09	300	[39]
202	CH2+	+ HC3N	= HC3NH+	+ CH	+ -	-	1	4.10E-09	300	[40]
203	CH3+	+ CH4	= C2H5+	+ H2	+ -	-	1	1.10E-09	298	[11]
204	CH3+	+ C2H2	= c-C3H3+	+ H2	+ -	-	1	2.88E-10	300	[8]
205	CH3+	+ C2H2	= l-C3H3+	+ H2	+ -	-	1	8.63E-10	300	[8]
206	CH3+	+ C2H4	= C2H3+	+ CH4	+ -	-	0.46	1.06E-09	298	[8]
207	CH3+	+ C2H4	= c-C3H3+	+ H2	+ H2	-	0.04	1.06E-09	298	[8]
208	CH3+	+ C2H4	= C3H5+	+ H2	+ -	-	0.51	1.06E-09	298	[8]
209	CH3+	+ C2H6	= C2H5+	+ CH4	+ -	-	0.85	1.74E-09	298	[54]
210	CH3+	+ C2H6	= C3H5+	+ H2	+ H2	-	0.09	1.74E-09	298	[54]
211	CH3+	+ C2H6	= C3H7+	+ H2	+ -	-	0.06	1.74E-09	298	[54]
212	CH3+	+ CH3C2H	= C2H3+	+ C2H4	+ -	-	0.15	1.90E-09	300	[79]
213	CH3+	+ CH3C2H	= C2H5+	+ C2H2	+ -	-	0.6	1.90E-09	300	[79]

214	CH3+	+ CH3C2H	= c-C3H3+	+ CH4	+ -	-	0.15	1.90E-09	300	[79]
215	CH3+	+ CH3C2H	= C4H5+	+ H2	+ -	-	0.1	1.90E-09	300	[79]
216	CH3+	+ C3H8	= C3H7+	+ CH4	+ -	-	1	1.00E-09	300	[27]
217	CH3+	+ C4H2	= c-C3H3+	+ C2H2	+ -	-	0.9	1.30E-09	300	[29]
218	CH3+	+ C4H2	= C5H3+	+ H2	+ -	-	0.1	1.30E-09	300	[29]
219	CH3+	+ C6H2	= C7H3+	+ H2	+ -	-	1	1.20E-09	-	[135]
220	CH3+	+ C8H2	= C9H3+	+ H2	+ -	-	1	1.20E-09	-	[135]
221	CH3+	+ N	= HCN+	+ H2	+ -	-	0.5	6.70E-11	300	[8]
222	CH3+	+ N	= HCNH+	+ H	+ -	-	0.5	6.70E-11	300	[8]
223	CH3+	+ NH3	= NH4+	+ CH2	+ -	-	0.15	1.75E-09	300	[8]
224	CH3+	+ NH3	= CH2NH2+	+ H2	+ -	-	0.85	1.75E-09	300	[8]
225	CH3+	+ HCN	= C2H3NH+	+ hv	+ -	-	1	2.00E-10	298	[8]
226	CH3+	+ CH3NH2	= CH2NH2+	+ CH4	+ -	-	0.45	3.20E-09	300	[8]
227	CH3+	+ CH3NH2	= CH3NH2+	+ CH3	+ -	-	0.55	3.20E-09	300	[8]
228	CH3+	+ CH3CN	= C2H5+	+ HCN	+ -	-	0.37	1.80E-09	300	[8]
229	CH3+	+ CH3CN	= HCNH+	+ C2H4	+ -	-	0.58	1.80E-09	300	[8]
230	CH3+	+ CH3CN	= C3H5NH+	+ hv	+ -	-	0.05	1.80E-09	300	[8]
231	CH3+	+ CH3NC	= C2H3NH+	+ CH2	+ -	-	1	1.10E-09	300	[56]
232	CH3+	+ C3H5N	= products	+ -	+ -	-	1	2.55E-09	300	[39]
233	CH3+	+ HC3N	= c-C3H3+	+ HCN	+ -	-	0.95	1.50E-09	320	[76]
234	CH3+	+ HC3N	= C4H3NH+	+ hv	+ -	-	0.05	1.50E-09	320	[76]
235	CH3+	+ HC5N	= C6H3NH+	+ hv	+ -	-	1	2.27E-10	-	[135]
236	CH3+	+ C3H3N	= C2H3NH+	+ C2H2	+ -	-	0.8	5.40E-09	320	[76]
237	CH3+	+ C3H3N	= C2H3+	+ CH3CN	+ -	-	0.1	5.40E-09	320	[76]
238	CH3+	+ C3H3N	= C3H5+	+ HCN	+ -	-	0.05	5.40E-09	320	[76]
239	CH3+	+ C3H3N	= C3H3NH+	+ CH2	+ -	-	0.05	5.40E-09	320	[76]
240	CH3+	+ C2N2	= HC2NH+	+ HCN	+ -	-	0.8	9.00E-11	320	[76]
241	CH3+	+ C2N2	= adduct	+ hv	+ -	-	0.2	9.00E-11	320	[76]
242	CH4+	+ H2	= CH5+	+ H	+ -	-	1	3.50E-11	300	[8]
243	CH4+	+ CH4	= CH5+	+ CH3	+ -	-	1	1.14E-09	300	[8]
244	CH4+	+ C2H2	= C2H2+	+ CH4	+ -	-	0.53	2.72E-09	300	[8]

245	CH4+	+ C2H2	= C2H3+	+ CH3	+ -	-	0.41	2.72E-09	300	[8]
246	CH4+	+ C2H2	= c-C3H3+	+ H2	+ H	-	0.06	2.72E-09	300	[8]
247	CH4+	+ C2H4	= C2H4+	+ CH4	+ -	-	0.85	2.00E-09	300	[8]
248	CH4+	+ C2H4	= C2H5+	+ CH3	+ -	-	0.13	2.00E-09	300	[8]
249	CH4+	+ C2H4	= C3H5+	+ H2	+ H	-	0.03	2.00E-09	300	[8]
250	CH4+	+ C2H6	= C2H4+	+ CH4	+ H2	-	1	1.91E-09	298	[54]
251	CH4+	+ NH3	= CH5+	+ NH2	+ -	-	0.02	3.00E-09	300	[8]
252	CH4+	+ NH3	= NH4+	+ CH3	+ -	-	0.45	3.00E-09	300	[8]
253	CH4+	+ NH3	= NH3+	+ CH4	+ -	-	0.53	3.00E-09	300	[8]
254	CH4+	+ H2O	= H3O+	+ CH3	+ -	-	1	2.50E-09	298	[8]
255	CH4+	+ HCN	= HCNH+	+ CH3	+ -	-	0.98	3.30E-09	298	[8]
256	CH4+	+ HCN	= C2H3NH+	+ H	+ -	-	0.02	3.30E-09	298	[8]
257	CH4+	+ CH3NH2	= CH3NH2+	+ CH4	+ -	-	0.6	2.20E-09	300	[1,120,121]
258	CH4+	+ CH3NH2	= CH2NH2+	+ CH4	+ H	-	0.4	2.20E-09	300	[1,120,121]
259	CH4+	+ CH3CN	= products	+ -	+ -	-	1	3.92E-09	300	[18]
260	CH4+	+ HC3N	= HC3NH+	+ CH3	+ -	-	1	2.50E-09	300	[40]
261	CH5+	+ H	= CH4+	+ H2	+ -	-	1	1.50E-10	300	[8]
262	CH5+	+ C2H2	= C2H3+	+ CH4	+ -	-	1	1.48E-09	300	[8]
263	CH5+	+ C2H4	= C2H5+	+ CH4	+ -	-	1	1.50E-09	300	[37]
264	CH5+	+ C2H6	= C2H5+	+ CH4	+ H2	-	0.15	1.35E-09	300	[8]
265	CH5+	+ C2H6	= C2H7+	+ CH4	+ -	-	0.85	1.35E-09	300	[8]
266	CH5+	+ CH3C2H	= products	+ -	+ -	-	1	2.00E-09	300	[66]
267	CH5+	+ C3H6	= products	+ -	+ -	-	1	2.00E-09	300	[37]
268	CH5+	+ C3H8	= C3H9+	+ CH4	+ -	-	1	1.00E-09	300	[127]
269	CH5+	+ C4H2	= C4H3+	+ CH4	+ -	-	1	3.00E-09	300	*
270	CH5+	+ CH3C4H	= C5H5+	+ CH4	+ -	-	1	3.00E-09	300	*
271	CH5+	+ C6H2	= C6H3+	+ CH4	+ -	-	1	3.00E-09	300	*
272	CH5+	+ CH3C6H	= C7H5+	+ CH4	+ -	-	1	3.00E-09	300	*
273	CH5+	+ C8H2	= C8H3+	+ CH4	+ -	-	1	3.00E-09	300	*
274	CH5+	+ C6H6	= C6H7+	+ CH4	+ -	-	1	2.00E-09	300	[130]
275	CH5+	+ C7H8	= C7H9+	+ CH4	+ -	-	1	3.00E-09	300	*

276	CH5+	+ NH3	= NH4+	+ CH4	+ -	-	1	2.30E-09	300	[133]
277	CH5+	+ CH3NH2	= CH3NH3+	+ CH4	+ -	-	1	2.25E-09	300	[133]
278	CH5+	+ CH2NH	= CH2NH2+	+ CH4	+ -	-	1	3.00E-09	300	*
279	CH5+	+ N2H4	= N2H4H+	+ CH4	+ -	-	1	3.00E-09	300	*
280	CH5+	+ HCN	= HCNH+	+ CH4	+ -	-	1	3.00E-09	300	*
281	CH5+	+ CH3CN	= C2H3NH+	+ CH4	+ -	-	1	4.90E-09	300	[18]
282	CH5+	+ C3H3N	= C3H3NH+	+ CH4	+ -	-	1	3.00E-09	300	*
283	CH5+	+ C3H5N	= C3H5NH+	+ CH4	+ -	-	1	3.00E-09	300	*
284	CH5+	+ HC3N	= HC3NH+	+ CH4	+ -	-	1	4.50E-09	300	[40]
285	CH5+	+ C4H3N	= C4H3NH+	+ CH4	+ -	-	1	3.00E-09	300	*
286	CH5+	+ C4H5N	= C4H5NH+	+ CH4	+ -	-	1	3.00E-09	300	*
287	CH5+	+ C5H5N	= C5H5NH+	+ CH4	+ -	-	1	3.00E-09	300	*
288	CH5+	+ HC5N	= HC5NH+	+ CH4	+ -	-	1	3.00E-09	300	*
289	CH5+	+ C6H3N	= C6H3NH+	+ CH4	+ -	-	1	3.00E-09	300	*
290	CH5+	+ C6H7N	= C6H7NH+	+ CH4	+ -	-	1	3.00E-09	300	*
291	CH5+	+ H2O	= H3O+	+ CH4	+ -	-	1	3.70E-09	297	[17]
292	CH5+	+ CH3OH	= CH3OH2+	+ CH4	+ -	-	1	1.66E-09	300	[127]
293	CH5+	+ H2O	= H3O+	+ CH4	+ -	-	1	4.20E-09	300	[18]
294	C2H+	+ H2	= C2H2+	+ H	+ -	-	1	1.24E-09	300	[8]
295	C2H+	+ CH4	= C2H2+	+ CH3	+ -	-	0.34	1.10E-09	300	[117,118]
296	C2H+	+ CH4	= c-C3H3+	+ H2	+ -	-	0.34	1.10E-09	300	[117,118]
297	C2H+	+ CH4	= C3H4+	+ H	+ -	-	0.12	1.10E-09	300	[117,118]
298	C2H+	+ CH4	= C3H5+	+ -	+ -	-	0.2	1.10E-09	300	[117,118]
299	C2H+	+ C2H2	= C4H2+	+ H	+ -	-	1	1.85E-09	300	[8]
300	C2H+	+ C2H4	= C4H3+	+ H2	+ -	-	0.83	1.00E-09	298	[42]
301	C2H+	+ C2H4	= C4H2+	+ H2	+ H	-	0.17	1.00E-09	298	[42]
302	C2H+	+ C2H6	= c-C3H3+	+ CH4	+ -	-	0.91	1.00E-09	300	[28]
303	C2H+	+ C2H6	= C4H4+	+ H2	+ H	-	0.03	1.00E-09	300	[28]
304	C2H+	+ C2H6	= C4H5+	+ H2	+ -	-	0.06	1.00E-09	300	[28]
305	C2H+	+ C3H8	= products	+ -	+ -	-	1	4.00E-09	300	[83]
306	C2H+	+ N	= CH+	+ CN	+ -	-	1	9.50E-11	300	[8]

307	C2H+	+ HCN	= C2H2+	+ CN	+ -	-	0.2	2.70E-09	300	[8]
308	C2H+	+ HCN	= HCNH+	+ C2	+ -	-	0.35	2.70E-09	300	[8]
309	C2H+	+ HCN	= HC3N+	+ H	+ -	-	0.45	2.70E-09	300	[8]
310	C2H+	+ CH3CN	= products	+ -	+ -	-	1	3.64E-09	300	[39]
311	C2H+	+ HC3N	= C4H+	+ HCN	+ -	-	0.2	3.80E-09	300	[8]
312	C2H+	+ HC3N	= C4H2+	+ CN	+ -	-	0.12	3.80E-09	300	[8]
313	C2H+	+ HC3N	= HC3NH+	+ C2	+ -	-	0.37	3.80E-09	300	[8]
314	C2H+	+ HC3N	= HC5N+	+ H	+ -	-	0.31	3.80E-09	300	[8]
315	C2H+	+ NH3	= NH4+	+ C2	+ -	-	0.5	1.10E-09	-	[135]
316	C2H+	+ NH3	= HC2NH+	+ H2	+ -	-	0.5	1.10E-09	-	[135]
317	C2H2+	+ H2	= C2H3+	+ H	+ -	-	1	1.00E-11	300	[8]
318	C2H2+	+ CH4	= C3H4+	+ H2	+ -	-	0.21	8.90E-10	300	[8]
319	C2H2+	+ CH4	= C3H5+	+ H	+ -	-	0.79	8.90E-10	300	[8]
320	C2H2+	+ C2H2	= C4H2+	+ H2	+ -	-	0.32	1.40E-09	298	[8]
321	C2H2+	+ C2H2	= C4H3+	+ H	+ -	-	0.68	1.40E-09	298	[8]
322	C2H2+	+ C2H4	= C2H4+	+ C2H2	+ -	-	0.3	1.38E-09	300	[8]
323	C2H2+	+ C2H4	= α -C3H3+	+ CH3	+ -	-	0.47	1.38E-09	300	[8]
324	C2H2+	+ C2H4	= C4H5+	+ H	+ -	-	0.23	1.38E-09	300	[8]
325	C2H2+	+ C2H6	= C2H4+	+ C2H4	+ -	-	0.18	1.38E-09	300	[8]
326	C2H2+	+ C2H6	= C2H5+	+ CHCH2	+ -	-	0.09	1.38E-09	300	[8]
327	C2H2+	+ C2H6	= α -C3H3+	+ CH3	+ H2	-	0.06	1.38E-09	300	[8]
328	C2H2+	+ C2H6	= C3H4+	+ CH4	+ -	-	0.01	1.38E-09	300	[8]
329	C2H2+	+ C2H6	= C3H5+	+ CH3	+ -	-	0.54	1.38E-09	300	[8]
330	C2H2+	+ C2H6	= C4H5+	+ H2	+ H	-	0.05	1.38E-09	300	[8]
331	C2H2+	+ C2H6	= C4H7+	+ H	+ -	-	0.09	1.38E-09	300	[8]
332	C2H2+	+ CH3C2H	= C3H4+	+ C2H2	+ -	-	0.5	1.50E-09	300	[12]
333	C2H2+	+ CH3C2H	= C3H5+	+ C2H	+ -	-	0.05	1.50E-09	300	[12]
334	C2H2+	+ CH3C2H	= C5H5+	+ H	+ -	-	0.45	1.50E-09	300	[12]
335	C2H2+	+ C3H6	= C3H6+	+ C2H2	+ -	-	1	1.30E-09	300	[79]
336	C2H2+	+ C3H8	= C3H6+	+ C2H4	+ -	-	0.15	1.40E-09	300	[79]
337	C2H2+	+ C3H8	= C3H7+	+ C2H3	+ -	-	0.5	1.40E-09	300	[79]

338	C2H2+	+ C3H8	= C3H8+	+ C2H2	+ -	-	0.3	1.40E-09	300	[79]
339	C2H2+	+ C3H8	= C4H7+	+ CH3	+ -	-	0.05	1.40E-09	300	[79]
340	C2H2+	+ C4H2	= C4H2+	+ C2H2	+ -	-	0.9	1.70E-09	300	[79]
341	C2H2+	+ C4H2	= C6H2+	+ H2	+ -	-	0.1	1.70E-09	300	[79]
342	C2H2+	+ C6H2	= C6H2+	+ C2H2	+ -	-	0.33	1.50E-09	-	[135]
343	C2H2+	+ C6H2	= C8H2+	+ H2	+ -	-	0.33	1.50E-09	-	[135]
344	C2H2+	+ C6H2	= C8H3+	+ H	+ -	-	0.33	1.50E-09	-	[135]
345	C2H2+	+ C6H6	= C6H6+	+ C2H2	+ -	-	1	1.50E-09	300	[107]
346	C2H2+	+ N	= CH+	+ HCN	+ -	-	0.1	2.50E-10	300	[8]
347	C2H2+	+ N	= C2N+	+ H2	+ -	-	0.3	2.50E-10	300	[8]
348	C2H2+	+ N	= HC2N+	+ H	+ -	-	0.6	2.50E-10	300	[8]
349	C2H2+	+ NH3	= NH3+	+ C2H2	+ -	-	0.69	3.10E-09	298	[8]
350	C2H2+	+ NH3	= NH4+	+ CCH	+ -	-	0.31	3.10E-09	298	[8]
351	C2H2+	+ HCN	= HCNH+	+ CCH	+ -	-	0.66	3.60E-10	298	[70]
352	C2H2+	+ HCN	= HC3NH+	+ H	+ -	-	0.34	3.60E-10	298	[70]
353	C2H2+	+ CH3NH2	= CH3NH3+	+ CCH	+ -	-	0.48	2.70E-09	300	[49]
354	C2H2+	+ CH3NH2	= CH3NH2+	+ C2H2	+ -	-	0.28	2.70E-09	300	[49]
355	C2H2+	+ CH3NH2	= CH2NH2+	+ CHCH2	+ -	-	0.24	2.70E-09	300	[49]
356	C2H2+	+ CH3CN	= C2H3NH+	+ CCH	+ -	-	0.22	3.80E-09	300	[49]
357	C2H2+	+ CH3CN	= C3H5+	+ CN	+ -	-	0.28	3.80E-09	300	[49]
358	C2H2+	+ CH3CN	= C3H4+	+ HCN	+ -	-	0.28	3.80E-09	300	[49]
359	C2H2+	+ CH3CN	= C4H5N+	+ hv	+ -	-	0.23	3.80E-09	300	[49]
360	C2H2+	+ HC3N	= C4H2+	+ HCN	+ -	-	1	3.70E-10	300	[79]
361	C2H2+	+ C3H3N	= c-C3H3+	+ C2H2N	+ -	-	0.15	4.30E-09	300	[94,97]
362	C2H2+	+ C3H3N	= C3H3N+	+ C2H2	+ -	-	0.55	4.30E-09	300	[94,97]
363	C2H2+	+ C3H3N	= C3H3NH+	+ C2H	+ -	-	0.15	4.30E-09	300	[94,97]
364	C2H2+	+ C3H3N	= C5H5N+	+ hv	+ -	-	0.15	4.30E-09	300	[94,97]
365	C2H2+	+ C3H5N	= products	+ -	+ -	-	1	2.45E-09	300	[39]
366	C2H3+	+ H	= C2H2+	+ H2	+ -	-	1	6.80E-11	300	[112]
367	C2H3+	+ CH4	= C3H5+	+ H2	+ -	-	1	1.90E-10	300	[8]
368	C2H3+	+ C2H2	= C4H3+	+ H2	+ -	-	1	2.40E-10	300	[8]

369	C2H3+	+ C2H4	= C2H5+	+ C2H2	+ -	-	1	8.20E-10	300	[4]
370	C2H3+	+ C2H6	= C2H5+	+ C2H4	+ -	-	0.47	6.20E-10	298	[8]
371	C2H3+	+ C2H6	= C3H5+	+ CH4	+ -	-	0.4	6.20E-10	298	[8]
372	C2H3+	+ C2H6	= C4H7+	+ H2	+ -	-	0.13	6.20E-10	298	[8]
373	C2H3+	+ CH3C2H	= C3H5+	+ C2H2	+ -	-	1	1.50E-09	300	[12]
374	C2H3+	+ C3H6	= C4H5+	+ CH4	+ -	-	1	8.70E-10	300	[79]
375	C2H3+	+ C3H8	= C3H7+	+ C2H4	+ -	-	0.95	1.00E-09	300	[27]
376	C2H3+	+ C3H8	= C4H7+	+ CH4	+ -	-	0.05	1.00E-09	300	[27]
377	C2H3+	+ C4H2	= C4H3+	+ C2H2	+ -	-	0.33	9.00E-10	-	[135]
378	C2H3+	+ C4H2	= C6H3+	+ H2	+ -	-	0.33	9.00E-10	-	[135]
379	C2H3+	+ C4H2	= C6H4+	+ H	+ -	-	0.33	9.00E-10	-	[135]
380	C2H3+	+ C6H2	= C6H3+	+ C2H2	+ -	-	0.33	9.00E-10	-	[135]
381	C2H3+	+ C6H2	= C8H3+	+ H2	+ -	-	0.33	9.00E-10	-	[135]
382	C2H3+	+ C6H2	= C8H4+	+ H	+ -	-	0.33	9.00E-10	-	[135]
383	C2H3+	+ C6H6	= C6H7+	+ C2H2	+ -	-	0.82	1.96E-09	-	[130]
384	C2H3+	+ C6H6	= C8H7+	+ H2	+ -	-	0.18	1.96E-09	-	[62]
385	C2H3+	+ N	= HC2N+	+ H2	+ -	-	0.9	2.20E-11	300	[115]
386	C2H3+	+ N	= HC2NH+	+ C	+ -	-	0.1	2.20E-11	300	[115]
387	C2H3+	+ HCN	= HCNH+	+ C2H2	+ -	-	1	2.30E-09	298	[8]
388	C2H3+	+ HC3N	= HC3NH+	+ C2H2	+ -	-	1	3.80E-09	300	[8]
389	C2H3+	+ C3H3N	= C3H3NH+	+ C2H2	+ -	-	0.8	4.40E-09	300	[94,97]
390	C2H3+	+ C3H3N	= C5H5NH+	+ hv	+ -	-	0.2	4.40E-09	300	[94,97]
391	C2H3+	+ C3H5N	= products	+ -	+ -	-	1	1.15E-09	300	[39]
392	C2H3+	+ C2N2	= C2N2H+	+ C2H2	+ -	-	1	5.50E-10	296	[8]
393	C2H4+	+ H	= C2H3+	+ H2	+ -	-	1	3.00E-10	300	[8]
394	C2H4+	+ C2H2	= c-C3H3+	+ CH3	+ -	-	0.77	8.40E-10	300	[8]
395	C2H4+	+ C2H2	= C4H5+	+ H	+ -	-	0.23	8.40E-10	300	[8]
396	C2H4+	+ C2H4	= C3H4+	+ CH4	+ -	-	0.06	7.90E-10	298	[12]
397	C2H4+	+ C2H4	= C3H5+	+ CH3	+ -	-	0.89	7.90E-10	298	[12]
398	C2H4+	+ C2H4	= C4H7+	+ H	+ -	-	0.06	7.90E-10	298	[12]
399	C2H4+	+ C2H6	= C3H6+	+ CH4	+ -	-	0.07	5.15E-12	298	[8]

400	C2H4+	+ C2H6	= C3H7+	+ CH3	+ -	-	0.93	5.15E-12	298	[8]
401	C2H4+	+ CH3C2H	= C3H4+	+ C2H4	+ -	-	0.2	1.10E-09	300	[12]
402	C2H4+	+ CH3C2H	= C4H5+	+ CH3	+ -	-	0.3	1.10E-09	300	[12]
403	C2H4+	+ CH3C2H	= C5H7+	+ H	+ -	-	0.5	1.10E-09	300	[12]
404	C2H4+	+ C3H6	= C3H6+	+ C2H4	+ -	-	0.9	1.30E-10	300	[79]
405	C2H4+	+ C3H6	= C4H7+	+ C2H3	+ -	-	0.1	1.30E-10	300	[79]
406	C2H4+	+ C3H8	= C3H6+	+ C2H6	+ -	-	0.55	1.20E-09	300	[79]
407	C2H4+	+ C3H8	= C3H7+	+ C2H5	+ -	-	0.45	1.20E-09	300	[79]
408	C2H4+	+ C4H2	= C5H3+	+ CH3	+ -	-	0.5	1.00E-09	-	[135]
409	C2H4+	+ C4H2	= C6H4+	+ H2	+ -	-	0.5	1.00E-09	-	[135]
410	C2H4+	+ N	= C2H3N+	+ H	+ -	-	1	3.00E-10	300	[115]
411	C2H4+	+ CH3NH2	= CH3NH3+	+ C2H3	+ -	-	0.38	1.70E-09	300	[92]
412	C2H4+	+ CH3CN	= C2H3NH+	+ CHCH2	+ -	-	0.89	3.20E-09	300	[92]
413	C2H4+	+ C3H5N	= products	+ -	+ -	-	1	1.13E-09	300	[39]
414	C2H4+	+ HC3N	= HC3NH+	+ CHCH2	+ -	-	0.85	1.50E-09	298	[10,77]
415	C2H4+	+ HC3N	= C5H3NH+	+ H	+ -	-	0.15	1.50E-09	298	[10,77]
416	C2H5+	+ H	= C2H4+	+ H2	+ -	-	1	1.00E-11	300	[8]
417	C2H5+	+ CH4	= C3H7+	+ H2	+ -	-	1	9.00E-14	300	[8]
418	C2H5+	+ C2H2	= c-C3H3+	+ CH4	+ -	-	0.36	1.90E-10	298	[54]
419	C2H5+	+ C2H2	= C4H5+	+ H2	+ -	-	0.64	1.90E-10	298	[54]
420	C2H5+	+ C2H4	= C3H5+	+ CH4	+ -	-	1	3.55E-10	300	[8]
421	C2H5+	+ C2H6	= C3H7+	+ CH4	+ -	-	0.14	3.90E-11	300	[8]
422	C2H5+	+ C2H6	= C4H9+	+ H2	+ -	-	0.86	3.90E-11	300	[8]
423	C2H5+	+ CH3C2H	= C3H5+	+ C2H4	+ -	-	0.9	1.40E-09	300	[79]
424	C2H5+	+ CH3C2H	= C4H5+	+ CH4	+ -	-	0.1	1.40E-09	300	[79]
425	C2H5+	+ C3H8	= C3H7+	+ C2H6	+ -	-	1	6.30E-10	300	[59]
426	C2H5+	+ C4H2	= C4H3+	+ C2H4	+ -	-	1	3.00E-09	300	*
427	C2H5+	+ CH3C4H	= C5H5+	+ C2H4	+ -	-	1	3.00E-09	300	*
428	C2H5+	+ C6H2	= C6H3+	+ C2H4	+ -	-	1	3.00E-09	300	*
429	C2H5+	+ C6H6	= C6H7+	+ C2H4	+ -	-	1	3.00E-09	300	*
430	C2H5+	+ CH3C6H	= C7H5+	+ C2H4	+ -	-	1	3.00E-09	300	*

431	C2H5+	+ C7H8	= C7H9+	+ C2H4	+ -	-	1	3.00E-09	300	*
432	C2H5+	+ C8H2	= C8H3+	+ C2H4	+ -	-	1	3.00E-09	300	*
433	C2H5+	+ NH3	= NH4+	+ C2H4	+ -	-	1	2.09E-09	300	[8]
434	C2H5+	+ CH3NH2	= CH3NH3+	+ C2H4	+ -	-	1	1.87E-09	300	[133]
435	C2H5+	+ CH2NH	= CH2NH2+	+ C2H4	+ -	-	1	2.70E-09	300	[4]
436	C2H5+	+ N2H4	= N2H4H+	+ C2H4	+ -	-	1	3.00E-09	300	*
437	C2H5+	+ HCN	= HCNH+	+ C2H4	+ -	-	1	2.70E-09	299	[68]
438	C2H5+	+ CH3CN	= C2H3NH+	+ C2H4	+ -	-	1	3.80E-09	300	[9,73,128]
439	C2H5+	+ HC3N	= HC3NH+	+ C2H4	+ -	-	1	3.55E-09	300	[8]
440	C2H5+	+ C3H3N	= C3H3NH+	+ C2H4	+ -	-	1	4.30E-09	300	[4]
441	C2H5+	+ C3H5N	= C3H5NH+	+ C2H4	+ -	-	1	4.10E-09	300	[4]
442	C2H5+	+ C4H3N	= C4H3NH+	+ C2H4	+ -	-	1	3.00E-09	300	*
443	C2H5+	+ C4H5N	= C4H5NH+	+ C2H4	+ -	-	1	3.00E-09	300	*
444	C2H5+	+ HC5N	= HC5NH+	+ C2H4	+ -	-	1	3.00E-09	300	*
445	C2H5+	+ C5H5N	= C5H5NH+	+ C2H4	+ -	-	1	3.00E-09	300	*
446	C2H5+	+ C6H3N	= C6H3NH+	+ C2H4	+ -	-	1	3.00E-09	300	*
447	C2H5+	+ C6H7N	= C6H7NH+	+ C2H4	+ -	-	1	3.00E-09	300	*
448	C2H5+	+ C2N2	= C2N2H+	+ C2H4	+ -	-	1	8.00E-11	300	[8]
449	C2H5+	+ H2O	= H3O+	+ C2H4	+ -	-	1	1.86E-09	300	[8]
450	C2H5+	+ CH3OH	= CH3OH2+	+ C2H4	+ -	-	1	3.00E-09	300	*
451	C2H5+	+ CH3CHO	= CH3CHOH+	+ C2H4	+ -	-	1	3.37E-09	300	[18]
452	C2H6+	+ H	= C2H5+	+ H2	+ -	-	1	1.00E-10	300	[8]
453	C2H6+	+ C2H2	= C2H5+	+ CHCH2	+ -	-	0.19	1.30E-09	300	[8]
454	C2H6+	+ C2H2	= C3H5+	+ CH3	+ -	-	0.7	1.30E-09	300	[8]
455	C2H6+	+ C2H2	= C4H7+	+ H	+ -	-	0.11	1.30E-09	300	[8]
456	C2H6+	+ C2H4	= C2H4+	+ C2H6	+ -	-	1	1.15E-09	298	[54]
457	C2H6+	+ C2H6	= C3H8+	+ CH4	+ -	-	0.42	1.90E-11	300	[8]
458	C2H6+	+ C2H6	= C3H9+	+ CH3	+ -	-	0.58	1.90E-11	300	[8]
459	C2H6+	+ H2O	= H3O+	+ CH3CH2	+ -	-	1	2.95E-09	298	[47]
460	C2H6+	+ NH3	= NH3+	+ C2H6	+ -	-	0.28	2.23E-09	298	[47]
461	C2H6+	+ NH3	= NH4+	+ CH3CH2	+ -	-	0.72	2.23E-09	298	[47]

462	C2H6+	+ HCN	= HCNH+	+ C2H5	+ -	-	0.95	1.20E-09	-	[4]
463	C2H6+	+ HCN	= C3H5NH+	+ H	+ -	-	0.05	1.20E-09	-	[4]
464	C2H7+	+ NH3	= NH4+	+ C2H6	+ -	-	0.9	2.00E-09	300	[43]
465	C2H7+	+ HCN	= HCNH+	+ C2H6	+ -	-	0.9	2.20E-09	-	[135]
466	C2H7+	+ HCN	= C2H3NH+	+ CH4	+ -	-	0.1	2.20E-09	-	[135]
467	C3H+	+ H2	= C3H2+	+ H	+ -	-	0.2	2.60E-11	298	[8]
468	C3H+	+ H2	= c-C3H3+	+ hv	+ -	-	0.8	2.60E-11	298	[8]
469	C3H+	+ CH4	= C2H3+	+ C2H2	+ -	-	0.9	8.70E-10	300	[101]
470	C3H+	+ CH4	= C4H3+	+ H2	+ -	-	0.1	8.70E-10	300	[101]
471	C3H+	+ C2H2	= C5H2+	+ H	+ -	-	1	8.40E-10	300	[8]
472	C3H+	+ C2H4	= c-C3H3+	+ C2H2	+ -	-	0.95	9.50E-10	296	[20,22,103]
473	C3H+	+ C2H4	= C5H3+	+ H2	+ -	-	0.05	9.50E-10	296	[20,22,103]
474	C3H+	+ C3H6	= C4H4+	+ C2H3	+ -	-	0.12	1.00E-09	298	[42]
475	C3H+	+ C3H6	= C4H3+	+ C2H4	+ -	-	0.88	1.00E-09	298	[42]
476	C3H+	+ C3H8	= products	+ -	+ -	-	1	1.60E-09	300	[83]
477	C3H+	+ CH3C2H	= C4H3+	+ C2H2	+ -	-	1	1.40E-09	300	[5]
478	C3H+	+ C4H2	= C5H2+	+ CCH	+ -	-	0.85	1.20E-09	300	[29]
479	C3H+	+ C4H2	= C5H+	+ C2H2	+ -	-	0.1	1.20E-09	300	[29]
480	C3H+	+ C4H2	= C4H2+	+ CCH	+ -	-	0.05	1.20E-09	300	[29]
481	C3H+	+ N	= C3N+	+ H	+ -	-	0.9	2.70E-10	300	[115]
482	C3H+	+ N	= HC3N+	+ -	+ -	-	0.1	2.70E-10	300	[115]
483	C3H+	+ NH3	= NH3+	+ C3H	+ -	-	0.2	1.65E-09	-	[4]
484	C3H+	+ NH3	= NH4+	+ C3	+ -	-	0.45	1.65E-09	-	[4]
485	C3H+	+ NH3	= HCNH+	+ C2H2	+ -	-	0.25	1.65E-09	-	[4]
486	C3H+	+ NH3	= C3H3N+	+ H	+ -	-	0.1	1.65E-09	-	[4]
487	C3H+	+ HCN	= HCNH+	+ CCC	+ -	-	0.09	4.00E-11	300	[8]
488	C3H+	+ HCN	= HC4NH+	+ hv	+ -	-	0.91	4.00E-11	300	[8]
489	C3H+	+ CH3CN	= C2H3+	+ HC3N	+ -	-	0.2	3.00E-09	296	[8]
490	C3H+	+ CH3CN	= C2H3NH+	+ CCC	+ -	-	0.15	3.00E-09	296	[8]
491	C3H+	+ CH3CN	= HC3NH+	+ C2H2	+ -	-	0.33	3.00E-09	296	[8]
492	C3H+	+ CH3CN	= C5H3NH+	+ -	+ -	-	0.3	3.00E-09	296	[8]

493	C3H+	+ HC3N	= HC6NH+	+ hv	+ -	-	1	1.25E-09	300	[8]
494	C3H+	+ C2N2	= adduct	+ hv	+ -	-	1	4.40E-10	296	[20,22,103]
495	C3H2+	+ CH4	= c-C3H3+	+ CH3	+ -	-	1	5.50E-10	300	[101]
496	C3H2+	+ C2H2	= C5H3+	+ H	+ -	-	1	9.00E-10	300	[124]
497	C3H2+	+ C2H4	= c-C3H3+	+ C2H3	+ -	-	0.25	1.10E-09	300	[101]
498	C3H2+	+ C2H4	= C3H4+	+ C2H2	+ -	-	0.6	1.10E-09	300	[101]
499	C3H2+	+ C2H4	= C5H5+	+ H	+ -	-	0.25	1.10E-09	300	[101]
500	C3H2+	+ CH3CCH	= C4H2+	+ C2H4	+ -	-	0.09	1.30E-09	300	[5]
501	C3H2+	+ CH3CCH	= C4H3+	+ CHCH2	+ -	-	0.12	1.30E-09	300	[5]
502	C3H2+	+ CH3CCH	= C4H4+	+ C2H2	+ -	-	0.41	1.30E-09	300	[5]
503	C3H2+	+ CH3CCH	= C5H3+	+ CH3	+ -	-	0.18	1.30E-09	300	[5]
504	C3H2+	+ CH3CCH	= C6H5+	+ H	+ -	-	0.2	1.30E-09	300	[5]
505	C3H2+	+ C3H6	= c-C3H3+	+ C3H5	+ -	-	0.15	1.00E-09	300	[101]
506	C3H2+	+ C3H6	= C4H4+	+ C2H4	+ -	-	0.15	1.00E-09	300	[101]
507	C3H2+	+ C3H6	= C5H5+	+ CH3	+ -	-	0.25	1.00E-09	300	[101]
508	C3H2+	+ C3H6	= C6H7+	+ H	+ -	-	0.45	1.00E-09	300	[101]
509	C3H2+	+ C3H8	= c-C3H3+	+ C3H7	+ -	-	0.3	1.20E-09	300	[101]
510	C3H2+	+ C3H8	= C3H7+	+ C3H3	+ -	-	0.45	1.20E-09	300	[101]
511	C3H2+	+ C3H8	= C4H6+	+ C2H4	+ -	-	0.1	1.20E-09	300	[101]
512	C3H2+	+ C3H8	= C4H8+	+ C2H2	+ -	-	0.05	1.20E-09	300	[101]
513	C3H2+	+ C3H8	= C5H7+	+ CH3	+ -	-	0.1	1.20E-09	300	[101]
514	C3H2+	+ C4H2	= C7H3+	+ H	+ -	-	0.5	6.00E-10	-	[86]
515	C3H2+	+ C4H2	= C7H2+	+ H2	+ -	-	0.5	6.00E-10	-	[86]
516	C3H2+	+ C6H2	= C9H3+	+ H	+ -	-	0.5	6.00E-10	-	[86]
517	C3H2+	+ C6H2	= C9H2+	+ H2	+ -	-	0.5	6.00E-10	-	[86]
518	C3H2+	+ C6H6	= c-C3H3+	+ C4H9	+ -	-	1	1.20E-09	300	[101]
519	C3H2+	+ N	= C2H2+	+ CN	+ -	-	0.85	4.40E-11	300	[115]
520	C3H2+	+ N	= HCNH+	+ C2	+ -	-	0.15	4.40E-11	300	[115]
521	C3H2+	+ NH3	= NH4+	+ C3H	+ -	-	0.2	2.30E-09	300	[101]
522	C3H2+	+ NH3	= CH2NH+	+ C2H2	+ -	-	0.05	2.30E-09	300	[101]
523	C3H2+	+ NH3	= C2H5+	+ CN	+ -	-	0.05	2.30E-09	300	[101]

524	C3H2+	+ NH3	= C3H3NH+	+ H	+ -	-	0.6	2.30E-09	300	[101]
525	C3H2+	+ NH3	= C3H5N+	+ hv	+ -	-	0.1	2.30E-09	300	[101]
526	C3H2+	+ HCN	= products	+ -	+ -	-	1	1.60E-10	300	[6]
527	C3H2+	+ C3H3N	= HC4NH+	+ C2H3	+ -	-	0.05	1.00E-09	300	[101]
528	C3H2+	+ C3H3N	= C5H4+	+ HCN	+ -	-	0.05	1.00E-09	300	[101]
529	C3H2+	+ C3H3N	= adduct	+ hv	+ -	-	0.9	1.00E-09	300	[101]
530	c-C3H3+	+ C6H6	= NoReaction	+ -	+ -	-	1	1.00E-11	300	[31]
531	c-C3H3+	+ C7H8	= products	+ -	+ -	-	1	1.70E-11	300	[31]
532	l-C3H3+	+ C2H2	= c-C3H3+	+ C2H2	+ -	-	1	2.10E-10	363	[74]
533	l-C3H3+	+ C2H4	= C5H5+	+ H2	+ -	-	0.5	1.10E-09	298	[129]
534	l-C3H3+	+ C2H4	= C5H7+	+ -	+ -	-	0.5	1.10E-09	298	[129]
535	l-C3H3+	+ C4H2	= c-C3H3+	+ C4H2	+ -	-	0.24	1.40E-09	363	[8]
536	l-C3H3+	+ C4H2	= C5H3+	+ C2H2	+ -	-	0.76	1.40E-09	363	[8]
537	l-C3H3+	+ C6H6	= C7H7+	+ C2H2	+ -	-	0.5	1.40E-09	300	[129]
538	l-C3H3+	+ C6H6	= C9H7+	+ H2	+ -	-	0.5	1.40E-09	300	[129]
539	l-C3H3+	+ N	= HC3N+	+ H2	+ -	-	1	5.80E-11	300	[115]
540	l-C3H3+	+ NH3	= NH4+	+ C3H3	+ -	-	0.6	3.00E-10	320	[74]
541	l-C3H3+	+ NH3	= HCNH+	+ C2H4	+ -	-	0.4	3.00E-10	320	[74]
542	l-C3H3+	+ CH3CN	= products	+ -	+ -	-	1	1.60E-10	320	[74]
543	l-C3H3+	+ HC3N	= products	+ -	+ -	-	1	9.00E-10	320	[74]
544	C3H4+	+ H	= c-C3H3+	+ H2	+ -	-	1	3.00E-11	300	[32]
545	C3H4+	+ C2H2	= C5H5+	+ H	+ -	-	1	4.20E-10	300	[12]
546	C3H4+	+ C2H4	= C4H5+	+ CH3	+ -	-	0.11	8.30E-10	300	[79]
547	C3H4+	+ C2H4	= C5H7+	+ H	+ -	-	0.89	8.30E-10	300	[79]
548	C3H4+	+ CH3C2H	= C3H5+	+ CH2CCH	+ -	-	0.18	1.10E-09	300	[8]
549	C3H4+	+ CH3C2H	= C4H4+	+ C2H4	+ -	-	0.02	1.10E-09	300	[8]
550	C3H4+	+ CH3C2H	= C4H6+	+ C2H2	+ -	-	0.02	1.10E-09	300	[8]
551	C3H4+	+ CH3C2H	= C5H5+	+ CH3	+ -	-	0.02	1.10E-09	300	[8]
552	C3H4+	+ CH3C2H	= C6H5+	+ H2	+ H	-	0.08	1.10E-09	300	[8]
553	C3H4+	+ CH3C2H	= C6H7+	+ H	+ -	-	0.3	1.10E-09	300	[8]
554	C3H4+	+ CH3C2H	= C6H7+	+ H	+ -	-	0.38	1.10E-09	300	[8]

555	C3H4+	+ C3H6	= C4H6+	+ C2H4	+ -	-	1	1.00E-09	298	[42]
556	C3H4+	+ C3H8	= products	+ -	+ -	-	1	1.20E-10	300	[83]
557	C3H4+	+ C4H2	= C5H4+	+ C2H2	+ -	-	0.07	1.80E-09	300	[79]
558	C3H4+	+ C4H2	= C7H5+	+ H	+ -	-	0.93	1.80E-09	300	[79]
559	C3H4+	+ N	= C3H3N+	+ H	+ -	-	1	1.00E-10	-	[86]
560	C3H4+	+ N	= HC3NH+	+ H2	+ -	-	1	1.00E-10	-	[86]
561	C3H4+	+ NH3	= NH3+	+ CH3C2H	+ -	-	0.14	1.50E-09	333	[85]
562	C3H4+	+ NH3	= NH4+	+ C3H3	+ -	-	0.86	1.50E-09	333	[85]
563	C3H4+	+ HC3N	= HC3NH+	+ C3H3	+ -	-	1	1.80E-10	300	[79]
564	C3H5+	+ H	= C2H2+	+ CH4	+ -	-	0.05	1.00E-11	300	[32]
565	C3H5+	+ H	= C2H3+	+ CH3	+ -	-	0.95	1.00E-11	300	[32]
566	C3H5+	+ C2H2	= C5H5+	+ H2	+ -	-	1	3.80E-10	298	[10,77]
567	C3H5+	+ C2H4	= C5H7+	+ H2	+ -	-	0.7	1.70E-10	298	[10,77]
568	C3H5+	+ C2H4	= C5H9+	+ hv	+ -	-	0.3	1.70E-10	298	[10,77]
569	C3H5+	+ CH3C2H	= C6H7+	+ H2	+ -	-	1	3.50E-10	300	[11]
570	C3H5+	+ C3H6	= C4H7+	+ C2H4	+ -	-	1	1.00E-09	300	[79]
571	C3H5+	+ C3H6	= C6H11+	+ -	+ -	-	1	1.50E-26	300	[79]
572	C3H5+	+ C3H8	= C3H7+	+ C3H6	+ -	-	0.83	4.70E-10	300	[79]
573	C3H5+	+ C3H8	= C4H7+	+ C2H6	+ -	-	0.06	4.70E-10	300	[79]
574	C3H5+	+ C3H8	= C4H9+	+ C2H4	+ -	-	0.11	4.70E-10	300	[79]
575	C3H5+	+ C4H2	= C5H5+	+ C2H2	+ -	-	1	1.50E-10	300	[79]
576	C3H5+	+ C6H6	= C7H7+	+ C2H4	+ -	-	0.9	1.15E-09	300	[45]
577	C3H5+	+ C6H6	= C6H7+	+ CH3C2H	+ -	-	0.1	1.15E-09	300	[45]
578	C3H5+	+ C7H8	= C8H9+	+ C2H4	+ -	-	0.72	1.45E-09	300	[45]
579	C3H5+	+ C7H8	= C7H9+	+ CH3C2H	+ -	-	0.15	1.45E-09	300	[45]
580	C3H5+	+ C7H8	= C7H7+	+ C3H6	+ -	-	0.13	1.45E-09	300	[45]
581	C3H5+	+ N	= C2H4+	+ HCN	+ -	-	0.88	1.25E-10	300	[35]
582	C3H5+	+ N	= C3H3N+	+ H2	+ -	-	0.12	1.25E-10	300	[35]
583	C3H5+	+ NH3	= NH4+	+ CH3C2H	+ -	-	1	9.00E-10	333	[85]
584	C3H5+	+ HCN	= C4H5NH+	+ hv	+ -	-	1	5.00E-11	298	[10,77]
585	C3H5+	+ C3H3N	= C3H3NH+	+ CH3C2H	+ -	-	1	1.00E-09	298	[10,77]

586	C3H5+	+ HC3N	= HC3NH+	+ CH3C2H	+ -	-	1	3.80E-10	300	[79]
587	C3H6+	+ C2H2	= C4H5+	+ CH3	+ -	-	0.12	6.70E-10	300	[79]
588	C3H6+	+ C2H2	= C5H7+	+ H	+ -	-	0.88	6.70E-10	300	[79]
589	C3H6+	+ C2H4	= C4H7+	+ CH3	+ -	-	1	1.80E-27	300	[12]
590	C3H6+	+ C3H6	= C3H7+	+ C3H5	+ -	-	0.15	1.40E-09	298	[10,77]
591	C3H6+	+ C3H6	= C4H7+	+ CH3CH2	+ -	-	0.2	1.40E-09	298	[10,77]
592	C3H6+	+ C3H6	= C4H8+	+ C2H4	+ -	-	0.35	1.40E-09	298	[10,77]
593	C3H6+	+ C3H6	= C5H9+	+ CH3	+ -	-	0.3	1.40E-09	298	[10,77]
594	C3H6+	+ NH3	= CH2NH2+	+ C2H5	+ -	-	0.57	1.00E-09	300	[60]
595	C3H6+	+ NH3	= CH3NH2+	+ C2H4	+ -	-	0.13	1.00E-09	300	[60]
596	C3H6+	+ NH3	= NH4+	+ C3H5	+ -	-	0.3	1.00E-09	300	[60]
597	C3H6+	+ HCN	= C2H3N+	+ C2H4	+ -	-	0.4	4.00E-10	298	[10,77]
598	C3H6+	+ HCN	= C4H5NH+	+ H	+ -	-	0.6	4.00E-10	298	[10,77]
599	C3H7+	+ H	= C3H6+	+ H2	+ -	-	1	3.70E-11	300	[131]
600	C3H7+	+ C2H6	= C4H9+	+ CH4	+ -	-	1	1.00E-09	300	[84]
601	C3H7+	+ C3H6	= C4H9+	+ C2H4	+ -	-	1	4.50E-10	300	[11]
602	C3H7+	+ C3H8	= C3H7+	+ C3H8	+ -	-	1	1.20E-10	300	[59]
603	C3H7+	+ NH3	= NH4+	+ C3H6	+ -	-	0.9	1.90E-09	300	[43]
604	C3H7+	+ CH3NH2	= products	+ -	+ -	-	1	1.65E-09	300	[133]
605	C4H2+	+ H	= C4H3+	+ hv	+ -	-	1	7.00E-11	300	[78]
606	C4H2+	+ C2H2	= C6H3+	+ H	+ -	-	0.05	2.80E-10	298	[8]
607	C4H2+	+ C2H2	= C6H4+	+ hv	+ -	-	0.95	2.80E-10	298	[8]
608	C4H2+	+ C2H4	= C4H4+	+ C2H2	+ -	-	0.47	1.50E-09	300	[12]
609	C4H2+	+ C2H4	= C6H4+	+ H2	+ -	-	0.05	1.50E-09	300	[12]
610	C4H2+	+ C2H4	= C6H5+	+ H	+ -	-	0.48	1.50E-09	300	[12]
611	C4H2+	+ CH3C2H	= C5H4+	+ C2H2	+ -	-	0.1	1.30E-09	300	[79]
612	C4H2+	+ CH3C2H	= C7H5+	+ H	+ -	-	0.9	1.30E-09	300	[79]
613	C4H2+	+ C4H2	= C6H2+	+ C2H2	+ -	-	1	1.40E-09	300	[11]
614	C4H2+	+ C6H6	= products	+ -	+ -	-	1	1.46E-09	300	[64]
615	C4H2+	+ N	= C3H+	+ HCN	+ -	-	0.9	1.90E-10	300	[115]
616	C4H2+	+ N	= HC4N+	+ H	+ -	-	0.05	1.90E-10	300	[115]

617	C4H2+	+ N	= HCNH+	+ C3	+ -	-	0.05	1.90E-10	300	[115]
618	C4H2+	+ HC3N	= C7H3N+	+ hv	+ -	-	1	1.70E-09	305	[55,57]
619	C4H2+	+ HC5N	= adduct	+ hv	+ -	-	1	1.13E-11	-	[135]
620	C4H2+	+ C2N2	= products	+ -	+ -	-	1	2.00E-10	295	[75]
621	C4H3+	+ H	= C4H4+	+ hv	+ -	-	1	6.00E-14	300	[78]
622	C4H3+	+ C2H2	= C6H5+	+ hv	+ -	-	1	2.20E-10	300	[8]
623	C4H3+	+ C2H4	= C6H5+	+ H2	+ -	-	1	1.20E-10	300	[12]
624	C4H3+	+ CH3C2H	= C5H5+	+ C2H2	+ -	-	1	1.40E-09	300	[12]
625	C4H3+	+ C4H2	= C6H3+	+ C2H2	+ -	-	1	7.40E-10	300	[5]
626	C4H3+	+ C6H6	= C6H7+	+ C4H2	+ -	-	1	1.30E-09	300	[26,64]
627	C4H3+	+ NH3	= NH4+	+ C4H2	+ -	-	1	9.90E-10	333	[85]
628	C4H3+	+ C2N2	= products	+ -	+ -	-	1	1.90E-10	295	[75]
629	C4H4+	+ C2H2	= C6H5+	+ H	+ -	-	0.88	1.00E-10	-	[135]
630	C4H4+	+ C2H2	= C6H4+	+ H2	+ -	-	0.12	1.00E-10	-	[135]
631	C4H4+	+ C4H2	= C6H4+	+ C2H2	+ -	-	1	7.00E-10	-	[135]
632	C4H4+	+ C6H6	= products	+ -	+ -	-	1	6.60E-10	300	[65]
633	C4H4+	+ NH3	= NH4+	+ C4H3	+ -	-	0.88	3.64E-10	333	[85]
634	C4H4+	+ NH3	= CH2NH2+	+ C3H3	+ -	-	0.12	3.64E-10	333	[85]
635	C4H5+	+ C2H2	= C6H5+	+ H2	+ -	-	1	1.60E-10	300	[12]
636	C4H5+	+ C2H4	= C6H7+	+ H2	+ -	-	1	7.30E-11	300	[12]
637	C4H5+	+ CH3C2H	= C6H5+	+ CH4	+ -	-	0.25	2.00E-10	300	[12]
638	C4H5+	+ CH3C2H	= C7H7+	+ H2	+ -	-	0.75	2.00E-10	300	[12]
639	C4H5+	+ C4H2	= C6H5+	+ C2H2	+ -	-	1	1.00E-09	300	[5]
640	C4H5+	+ N	= C4H3NH+	+ H	+ -	-	1	1.00E-10	-	[86]
641	C4H5+	+ NH3	= NH4+	+ C4H4	+ -	-	1	4.70E-10	333	[85]
642	C4H7+	+ CH3C2H	= C7H9+	+ H2	+ -	-	1	1.50E-10	300	[12]
643	C4H7+	+ CH3CN	= C2H3NH+	+ C4H6	+ -	-	1	5.20E-11	340	[61]
644	C4H9+	+ NH3	= NH4+	+ C4H8	+ -	-	0.98	1.60E-09	300	[80]
645	C4H9+	+ NH3	= adduct	+ hv	+ -	-	0.02	1.60E-09	300	[80]
646	C4H9+	+ CH3NH2	= products	+ -	+ -	-	1	1.31E-09	300	[132]
647	C5H+	+ N	= C5N+	+ H	+ -	-	1	2.00E-10	-	[135]

648	C5H2+	+ CH4	= C6H5+	+ H	+ -	-	0.8	1.00E-09	-	[86]
649	C5H2+	+ CH4	= C6H4+	+ H2	+ -	-	0.2	1.00E-09	-	[86]
650	C5H2+	+ C2H2	= C7H3+	+ H	+ -	-	0.7	1.00E-09	-	[86]
651	C5H2+	+ C2H2	= C7H2+	+ H2	+ -	-	0.3	1.00E-09	-	[86]
652	C5H2+	+ C2H4	= C7H5+	+ H	+ -	-	0.5	1.00E-09	-	[135]
653	C5H2+	+ C2H4	= C7H4+	+ H2	+ -	-	0.5	1.00E-09	-	[135]
654	C5H2+	+ CH3C2H	= C8H4+	+ H2	+ -	-	1	8.70E-10	-	[86]
655	C5H2+	+ C4H2	= C7H3+	+ C2H	+ -	-	1	6.00E-10	-	[135]
656	C5H2+	+ N	= HC5N+	+ H	+ -	-	1	2.00E-10	-	[135]
657	C5H3+	+ C6H6	= products	+ -	+ -	-	1	2.40E-10	300	[63]
658	C5H3+	+ N	= HC5NH+	+ H	+ -	-	1	1.00E-10	-	[135]
659	C5H4+	+ N	= C5H3N+	+ H	+ -	-	1	1.00E-10	-	[135]
660	C5H5+	+ C2H2	= C7H7+	+ hv	+ -	-	1	1.70E-10	300	[12]
661	C5H5+	+ C4H2	= C9H7+	+ hv	+ -	-	1	2.20E-10	373 [87,88]	
662	C5H5+	+ C4H2	= C7H5+	+ C2H2	+ -	-	1	2.20E-10	373 [87,88]	
663	C5H5+	+ C4H2	= C7H7+	+ C2	+ -	-	1	2.20E-10	373 [87,88]	
664	C5H5+	+ C6H6	= products	+ -	+ -	-	1	2.00E-10	300 [31]	
665	C5H5+	+ C7H8	= products	+ -	+ -	-	1	2.00E-10	300 [31]	
666	C5H5+	+ N	= C5H3N+	+ H2	+ -	-	1	1.00E-10	-	[135]
667	C5H5+	+ NH3	= NH4+	+ C5H4	+ -	-	1	3.50E-11	333 [85]	
668	C5H5+	+ HCN	= C6H5NH+	+ -	+ -	-	1	9.00E-12	300 [4]	
669	C5H7+	+ CH3C2H	= adduct	+ hv	+ -	-	1	7.00E-10	300 [12]	
670	C5H11+	+ NH3	= NH4+	+ C5H10	+ -	-	1	6.50E-10	300 [132]	
671	C5H11+	+ CH3NH2	= CH3NH3+	+ C5H10	+ -	-	1	9.10E-10	300 [132]	
672	C6H2+	+ CH4	= C7H5+	+ H	+ -	-	0.8	1.00E-09	-	[86]
673	C6H2+	+ CH4	= C7H4+	+ H2	+ -	-	0.2	1.00E-09	-	[86]
674	C6H2+	+ C2H4	= C8H4+	+ H2	+ -	-	1	1.00E-09	-	[135]
675	C6H2+	+ CH3C2H	= C9H4+	+ H2	+ -	-	1	8.40E-10	-	[86]
676	C6H2+	+ C6H6	= products	+ -	+ -	-	1	1.26E-09	300 [63]	
677	C6H2+	+ N	= C5H+	+ HCN	+ -	-	1	1.90E-10	-	[135]
678	C6H3+	+ C2H2	= C8H5+	+ hv	+ -	-	1	2.30E-10	300 [12]	

679	C6H3+	+ C6H6	= products	+ -	-	1	4.20E-10	300	[63]
680	C6H4+	+ H	= C6H5+	+ hv	-	1	3.30E-11	300	[32]
681	C6H4+	+ C2H2	= C8H6+	+ hv	-	1	2.90E-10	300	[12]
682	C6H4+	+ C6H6	= adduct	+ hv	-	0.9	1.41E-10	300	[62]
683	C6H4+	+ C6H6	= C12H8+	+ H2	-	0.1	1.41E-10	300	[62]
684	C6H5+	+ H2	= C6H7+	+ hv	-	1	6.00E-11	300	[78]
685	C6H5+	+ CH4	= C7H7+	+ H2	-	1	7.50E-11	325	[15]
686	C6H5+	+ C2H2	= C8H6+	+ H	-	0.6	1.30E-10	325	[15]
687	C6H5+	+ C2H2	= C8H7+	+ hv	-	0.4	1.30E-10	325	[15]
688	C6H5+	+ C2H4	= C6H7+	+ C2H2	-	0.6	1.70E-10	300	[12]
689	C6H5+	+ C2H4	= C8H7+	+ H2	-	0.4	1.70E-10	300	[12]
690	C6H5+	+ C2H6	= C7H7+	+ CH4	-	0.03	1.30E-10	325	[15]
691	C6H5+	+ C2H6	= C6H7+	+ C2H4	-	0.97	1.30E-10	325	[15]
692	C6H5+	+ CH3C2H	= C7H7+	+ C2H2	-	0.18	2.30E-10	300	[8]
693	C6H5+	+ CH3C2H	= C9H7+	+ H2	-	0.78	2.30E-10	300	[8]
694	C6H5+	+ CH3C2H	= C9H8+	+ H	-	0.05	2.30E-10	300	[8]
695	C6H5+	+ C6H6	= products	+ -	-	1	4.70E-10	300	[64]
696	C6H5+	+ N	= C5H4+	+ HCN	-	1	3.70E-11	300	[115]
697	C6H5+	+ NH3	= NH4+	+ C6H4	-	0.36	2.08E-10	333	[85]
698	C6H5+	+ NH3	= C6H7N+	+ H	-	0.23	2.08E-10	333	[85]
699	C6H5+	+ NH3	= C6H7NH+	+ hv	-	0.41	2.08E-10	333	[85]
700	C6H6+	+ H	= C6H7+	+ hv	-	1	2.50E-10	294	[98]
701	C6H6+	+ C4H2	= adduct	+ hv	-	1	5.00E-10	296	[23]
702	C6H6+	+ N	= C5H5+	+ HCN	-	0.95	1.40E-10	300	[115]
703	C6H6+	+ N	= e-C3H3+	+ C3H3N	-	0.05	1.40E-10	300	[115]
704	C6H7+	+ CH3C2H	= C7H7+	+ C2H4	-	1	9.70E-11	300	[12]
705	C6H7+	+ NH3	= NH4+	+ C6H6	-	1	2.20E-10	333	[85]
706	C7H+	+ N	= C7N+	+ H	-	1	2.00E-10	-	[135]
707	C7H2+	+ CH4	= C8H4+	+ H2	-	1	1.00E-09	-	[135]
708	C7H2+	+ C2H2	= C9H3+	+ H	-	0.7	1.00E-09	-	[135]
709	C7H2+	+ C2H2	= C9H2+	+ H2	-	0.3	1.00E-09	-	[135]

710	C7H2+	+ C2H4	= C9H4+	+ H2	+ -	-	1	1.00E-09	-	[135]
711	C7H2+	+ N	= HC7N+	+ H	+ -	-	1	2.00E-10	-	[135]
712	C7H3+	+ N	= HC7NH+	+ H	+ -	-	1	2.00E-10	-	[135]
713	C7H4+	+ N	= C7H3N+	+ H	+ -	-	1	1.00E-10	-	[135]
714	C7H5+	+ N	= C7H3N+	+ H2	+ -	-	1	1.00E-10	-	[135]
715	C7H7+	+ C2H4	= adduct	+ hv	+ -	-	1	2.00E-10	300	[12]
716	C7H7+	+ C4H2	= adduct	+ hv	+ -	-	1	1.00E-09	373	[87,88]
717	C7H7+	+ C7H8	= C8H9+	+ C6H6	+ -	-	1	1.60E-10	300	[16]
718	C8H2+	+ CH4	= C9H4+	+ H2	+ -	-	1	1.00E-09	-	[135]
719	N+	+ H2	= NH+	+ H	+ -	-	1	5.00E-10	300	[8]
720	N+	+ CH4	= CH3+	+ NH	+ -	-	0.5	1.15E-09	300	[8]
721	N+	+ CH4	= CH4+	+ N	+ -	-	0.05	1.15E-09	300	[8]
722	N+	+ CH4	= HCNH+	+ H2	+ -	-	0.36	1.15E-09	300	[8]
723	N+	+ CH4	= HCN+	+ H2	+ H	-	0.1	1.15E-09	300	[8]
724	N+	+ C2H2	= C2H2+	+ N	+ -	-	0.7	1.50E-09	298	[10,77]
725	N+	+ C2H2	= CNC+	+ H2	+ -	-	0.15	1.50E-09	298	[10,77]
726	N+	+ C2H2	= HC2N+	+ H	+ -	-	0.15	1.50E-09	298	[10,77]
727	N+	+ C2H4	= C2H2+	+ NH2	+ -	-	0.1	1.30E-09	298	[10,77]
728	N+	+ C2H4	= C2H3+	+ NH	+ -	-	0.25	1.30E-09	298	[10,77]
729	N+	+ C2H4	= C2H4+	+ N	+ -	-	0.35	1.30E-09	298	[10,77]
730	N+	+ C2H4	= HCN+	+ CH3	+ -	-	0.1	1.30E-09	298	[10,77]
731	N+	+ C2H4	= HCNH+	+ CH2	+ -	-	0.15	1.30E-09	298	[10,77]
732	N+	+ C2H4	= HC2N+	+ H2	+ H	-	0.05	1.30E-09	298	[10,77]
733	N+	+ C2H6	= C2H5+	+ NH	+ -	-	0.1	1.00E-09	298	[10,77]
734	N+	+ C2H6	= C2H4+	+ NH2	+ -	-	0.55	1.00E-09	298	[10,77]
735	N+	+ C2H6	= C2H3+	+ NH3	+ -	-	0.25	1.00E-09	298	[10,77]
736	N+	+ C2H6	= HCNH+	+ CH4	+ -	-	0.1	1.00E-09	298	[10,77]
737	N+	+ C6H6	= C6H6+	+ N	+ -	-	0.68	2.00E-09	300	[13]
738	N+	+ C6H6	= C6H5+	+ NH	+ -	-	0.07	2.00E-09	300	[13]
739	N+	+ C6H6	= C6H4+	+ NH2	+ -	-	0.01	2.00E-09	300	[13]
740	N+	+ C6H6	= C5H4+	+ HCN	+ H	-	0.07	2.00E-09	300	[13]

741	N+	+ C6H6	= C4H4+	+ CH2CN	+ -	-	0.05	2.00E-09	300	[13]
742	N+	+ C6H6	= c-C3H3+	+ CH3CCN	+ -	-	0.12	2.00E-09	300	[13]
743	N+	+ C7H8	= C7H7+	+ NH	+ -	-	0.82	2.20E-09	300	[14]
744	N+	+ C7H8	= C6H6+	+ CH2N	+ -	-	0.07	2.20E-09	300	[14]
745	N+	+ C7H8	= C5H5+	+ C2H3N	+ -	-	0.05	2.20E-09	300	[14]
746	N+	+ C7H8	= C4H4+	+ C3H4N	+ -	-	0.02	2.20E-09	300	[14]
747	N+	+ C7H8	= c-C3H3+	+ C4H5N	+ -	-	0.04	2.20E-09	300	[14]
748	N+	+ NH3	= NH2+	+ NH	+ -	-	0.2	2.35E-09	300	[8]
749	N+	+ NH3	= NH3+	+ N	+ -	-	0.71	2.35E-09	300	[8]
750	N+	+ NH3	= N2H+	+ H2	+ -	-	0.09	2.35E-09	300	[8]
751	N+	+ CH3NH2	= CH3NH2+	+ N	+ -	-	0.06	2.56E-09	300	[50]
752	N+	+ CH3NH2	= CH2NH2+	+ N	+ H	-	0.62	2.56E-09	300	[50]
753	N+	+ CH3NH2	= CH2NH+	+ N	+ H2	-	0.07	2.56E-09	300	[50]
754	N+	+ CH3NH2	= HCNH+	+ H2	+ N	-	0.18	2.56E-09	300	[50]
755	N+	+ CH3NH2	= CH3+	+ NH2	+ N	-	0.07	2.56E-09	300	[50]
756	N+	+ H2O	= H2O+	+ N	+ -	-	1	2.70E-09	300	[8]
757	N+	+ HCN	= HCN+	+ N	+ -	-	0.65	3.70E-09	300	[10,77]
758	N+	+ HCN	= CH+	+ N2	+ -	-	0.35	3.70E-09	300	[10,77]
759	N+	+ CH3CN	= C2H3N+	+ N	+ -	-	0.5	1.00E-09	298	[10,77]
760	N+	+ CH3CN	= HC2NH+	+ NH	+ -	-	0.3	1.00E-09	298	[10,77]
761	N+	+ CH3CN	= C2H2+	+ N2	+ H	-	0.1	1.00E-09	298	[10,77]
762	N+	+ CH3CN	= CN+	+ CH2NH	+ -	-	0.1	1.00E-09	298	[10,77]
763	N+	+ C3H3N	= C3H3N+	+ N	+ -	-	0.35	1.00E-09	298	[10,77]
764	N+	+ C3H3N	= HC3NH+	+ NH	+ -	-	0.15	1.00E-09	298	[10,77]
765	N+	+ C3H3N	= HC2N+	+ CH2N2	+ -	-	0.13	1.00E-09	298	[10,77]
766	N+	+ C3H3N	= c-C3H3+	+ N2	+ -	-	0.12	1.00E-09	298	[10,77]
767	N+	+ C3H3N	= CN+	+ CH3CN	+ -	-	0.13	1.00E-09	298	[10,77]
768	N+	+ C3H3N	= C2H2+	+ N2	+ CH	-	0.12	1.00E-09	298	[10,77]
769	N+	+ C2N2	= C2N2+	+ N	+ -	-	0.2	1.70E-09	295	[75]
770	N+	+ C2N2	= C2N+	+ N2	+ -	-	0.8	1.70E-09	295	[75]
771	N+	+ HC3N	= C3H+	+ N2	+ -	-	0.38	4.20E-09	305	[10,77]

772	N+	+ HC3N	= HC3N+	+ N	+ -	-	0.63	4.20E-09	305	[10,77]
773	N+	+ CO	= C+	+ NO	+ -	-	0.01	5.60E-10	300	[8]
774	N+	+ CO	= CO+	+ N	+ -	-	0.88	5.60E-10	300	[8]
775	N+	+ CO	= NO+	+ C	+ -	-	0.11	5.60E-10	300	[8]
776	NH+	+ H2	= H3+	+ N	+ -	-	0.15	1.23E-09	300	[8]
777	NH+	+ H2	= NH2+	+ H	+ -	-	0.85	1.23E-09	300	[8]
778	NH+	+ CH4	= CH5+	+ N	+ -	-	0.1	9.60E-10	300	[2,122]
779	NH+	+ CH4	= NH2+	+ CH3	+ -	-	0.2	9.60E-10	300	[2,122]
780	NH+	+ CH4	= HCNH+	+ H2	+ H	-	0.7	9.60E-10	300	[2,122]
781	NH+	+ C2H4	= C2H2+	+ NH3	+ -	-	0.1	1.50E-09	300	[123]
782	NH+	+ C2H4	= C2H3+	+ NH2	+ -	-	0.25	1.50E-09	300	[123]
783	NH+	+ C2H4	= C2H4+	+ NH	+ -	-	0.25	1.50E-09	300	[123]
784	NH+	+ C2H4	= HCNH+	+ CH3	+ -	-	0.2	1.50E-09	300	[123]
785	NH+	+ C2H4	= CH2NH+	+ CH2	+ -	-	0.1	1.50E-09	300	[123]
786	NH+	+ C2H4	= C2H3N+	+ H2	+ -	-	0.1	1.50E-09	300	[123]
787	NH+	+ CH3C2H	= CH2NH+	+ C2H2	+ -	-	0.12	9.07E-10	333	[85]
788	NH+	+ CH3C2H	= CH2NH2+	+ C2H	+ -	-	0.1	9.07E-10	333	[85]
789	NH+	+ CH3C2H	= c-C3H3+	+ NH2	+ -	-	0.175	9.07E-10	333	[85]
790	NH+	+ CH3C2H	= HC2N+	+ CH4	+ -	-	0.175	9.07E-10	333	[85]
791	NH+	+ CH3C2H	= C3H4+	+ NH	+ -	-	0.14	9.07E-10	333	[85]
792	NH+	+ CH3C2H	= HC2NH+	+ CH3	+ -	-	0.14	9.07E-10	333	[85]
793	NH+	+ CH3C2H	= C3H5+	+ N	+ -	-	0.07	9.07E-10	333	[85]
794	NH+	+ CH3C2H	= C2H3N+	+ CH2	+ -	-	0.07	9.07E-10	333	[85]
795	NH+	+ CH3NH2	= HCNH+	+ NH3	+ H	-	0.2	2.10E-09	300	[2,122]
796	NH+	+ CH3NH2	= CH2NH+	+ NH3	+ -	-	0.05	2.10E-09	300	[2,122]
797	NH+	+ CH3NH2	= CH2NH2+	+ NH2	+ -	-	0.45	2.10E-09	300	[2,122]
798	NH+	+ CH3NH2	= CH3NH2+	+ NH	+ -	-	0.2	2.10E-09	300	[2,122]
799	NH+	+ CH3NH2	= CH3NH3+	+ N	+ -	-	0.2	2.10E-09	300	[2,122]
800	NH+	+ NH3	= NH3+	+ NH	+ -	-	0.75	2.40E-09	300	[2,122]
801	NH+	+ NH3	= NH4+	+ N	+ -	-	0.25	2.40E-09	300	[2,122]
802	NH+	+ N2	= N2H+	+ N	+ -	-	1	6.50E-10	300	[8]

803	NH+	+ N	= N2+	+ H	+ -	-	1	1.30E-09	-	[86]
804	NH+	+ HCN	= HCNH+	+ N	+ -	-	1	1.80E-09	-	[135]
805	NH+	+ H2O	= H3O+	+ N	+ -	-	0.3	3.50E-09	300	[2,122]
806	NH+	+ H2O	= H2O+	+ NH	+ -	-	0.3	3.50E-09	300	[2,122]
807	NH2+	+ H2	= NH3+	+ H	+ -	-	1	1.95E-10	300	[8]
808	NH2+	+ CH4	= NH3+	+ CH3	+ -	-	1	9.20E-10	300	[8]
809	NH2+	+ C2H4	= C2H4+	+ NH2	+ -	-	0.3	1.50E-09	300	[123]
810	NH2+	+ C2H4	= C2H5+	+ NH	+ -	-	0.2	1.50E-09	300	[123]
811	NH2+	+ C2H4	= CH2NH2+	+ CH2	+ -	-	0.3	1.50E-09	300	[123]
812	NH2+	+ C2H4	= C2H5N+	+ H	+ -	-	0.2	1.50E-09	300	[123]
813	NH2+	+ CH3C2H	= C3H4+	+ NH2	+ -	-	0.185	7.80E-10	333	[85]
814	NH2+	+ CH3C2H	= HC2NH+	+ CH4	+ -	-	0.185	7.80E-10	333	[85]
815	NH2+	+ CH3C2H	= C3H5+	+ NH	+ -	-	0.185	7.80E-10	333	[85]
816	NH2+	+ CH3C2H	= C2H3N+	+ CH2	+ H	-	0.185	7.80E-10	333	[85]
817	NH2+	+ CH3C2H	= C3H3NH+	+ H2	+ -	-	0.26	7.80E-10	333	[85]
818	NH2+	+ CH3NH2	= NH4+	+ CH2NH	+ -	-	0.08	1.90E-09	300	[8]
819	NH2+	+ CH3NH2	= CH2NH2+	+ NH3	+ -	-	0.2	1.90E-09	300	[8]
820	NH2+	+ CH3NH2	= CH3NH2+	+ NH2	+ -	-	0.53	1.90E-09	300	[8]
821	NH2+	+ CH3NH2	= CH3NH3+	+ NH	+ -	-	0.2	1.90E-09	300	[8]
822	NH2+	+ NH3	= NH3+	+ NH2	+ -	-	0.5	2.30E-09	300	[8]
823	NH2+	+ NH3	= NH4+	+ NH	+ -	-	0.5	2.30E-09	300	[8]
824	NH2+	+ N	= N2H+	+ H	+ -	-	1	9.10E-11	-	[86]
825	NH2+	+ HCN	= HCNH+	+ NH	+ -	-	1	1.20E-09	-	[86]
826	NH2+	+ H2O	= H3O+	+ NH	+ -	-	0.94	2.90E-09	300	[8]
827	NH3+	+ H2	= NH4+	+ H	+ -	-	1	4.40E-13	300	[8]
828	NH3+	+ CH4	= NH4+	+ CH3	+ -	-	1	4.80E-10	300	[2,122]
829	NH3+	+ C2H4	= NH4+	+ CHCH2	+ -	-	1	1.40E-09	300	[123]
830	NH3+	+ NH3	= NH4+	+ NH2	+ -	-	1	2.10E-09	300	[8]
831	NH3+	+ CH3NH2	= CH3NH2+	+ NH3	+ -	-	0.5	1.80E-09	300	[2,122]
832	NH3+	+ CH3NH2	= CH3NH3+	+ NH2	+ -	-	0.35	1.80E-09	300	[2,122]
833	NH3+	+ CH3NH2	= NH4+	+ CH2NH2	+ -	-	0.15	1.80E-09	300	[2,122]

834	NH4+	+ CH3NH2	= CH3NH3+	+ NH3	+ -	-	1	1.40E-09	300	[3]
835	N2+	+ H	= H+	+ N2	+ -	-	1	1.00E-11	300	[110]
836	N2+	+ H2	= N2H+	+ H	+ -	-	1	2.00E-09	300	[8]
837	N2+	+ CH4	= CH2+	+ N2	+ H2	-	0.09	1.14E-09	300	[12]
838	N2+	+ CH4	= CH3+	+ N2	+ H	-	0.91	1.14E-09	300	[12]
839	N2+	+ C2H2	= C2H2+	+ N2	+ -	-	0.94	4.00E-10	298	[10,30]
840	N2+	+ C2H2	= N2H+	+ C2H	+ -	-	0.06	4.00E-10	298	[10,30]
841	N2+	+ C2H4	= C2H3+	+ N2	+ H	-	0.66	1.30E-09	298	[10,30]
842	N2+	+ C2H4	= C2H2+	+ N2	+ H2	-	0.29	1.30E-09	298	[10,30]
843	N2+	+ C2H4	= N2H+	+ C2H3	+ -	-	0.05	1.30E-09	298	[10,30]
844	N2+	+ C2H6	= C2H5+	+ N2	+ H	-	0.15	1.44E-09	298	[100]
845	N2+	+ C2H6	= C2H4+	+ N2	+ H2	-	0.3	1.44E-09	298	[100]
846	N2+	+ C2H6	= C2H3+	+ N2	+ H2	H	0.35	1.44E-09	298	[100]
847	N2+	+ C2H6	= C2H2+	+ N2	+ H2	H2	0.2	1.44E-09	298	[100]
848	N2+	+ C6H6	= C6H6+	+ N2	+ -	-	0.12	1.60E-09	300	[13]
849	N2+	+ C6H6	= C6H5+	+ N2	+ H	-	0.24	1.60E-09	300	[13]
850	N2+	+ C6H6	= C6H4+	+ N2	+ H2	-	0.04	1.60E-09	300	[13]
851	N2+	+ C6H6	= C5H3+	+ N2	+ CH3	-	0.02	1.60E-09	300	[13]
852	N2+	+ C6H6	= C4H4+	+ N2	+ C2H2	-	0.41	1.60E-09	300	[13]
853	N2+	+ C6H6	= c-C3H3+	+ N2	+ C3H3	-	0.17	1.60E-09	300	[13]
854	N2+	+ C7H8	= C7H7+	+ N2	+ H	-	0.85	1.90E-09	300	[14]
855	N2+	+ C7H8	= C6H5+	+ N2	+ CH3	-	0.05	1.90E-09	300	[14]
856	N2+	+ C7H8	= C5H6+	+ N2	+ C2H2	-	0.02	1.90E-09	300	[14]
857	N2+	+ C7H8	= C4H4+	+ N2	+ CH3C2H	-	0.05	1.90E-09	300	[14]
858	N2+	+ C7H8	= c-C3H3+	+ N2	+ C4H5	-	0.03	1.90E-09	300	[14]
859	N2+	+ N	= N+	+ N2	+ -	-	1	1.00E-11	300	[36]
860	N2+	+ NH3	= NH3+	+ N2	+ -	-	1	1.95E-09	300	[8]
861	N2+	+ H2O	= H2O+	+ N2	+ -	-	0.79	2.40E-09	300	[8]
862	N2+	+ HCN	= HCN+	+ N2	+ -	-	1	3.90E-10	298	[71]
863	N2+	+ CH3NH2	= CH3NH2+	+ N2	+ -	-	0.05	1.22E-09	300	[50]
864	N2+	+ CH3NH2	= CH2NH2+	+ N2	+ H	-	0.67	1.22E-09	300	[50]

865	N2+	+ CH3NH2	= CH2NH+	+ N2	+ H2	-	0.21	1.22E-09	300	[50]
866	N2+	+ CH3NH2	= CH3+	+ N2	+ NH2	-	0.07	1.22E-09	300	[50]
867	N2+	+ CH3CN	= C2H3N+	+ N2	+ -	-	0.15	2.10E-09	298	[137]
868	N2+	+ CH3CN	= HC2NH+	+ N2	+ H	-	0.65	2.10E-09	298	[137]
869	N2+	+ CH3CN	= HC2N+	+ N2	+ H2	-	0.2	2.10E-09	298	[137]
870	N2+	+ HC3N	= HC3N+	+ N2	+ -	-	1	3.50E-09	300	[8]
871	N2+	+ C3H3N	= C2H3+	+ N2	+ CN	-	0.1	1.00E-09	298	[10,77]
872	N2+	+ C3H3N	= C2H2+	+ N2	+ HCN	-	0.3	1.00E-09	298	[10,77]
873	N2+	+ C3H3N	= HC3NH+	+ N2	+ H	-	0.35	1.00E-09	298	[10,77]
874	N2+	+ C3H3N	= HC3N+	+ N2	+ H2	-	0.05	1.00E-09	298	[10,77]
875	N2+	+ C3H3N	= N2H+	+ H2C3N	+ -	-	0.2	1.00E-09	298	[10,77]
876	N2+	+ C2N2	= C2N2+	+ N2	+ -	-	1	9.30E-10	295	[75]
877	N2H+	+ H2	= H3+	+ N2	+ -	-	1	5.10E-18	300	[8]
878	N2H+	+ CH4	= CH5+	+ N2	+ -	-	1	8.90E-10	298	[24]
879	N2H+	+ C2H2	= C2H3+	+ N2	+ -	-	1	1.40E-09	300	[82]
880	N2H+	+ C2H4	= C2H5+	+ N2	+ -	-	1	1.00E-09	300	[82]
881	N2H+	+ C2H6	= C2H5+	+ N2	+ H2	-	0.87	1.30E-09	298	[69]
882	N2H+	+ C2H6	= C2H7+	+ N2	+ -	-	0.13	1.30E-09	298	[69]
883	N2H+	+ CH3C2H	= C3H5+	+ N2	+ -	-	1	1.50E-09	300	[82]
884	N2H+	+ C4H2	= C4H3+	+ N2	+ -	-	1	1.10E-09	300	[29]
885	N2H+	+ C6H6	= C6H7+	+ N2	+ -	-	1	1.50E-09	300	[82]
886	N2H+	+ C7H8	= C7H9+	+ N2	+ -	-	1	1.30E-09	300	[82]
887	N2H+	+ NH3	= NH4+	+ N2	+ -	-	1	2.30E-09	297	[43]
888	N2H+	+ H2O	= H3O+	+ N2	+ -	-	1	2.60E-09	300	[8]
889	N2H+	+ HCN	= HCNH+	+ N2	+ -	-	1	3.20E-09	297	[67]
890	N2H+	+ CH3CN	= C2H3NH+	+ N2	+ -	-	1	4.10E-09	297	[67]
891	N2H+	+ HC3N	= HC3NH+	+ N2	+ -	-	1	4.20E-09	300	[8]
892	N2H+	+ C3H3N	= C3H3NH+	+ N2	+ -	-	1	1.50E-09	300	[82]
893	N2H+	+ C2N2	= C2N2H+	+ N2	+ -	-	1	1.20E-09	296	[104]
894	CN+	+ H	= H+	+ CN	+ -	-	1	6.40E-10	300	[112]
895	CN+	+ H2	= HCN+	+ H	+ -	-	0.5	1.60E-09	300	[112]

896	CN+	+ H2	= HNC+	+ H	-	0.5	1.60E-09	300	[112]
897	CN+	+ CH4	= CH3+	+ HCN	-	0.5	1.00E-09	300	[8]
898	CN+	+ CH4	= CH4+	+ CN	-	0.15	1.00E-09	300	[8]
899	CN+	+ CH4	= HCN+	+ CH3	-	0.15	1.00E-09	300	[8]
900	CN+	+ CH4	= HCNH+	+ CH2	-	0.1	1.00E-09	300	[8]
901	CN+	+ CH4	= HC2NH+	+ H2	-	0.1	1.00E-09	300	[8]
902	CN+	+ C2H4	= C2H4+	+ CN	-	0.7	1.30E-09	298	[8]
903	CN+	+ C2H4	= HCN+	+ CHCH2	-	0.25	1.30E-09	298	[8]
904	CN+	+ C2H4	= HC3NH+	+ H2	-	0.05	1.30E-09	298	[8]
905	CN+	+ C2H6	= C2H3+	+ HCN	+ H2	0.15	1.90E-09	298	[72]
906	CN+	+ C2H6	= C2H4+	+ HCN	+ H	0.65	1.90E-09	298	[72]
907	CN+	+ C2H6	= C2H5+	+ HCN	-	0.2	1.90E-09	298	[72]
908	CN+	+ C4H2	= C4H2+	+ CN	-	0.75	9.70E-10	300	[29]
909	CN+	+ C4H2	= HC5N+	+ H	-	0.25	9.70E-10	300	[29]
910	CN+	+ N	= N2+	+ C	-	1	6.10E-10	300	[111,113,114]
911	CN+	+ H2O	= H2O+	+ CN	-	0.1	3.20E-09	298	[72]
912	CN+	+ HCN	= HCN+	+ CN	-	0.83	2.70E-09	298	[8]
913	CN+	+ HCN	= C2N2+	+ H	-	0.17	2.70E-09	298	[8]
914	CN+	+ CH3CN	= C2H3N+	+ CN	-	0.5	3.40E-09	298	[105]
915	CN+	+ CH3CN	= HC2NH+	+ HCN	-	0.2	3.40E-09	298	[105]
916	CN+	+ CH3CN	= CH3+	+ C2N2	-	0.2	3.40E-09	298	[105]
917	CN+	+ CH3CN	= C2H3+	+ CN2	-	0.1	3.40E-09	298	[105]
918	CN+	+ HC3N	= C3N+	+ HCN	-	0.2	4.60E-09	296	[8]
919	CN+	+ HC3N	= HC3N+	+ CN	-	0.8	4.60E-09	296	[8]
920	CN+	+ C2N2	= C2N+	+ CN2	-	0.03	1.75E-09	298	[8]
921	CN+	+ C2N2	= C2N2+	+ CN	-	0.93	1.75E-09	298	[8]
922	CN+	+ C2N2	= C3N+	+ N2	-	0.05	1.75E-09	298	[8]
923	CN+	+ NH3	= NH2+	+ HCN	-	0.05	2.00E-09	298	[72]
924	CN+	+ NH3	= NH3+	+ CN	-	0.6	2.00E-09	298	[72]
925	CN+	+ NH3	= HCN+	+ NH2	-	0.2	2.00E-09	298	[72]
926	CN+	+ NH3	= HCNH+	+ NH	-	0.15	2.00E-09	298	[72]

927	HCN+	+ H	= H+	+ HCN	+ -	-	1	3.70E-11	-	[86]
928	HCN+	+ H2	= HCNH+	+ H	+ -	-	1	8.80E-10	300	[8]
929	HCN+	+ CH4	= C2H3+	+ NH2	+ -	-	0.1	1.27E-09	300	[8]
930	HCN+	+ CH4	= HCNH+	+ CH3	+ -	-	0.9	1.27E-09	300	[8]
931	HCN+	+ C2H2	= C2H2+	+ HCN	+ -	-	0.85	1.35E-09	300	[8]
932	HCN+	+ C2H2	= C2H3+	+ CN	+ -	-	0.15	1.35E-09	300	[8]
933	HCN+	+ C2H2	= HC3NH+	+ H	+ -	-	0.1	1.35E-09	300	[8]
934	HCN+	+ N	= CH+	+ N2	+ -	-	1	2.20E-10	300	[111,113,114]
935	HCN+	+ H2O	= H3O+	+ CN	+ -	-	0.5	3.60E-09	298	[71]
936	HCN+	+ H2O	= H2O+	+ HCN	+ -	-	0.5	3.60E-09	298	[71]
937	HCN+	+ HCN	= HCNH+	+ CN	+ -	-	1	1.45E-09	298	[8]
938	HCN+	+ HC3N	= HC3N+	+ HCN	+ -	-	0.52	4.60E-09	305	[8]
939	HCN+	+ HC3N	= HC3NH+	+ CN	+ -	-	0.48	4.60E-09	305	[8]
940	HCN+	+ C2N2	= products	+ -	+ -	-	1	1.10E-09	295	[75]
941	HCN+	+ NH3	= NH3+	+ HCN	+ -	-	0.65	2.80E-09	298	[71]
942	HCN+	+ NH3	= HCNH+	+ NH2	+ -	-	0.35	2.80E-09	298	[71]
943	HNC+	+ H2	= HCNH+	+ H	+ -	-	1	7.00E-10	300	[95]
944	HNC+	+ CH4	= HCNH+	+ CH3	+ -	-	1	1.10E-09	300	[95]
945	HNC+	+ C2H2	= C2H2+	+ HCN	+ -	-	0.4	1.50E-09	300	[95]
946	HNC+	+ C2H2	= HC3NH+	+ H	+ -	-	0.6	1.50E-09	300	[95]
947	HNC+	+ HCN	= HCNH+	+ CN	+ -	-	1	1.60E-09	-	[86]
948	HNC+	+ NH3	= NH3+	+ HNC	+ -	-	1	1.70E-09	-	[86]
949	HCNH+	+ C4H2	= C4H3+	+ HCN	+ -	-	1	1.80E-09	300	[96]
950	HCNH+	+ CH3C4H	= C5H5+	+ HCN	+ -	-	1	3.00E-09	300	*
951	HCNH+	+ C6H2	= C6H3+	+ HCN	+ -	-	1	3.00E-09	300	*
952	HCNH+	+ C6H6	= C6H7+	+ HCN	+ -	-	1	3.00E-09	300	*
953	HCNH+	+ CH3C6H	= C7H5+	+ HCN	+ -	-	1	3.00E-09	300	*
954	HCNH+	+ C7H8	= C7H9+	+ HCN	+ -	-	1	3.00E-09	300	*
955	HCNH+	+ C8H2	= C8H3+	+ HCN	+ -	-	1	3.00E-09	300	*
956	HCNH+	+ NH3	= NH4+	+ HCN	+ -	-	1	2.30E-09	300	[8]
957	HCNH+	+ CH3NH2	= CH3NH3+	+ HCN	+ -	-	1	3.00E-09	300	*

958	HCNH+	+ CH ₂ NH	= CH ₂ NH ₂ +	+ HCN	+ -	-	1	2.70E-09	300	[4]
959	HCNH+	+ N ₂ H ₄	= N ₂ H ₄ H+	+ HCN	+ -	-	1	3.00E-09	300	*
960	HCNH+	+ CH ₃ CN	= C ₂ H ₃ NH+	+ HCN	+ -	-	1	3.80E-09	300	[9,73,128]
961	HCNH+	+ C ₃ H ₃ N	= C ₃ H ₃ NH+	+ HCN	+ -	-	1	4.50E-09	300	[94,97]
962	HCNH+	+ C ₃ H ₅ N	= C ₃ H ₅ NH+	+ HCN	+ -	-	1	3.00E-09	300	*
963	HCNH+	+ HC ₃ N	= HC ₃ NH+	+ HCN	+ -	-	1	3.40E-09	300	[40]
964	HCNH+	+ C ₄ H ₃ N	= C ₄ H ₃ NH+	+ HCN	+ -	-	1	3.00E-09	300	*
965	HCNH+	+ C ₄ H ₅ N	= C ₄ H ₅ NH+	+ HCN	+ -	-	1	3.00E-09	300	*
966	HCNH+	+ HC ₅ N	= HC ₅ NH+	+ HCN	+ -	-	1	3.00E-09	300	*
967	HCNH+	+ C ₅ H ₅ N	= C ₅ H ₅ NH+	+ HCN	+ -	-	1	3.00E-09	300	*
968	HCNH+	+ C ₆ H ₃ N	= C ₆ H ₃ NH+	+ HCN	+ -	-	1	3.00E-09	300	*
969	HCNH+	+ C ₆ H ₇ N	= C ₆ H ₇ NH+	+ HCN	+ -	-	1	3.00E-09	300	*
970	HCNH+	+ H ₂ O	= H ₃ O+	+ HCN	+ -	-	1	8.80E-13	296	[134]
971	HCNH+	+ CH ₃ OH	= CH ₃ OH ₂ +	+ HCN	+ -	-	1	3.00E-09	-	*
972	HCNH+	+ CH ₃ CHO	= CH ₃ CHOH+	+ HCN	+ -	-	1	3.00E-09	-	*
973	CH ₂ NH ₂ +	+ NH ₃	= NH ₄ +	+ CH ₂ NH	+ -	-	1	1.10E-10	333	[85]
974	C ₂ N+	+ H ₂	= HCNH+	+ C	+ -	-	0.9	9.00E-10	300	[58]
975	C ₂ N+	+ H ₂	= HC ₂ NH+	+ -	+ -	-	0.1	9.00E-10	300	[58]
976	CNC+	+ CH ₄	= C ₂ H ₃ +	+ HCN	+ -	-	0.5	4.20E-12	300	[8]
977	CNC+	+ CH ₄	= HC ₃ NH+	+ H ₂	+ -	-	0.5	4.20E-12	300	[8]
978	C ₂ N+	+ CH ₄	= C ₂ H ₃ +	+ HCN	+ -	-	0.6	7.00E-10	300	[58]
979	C ₂ N+	+ CH ₄	= HCNH+	+ C ₂ H ₂	+ -	-	0.1	7.00E-10	300	[58]
980	C ₂ N+	+ CH ₄	= HC ₃ NH+	+ H ₂	+ -	-	0.3	7.00E-10	300	[58]
981	CNC+	+ C ₂ H ₂	= C ₃ H+	+ HCN	+ -	-	0.92	7.00E-10	300	[58]
982	CNC+	+ C ₂ H ₂	= HCNH+	+ C ₃	+ -	-	0.08	7.00E-10	300	[58]
983	C ₂ N+	+ C ₂ H ₂	= C ₃ H+	+ HCN	+ -	-	0.92	1.60E-09	300	[58]
984	C ₂ N+	+ C ₂ H ₂	= HCNH+	+ CCC	+ -	-	0.08	1.60E-09	300	[58]
985	C ₂ N+	+ C ₂ H ₄	= C ₂ H ₄ +	+ CCN	+ -	-	0.1	1.30E-09	298	[72]
986	C ₂ N+	+ C ₂ H ₄	= HC ₂ NH+	+ C ₂ H ₂	+ -	-	0.5	1.30E-09	298	[72]
987	C ₂ N+	+ C ₂ H ₄	= c-C ₃ H ₃ +	+ HCN	+ -	-	0.3	1.30E-09	298	[72]
988	C ₂ N+	+ C ₂ H ₄	= HC ₄ NH+	+ H ₂	+ -	-	0.1	1.30E-09	298	[72]

989	C2N+	+ C2H6	= C2H3+	+ CH3CN	+ -	-	0.1	1.20E-09	298	[72]
990	C2N+	+ C2H6	= C2H5+	+ HCCN	+ -	-	0.25	1.20E-09	298	[72]
991	C2N+	+ C2H6	= c-C3H3+	+ HCN	+ H2	-	0.3	1.20E-09	298	[72]
992	C2N+	+ C2H6	= C3H5+	+ HCN	+ -	-	0.1	1.20E-09	298	[72]
993	C2N+	+ C2H6	= HC2NH+	+ C2H4	+ -	-	0.25	1.20E-09	298	[72]
994	C2N+	+ C4H2	= C5H+	+ HCN	+ -	-	0.6	1.30E-09	300	[29]
995	C2N+	+ C4H2	= C4H2+	+ CCN	+ -	-	0.2	1.30E-09	300	[29]
996	C2N+	+ C4H2	= C2N+	+ C4H2	+ -	-	0.2	1.30E-09	300	[29]
997	C2N+	+ CH3CN	= C2H3+	+ C2N2	+ -	-	1	4.10E-09	300	[108,109]
998	C2N+	+ C3H5N	= products	+ -	+ -	-	1	2.05E-09	300	[39]
999	CNC+	+ HC3N	= C3H+	+ C2N2	+ -	-	1	3.30E-09	305	[8]
1000	CNC+	+ NH3	= HCNH+	+ HCN	+ -	-	0.95	1.85E-09	300	[8]
1001	CNC+	+ NH3	= N2H+	+ C2H2	+ -	-	0.05	1.85E-09	300	[8]
1002	C2N+	+ NH3	= HCNH+	+ HCN	+ -	-	1	1.80E-09	-	[135]
1003	HC2NH+	+ C3H5N	= products	+ -	+ -	-	1	9.50E-10	300	[39]
1004	C2H3N+	+ H2	= C2H3NH+	+ H	+ -	-	1	5.70E-10	-	[135]
1005	C3N+	+ H2	= HC3N+	+ H	+ -	-	0.9	9.10E-10	305	[55,57]
1006	C3N+	+ H2	= HC3NH+	+ -	+ -	-	0.1	9.10E-10	305	[55,57]
1007	HC3N+	+ H2	= C2H2+	+ HCN	+ -	-	0.37	4.45E-12	300	[8]
1008	HC3N+	+ H2	= HC3NH+	+ H	+ -	-	0.63	4.45E-12	300	[8]
1009	HC3N+	+ CH4	= C2H3N+	+ C2H2	+ -	-	0.3	8.30E-10	300	[94,97]
1010	HC3N+	+ CH4	= C3H5+	+ CN	+ -	-	0.25	8.30E-10	300	[94,97]
1011	HC3N+	+ CH4	= HC3NH+	+ CH3	+ -	-	0.35	8.30E-10	300	[94,97]
1012	HC3N+	+ CH4	= C3H4+	+ HCN	+ -	-	0.1	8.30E-10	300	[94,97]
1013	HC3N+	+ C2H2	= C4H2+	+ HCN	+ -	-	0.8	6.40E-10	296	[38]
1014	HC3N+	+ C2H2	= C2H2+	+ HC3N	+ -	-	0.2	6.40E-10	296	[38]
1015	HC3N+	+ C2H4	= C2H4+	+ HC3N	+ -	-	0.8	6.70E-10	296	[38]
1016	HC3N+	+ C2H4	= HC3NH+	+ CHCH2	+ -	-	0.2	6.70E-10	296	[38]
1017	HC3N+	+ C4H2	= C4H2+	+ HC3N	+ -	-	1	8.90E-10	296	[38]
1018	HC3N+	+ N	= C2N+	+ HCN	+ -	-	0.6	2.40E-10	300	[111,113,114]
1019	HC3N+	+ N	= C3H+	+ N2	+ -	-	0.4	2.40E-10	300	[111,113,114]

1020	HC3N+	+ HCN	= HCNH+	+ C3N	+ -	-	0.3	1.30E-09	300	[94,97]
1021	HC3N+	+ HCN	= C4N2H+	+ H	+ -	-	0.2	1.30E-09	300	[94,97]
1022	HC3N+	+ HCN	= adduct	+ hv	+ -	-	0.5	1.30E-09	300	[94,97]
1023	HC3N+	+ C3H5N	= products	+ -	+ -	-	1	3.70E-09	300	[39]
1024	HC3N+	+ HC3N	= HC5N+	+ HCN	+ -	-	0.9	1.30E-09	300	[7,116]
1025	HC3N+	+ HC3N	= products	+ -	+ -	-	0.05	1.30E-09	300	[7,116]
1026	HC3N+	+ HC3N	= adduct	+ hv	+ -	-	0.05	1.30E-09	300	[7,116]
1027	HC3N+	+ NH3	= NH3+	+ HC3N	+ -	-	1	1.70E-09	300	[94,97]
1028	HC3NH+	+ C4H2	= C7H3NH+	+ hv	+ -	-	1	8.70E-10	296	[38]
1029	HC3NH+	+ HCN	= adduct	+ hv	+ -	-	1	6.00E-11	300	[94,97]
1030	HC3NH+	+ CH3CN	= C2H3NH+	+ HC3N	+ -	-	0.8	1.60E-09	300	[94,97]
1031	HC3NH+	+ CH3CN	= C5H3NH+	+ HCN	+ -	-	0.2	1.60E-09	300	[94,97]
1032	HC3NH+	+ C3H5N	= products	+ -	+ -	-	1	1.90E-09	300	[39]
1033	HC3NH+	+ NH3	= NH4+	+ HC3N	+ -	-	1	2.00E-09	300	[94,97]
1034	C3H3N+	+ H2	= C3H3NH+	+ H	+ -	-	1	1.20E-12	300	[94,97]
1035	C3H3N+	+ CH4	= C2H3N+	+ C2H4	+ -	-	0.7	2.60E-11	300	[94,97]
1036	C3H3N+	+ CH4	= C3H3NH+	+ CH3	+ -	-	0.25	2.60E-11	300	[94,97]
1037	C3H3N+	+ CH4	= C4H5NH+	+ H	+ -	-	0.05	2.60E-11	300	[94,97]
1038	C3H3N+	+ C2H2	= c-C3H3+	+ CH2CN	+ -	-	0.08	9.30E-10	300	[94,97]
1039	C3H3N+	+ C2H2	= C4H4+	+ HCN	+ -	-	1	9.30E-10	300	[94,97]
1040	C3H3N+	+ C2H2	= HC3NH+	+ C2H3	+ -	-	0.55	9.30E-10	300	[94,97]
1041	C3H3N+	+ C2H2	= HC5NH+	+ H2	+ H	-	0.21	9.30E-10	300	[94,97]
1042	C3H3N+	+ C2H2	= C5H3NH+	+ H	+ -	-	0.16	9.30E-10	300	[94,97]
1043	C3H3N+	+ HCN	= C4N2H+	+ H2	+ H	-	0.09	1.90E-10	300	[94,97]
1044	C3H3N+	+ HCN	= products	+ -	+ -	-	0.58	1.90E-10	300	[94,97]
1045	C3H3N+	+ HCN	= adduct	+ hv	+ -	-	0.33	1.90E-10	300	[94,97]
1046	C3H3N+	+ C3H3N	= C3H3NH+	+ C3H2N	+ -	-	1	2.50E-09	300	[81]
1047	C3H3N+	+ NH3	= NH3+	+ C2H3CN	+ -	-	0.66	1.90E-10	300	[94,97]
1048	C3H3N+	+ NH3	= NH4+	+ C2H2CN	+ -	-	0.34	1.90E-10	300	[94,97]
1049	C3H3NH+	+ C3H5N	= products	+ -	+ -	-	1	1.20E-09	300	[39]
1050	C3H3NH+	+ NH3	= NH4+	+ C2H3CN	+ -	-	1	1.70E-09	300	[94,97]

1051	HC4N+	+ H2	= HC4NH+	+ H	+ -	-	1	1.00E-09	-	[135]
1052	HC4NH+	+ H2	= C4H3N+	+ H	+ -	-	1	1.00E-09	-	[135]
1053	C4H3N+	+ H2	= C4H3NH+	+ H	+ -	-	1	1.00E-09	-	[135]
1054	C5N+	+ H2	= HC5N+	+ H	+ -	-	1	1.50E-09	-	[135]
1055	C5N+	+ CH4	= HC6NH+	+ H2	+ -	-	0.04	7.50E-10	300	[90,91]
1056	C5N+	+ CH4	= HC4NH+	+ C2H2	+ -	-	0.09	7.50E-10	300	[90,91]
1057	C5N+	+ CH4	= HCNH+	+ C5H2	+ -	-	0.08	7.50E-10	300	[90,91]
1058	C5N+	+ CH4	= HC5N+	+ CH3	+ -	-	0.37	7.50E-10	300	[90,91]
1059	C5N+	+ CH4	= C5H3+	+ HCN	+ -	-	0.05	7.50E-10	300	[90,91]
1060	C5N+	+ CH4	= c-C3H3+	+ HC3N	+ -	-	0.07	7.50E-10	300	[90,91]
1061	C5N+	+ CH4	= CH3+	+ HC5N	+ -	-	0.23	7.50E-10	300	[90,91]
1062	C5N+	+ CH4	= C2H3+	+ HC4N	+ -	-	0.07	7.50E-10	300	[90,91]
1063	C5N+	+ HCN	= HC5N+	+ CN	+ -	-	0.27	9.40E-10	300	[89]
1064	C5N+	+ HCN	= C6N2+	+ H	+ -	-	0.57	9.40E-10	300	[89]
1065	C5N+	+ HCN	= HC6N2+	+ hv	+ -	-	0.16	9.40E-10	300	[89]
1066	HC5N+	+ H2	= HC5NH+	+ H	+ -	-	1	1.00E-09	-	[135]
1067	HC5N+	+ C2H4	= HC5NH+	+ C2H3	+ -	-	0.75	1.20E-09	298	[10,77]
1068	HC5N+	+ C2H4	= products	+ -	+ -	-	0.05	1.20E-09	298	[10,77]
1069	HC5N+	+ C2H4	= adduct	+ hv	+ -	-	0.2	1.20E-09	298	[10,77]
1070	HC5N+	+ C4H2	= adduct	+ hv	+ -	-	1	1.00E-09	300	[29]
1071	HC5N+	+ HC3N	= adduct	+ hv	+ -	-	1	5.00E-10	300	[7,116]
1072	C7N+	+ H2	= HC7N+	+ H	+ -	-	1	1.50E-09	-	[135]
1073	HC7N+	+ H2	= HC7NH+	+ H	+ -	-	1	5.00E-12	-	[135]
1074	C2N2+	+ H	= HNC+	+ CN	+ -	-	0.8	6.20E-10	300	[112]
1075	C2N2+	+ H	= C2H+	+ N2	+ -	-	0.2	6.20E-10	300	[112]
1076	C2N2+	+ H2	= C2N2H+	+ H	+ -	-	1	8.80E-10	300	[112]
1077	C2N2+	+ C2H2	= C2H2+	+ C2N2	+ -	-	0.5	2.00E-10	298	[10,77]
1078	C2N2+	+ C2H2	= C4N2H+	+ H	+ -	-	0.35	2.00E-10	298	[10,77]
1079	C2N2+	+ C2H2	= C4N2+	+ H2	+ -	-	0.15	2.00E-10	298	[10,77]
1080	C2N2+	+ C4H2	= C4H2+	+ C2N2	+ -	-	0.9	1.20E-09	300	[29]
1081	C2N2+	+ C4H2	= HC5N+	+ HCN	+ -	-	0.1	1.20E-09	300	[29]

1082	C2N2+	+ H2O	= H2O+	+ C2N2	+ -	-	0.09	2.60E-09	300	[99]
1083	C2N2+	+ HCN	= HNC+	+ C2N2	+ -	-	0.2	2.70E-09	300	[93]
1084	C2N2+	+ HCN	= C2N2H+	+ CN	+ -	-	0.75	2.70E-09	300	[93]
1085	C2N2+	+ HCN	= adduct	+ hv	+ -	-	0.05	2.70E-09	300	[93]
1086	C2N2+	+ HC3N	= HC3N+	+ C2N2	+ -	-	1	1.60E-09	296	[21,106]
1087	C2N2H+	+ C2H4	= C2H5+	+ C2N2	+ -	-	0.7	5.60E-10	296	[104]
1088	C2N2H+	+ C2H4	= adduct	+ -	+ -	-	0.3	5.60E-10	296	[104]
1089	C2N2H+	+ NH3	= NH4+	+ C2N2	+ -	-	1	2.00E-09	-	[135]
1090	C2N2H+	+ HCN	= HCNH+	+ C2N2	+ -	-	1	2.00E-09	-	[135]
1091	H2O+	+ H2	= H3O+	+ H	+ -	-	1	7.60E-10	300	[8]
1092	H2O+	+ CH4	= H3O+	+ CH3	+ -	-	1	1.12E-09	300	[8]
1093	H2O+	+ C2H2	= C2H2+	+ H2O	+ -	-	1	1.90E-09	300	[102]
1094	H2O+	+ C2H4	= C2H4+	+ H2O	+ -	-	1	1.50E-09	300	[102]
1095	H2O+	+ C2H6	= H3O+	+ CH3CH2	+ -	-	0.83	1.60E-09	298	[69]
1096	H2O+	+ C2H6	= C2H4+	+ H2O	+ H2	-	0.12	1.60E-09	298	[69]
1097	H2O+	+ C2H6	= C2H5+	+ H2O	+ H	-	0.01	1.60E-09	298	[69]
1098	H2O+	+ C2H6	= C2H6+	+ H2O	+ -	-	0.04	1.60E-09	298	[69]
1099	H2O+	+ N	= HNO+	+ H	+ -	-	0.8	1.40E-10	300	[111,113,114]
1100	H2O+	+ N	= NO+	+ H2	+ -	-	0.2	1.40E-10	300	[111,113,114]
1101	H2O+	+ N2	= adduct	+ -	+ -	-	1	1.13E-28	300	[48]
1102	H2O+	+ H2O	= H3O+	+ OH	+ -	-	1	1.85E-09	300	[8]
1103	H2O+	+ HCN	= HCNH+	+ OH	+ -	-	0.5	2.10E-09	298	[71]
1104	H2O+	+ HCN	= H3O+	+ CN	+ -	-	0.5	2.10E-09	298	[71]
1105	H2O+	+ C2N2	= C2N2H+	+ OH	+ -	-	1	1.00E-09	296	[104]
1106	H3O+	+ CH3C2H	= C3H5+	+ H2O	+ -	-	1	1.80E-09	300	[82]
1107	H3O+	+ C4H2	= C4H3+	+ H2O	+ -	-	1	1.10E-09	300	[29]
1108	H3O+	+ HCN	= HCNH+	+ H2O	+ -	-	1	3.80E-09	300	[8]
1109	H3O+	+ CH3CN	= C2H3NH+	+ H2O	+ -	-	1	4.50E-09	300	[8]
1110	H3O+	+ HC3N	= HC3NH+	+ H2O	+ -	-	1	3.90E-09	300	[8]
1111	H3O+	+ C3H3N	= C3H3NH+	+ H2O	+ -	-	1	5.10E-09	300	[82]

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1	H+	3.50E-12	0.75	[26]
2	H2+	1.60E-08	0.43	[19]
3	H3+	6.70E-08	0.52	[16]
4	C+	4.67E-12	0.6	[20]
5	CH+	1.00E-07	0.37	[3]
6	CH2+	6.40E-07	0.6	[13]
7	CH3+	8.00E-07	0.53	[25]
8	CH4+	7.25E-07	0.53	[25]
9	CH5+	1.10E-06	0.7	[17]
10	C2H+	2.70E-07	0.76	[5]
11	C2H2+	2.70E-07	0.5	[19]
12	C2H3+	5.00E-07	0.84	[12]
13	C2H4+	5.60E-07	0.76	[5]
14	C2H5+	1.20E-06	0.8	[17]
15	C2H6+	7.00E-07	0.7	*
16	C2H7+	7.00E-07	0.7	*
17	C3+	7.00E-07	0.7	*
18	C3H+	7.00E-07	0.7	*
19	C3H2+	7.00E-07	0.7	*
20	c-C3H3+	8.00E-07	1	[18]
21	l-C3H3+	1.15E-07	1	[18]
22	C3H4+	2.95E-06	0.67	[8]
23	C3H5+	7.00E-07	0.7	*
24	C3H6+	7.00E-07	0.7	*
25	C3H7+	1.90E-06	0.67	[4]
26	C3H8+	7.00E-07	0.7	*
27	C3H9+	7.00E-07	0.7	*
28	C4H+	7.00E-07	0.7	*
29	C4H2+	7.00E-07	0.7	*
30	C4H3+	6.20E-07	0.7	[19]
31	C4H4+	7.00E-07	0.7	*
32	C4H5+	8.20E-07	0.7	[21]
33	C4H6+	7.00E-07	0.7	*
34	C4H7+	7.00E-07	0.7	*
35	C4H8+	7.00E-07	0.7	*
36	C4H9+	8.30E-07	0.7	[15]
37	C5H+	7.00E-07	0.7	*
38	C5H2+	7.00E-07	0.7	*
39	C5H3+	9.00E-07	0.7	[1]
40	C5H4+	7.00E-07	0.7	*
41	C5H5+	7.00E-07	0.7	*
42	C5H7+	7.00E-07	0.7	*
43	C5H9+	9.50E-07	0.7	[21]

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44	C6H2+	7.00E-07	0.7	*
45	C6H3+	7.00E-07	0.7	*
46	C6H4+	1.10E-06	0.7	[21]
47	C6H5+	1.10E-06	0.7	[21]
48	C6H6+	1.00E-07	0.7	[1]
49	C6H7+	2.40E-06	1.3	[17]
50	C6H11+	7.00E-07	0.7	*
51	C7+	7.00E-07	0.7	*
52	C7H+	7.00E-07	0.7	*
53	C7H2+	7.00E-07	0.7	*
54	C7H3+	7.00E-07	0.7	*
55	C7H4+	7.00E-07	0.7	*
56	C7H5+	7.00E-07	0.7	[1]
57	C7H7+	3.20E-07	0.7	[22]
58	C7H9+	7.00E-07	0.7	*
59	C8H+	7.00E-07	0.7	*
60	C8H2+	7.00E-07	0.7	*
61	C8H3+	7.00E-07	0.7	*
62	C8H4+	7.00E-07	0.7	*
63	C8H5+	7.00E-07	0.7	*
64	C8H6+	7.00E-07	0.7	*
65	C8H7+	1.00E-06	0.7	[21]
66	C8H9+	7.00E-07	0.7	*
67	C9+	7.00E-07	0.7	*
68	C9H+	7.00E-07	0.7	*
69	C9H2+	7.00E-07	0.7	*
70	C9H3+	7.00E-07	0.7	*
71	C9H4+	7.00E-07	0.7	*
72	C9H7+	7.00E-07	0.7	*
73	C9H8+	7.00E-07	0.7	*
74	N+	4.00E-12	0.58	[20]
75	NH+	4.30E-08	0.5	[19]
76	NH2+	3.00E-07	0.5	[19]
77	NH3+	3.10E-07	0.5	[19]
78	NH4+	1.35E-06	0.6	[2]
79	N2+	2.20E-07	0.39	[25]
80	N2H+	1.00E-07	0.51	[9]
81	CN+	3.40E-07	0.55	[14]
82	HCN+	3.90E-07	0.96	[24]
83	HNC+	1.82E-07	0.96	[24]
84	HCNH+	2.80E-07	0.65	[23]
85	CH2NH+	7.00E-07	0.7	*
86	CH2NH2+	7.00E-07	0.7	*
87	CH3NH2+	7.00E-07	0.7	*
88	CH3NH3+	7.00E-07	0.7	*
89	N2H4H+	7.00E-07	0.7	*

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90	C2N+	7.00E-07	0.7	*
91	CNC+	7.00E-07	0.7	*
92	HC2N+	7.00E-07	0.7	*
93	HC2NH+	7.00E-07	0.7	*
94	C2H3N+	7.00E-07	0.7	*
95	C2H3NH+	3.30E-07	0.7	[6]
96	C2H5N+	7.00E-07	0.7	*
97	C3N+	7.00E-07	0.7	*
98	HC3N+	1.50E-06	0.6	[7]
99	HC3NH+	1.50E-06	0.58	[7]
100	C3H3N+	7.00E-07	0.7	*
101	C3H3NH+	7.00E-07	0.7	*
102	C3H5N+	7.00E-07	0.7	*
103	C3H5NH+	4.70E-07	0.7	[6]
104	C4N+	7.00E-07	0.7	*
105	HC4N+	7.00E-07	0.7	*
106	HC4NH+	7.00E-07	0.7	*
107	C4H3N+	7.00E-07	0.7	*
108	C4H3NH+	7.00E-07	0.7	*
109	C4H5N+	7.00E-07	0.7	*
110	C4H5NH+	7.00E-07	0.7	*
111	C5N+	7.00E-07	0.7	*
112	HC5N+	7.00E-07	0.7	*
113	HC5NH+	7.00E-07	0.7	*
114	C5H3N+	7.00E-07	0.7	*
115	C5H3NH+	7.00E-07	0.7	*
116	C5H5N+	7.00E-07	0.7	*
117	C5H5NH+	7.00E-07	0.7	*
118	HC6NH+	7.00E-07	0.7	*
119	C6H3NH+	7.00E-07	0.7	*
120	C6H5NH+	7.00E-07	0.7	*
121	C6H7N+	7.00E-07	0.7	*
122	C6H7NH+	7.00E-07	0.7	*
123	C7N+	7.00E-07	0.7	*
124	HC7N+	7.00E-07	0.7	*
125	HC7NH+	7.00E-07	0.7	*
126	C7H3N+	7.00E-07	0.7	*
127	C7H3NH+	7.00E-07	0.7	*
128	C2N2+	7.00E-07	0.7	*
129	C2N2H+	7.00E-07	0.7	*
130	C4N2+	7.00E-07	0.7	*
131	C4N2H+	7.00E-07	0.7	*
132	C6N2+	7.00E-07	0.7	*
133	C6N2H+	7.00E-07	0.7	*
134	H2O+	2.60E-07	0.7	[10]
135	H3O+	4.32E-07	0.5	[11]

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136	CH ₃ OH ₂ ⁺	8.65E-07	0.63	[26]
137	CH ₃ CHOH ⁺	7.00E-07	0.7	*

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