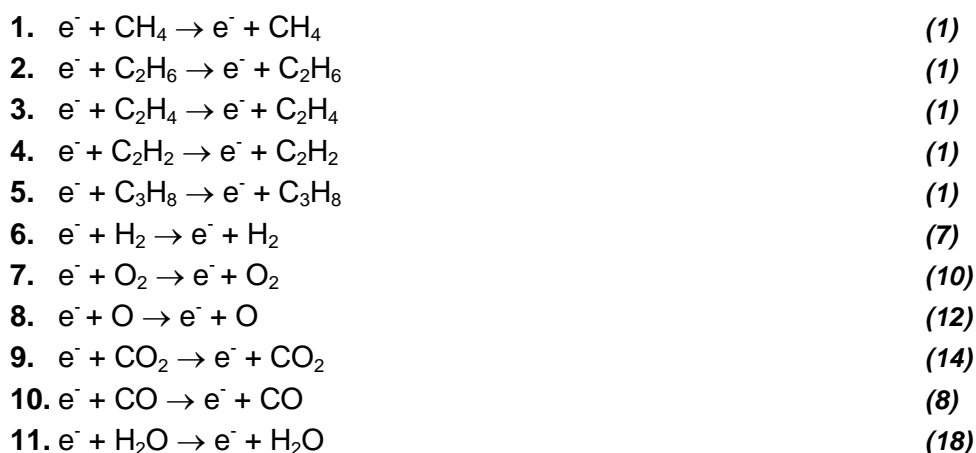


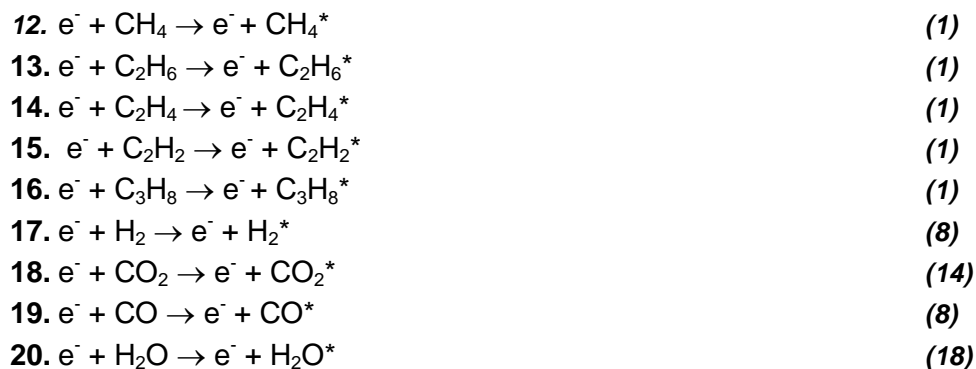
## ANEXO I: Reacciones implicadas en el proceso.

Los datos necesarios de secciones eficaces para las reacciones generadas por impacto electrónico aparecen incluidos dentro de la biblioteca Bolsig+. Las siguientes reacciones junto con sus referencias nos muestran el tipo de sección eficaz considerado.

- Considerando el momento de transferencia:



- Estados de Vibración por excitación:



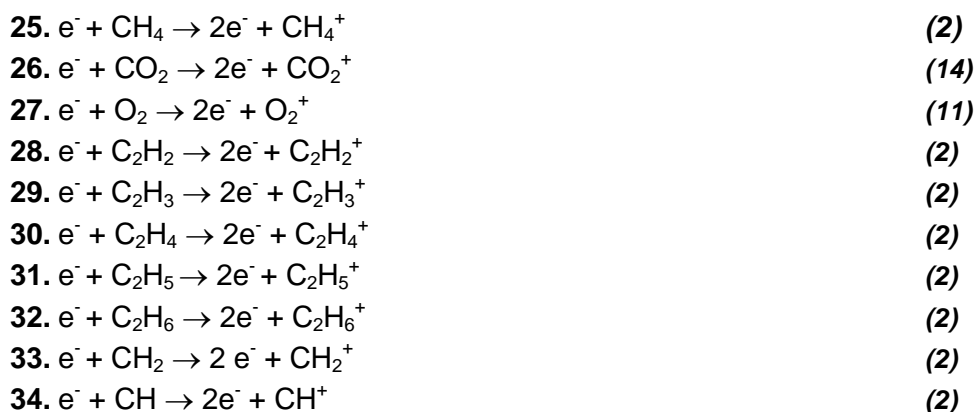
- Excitación electrónica:



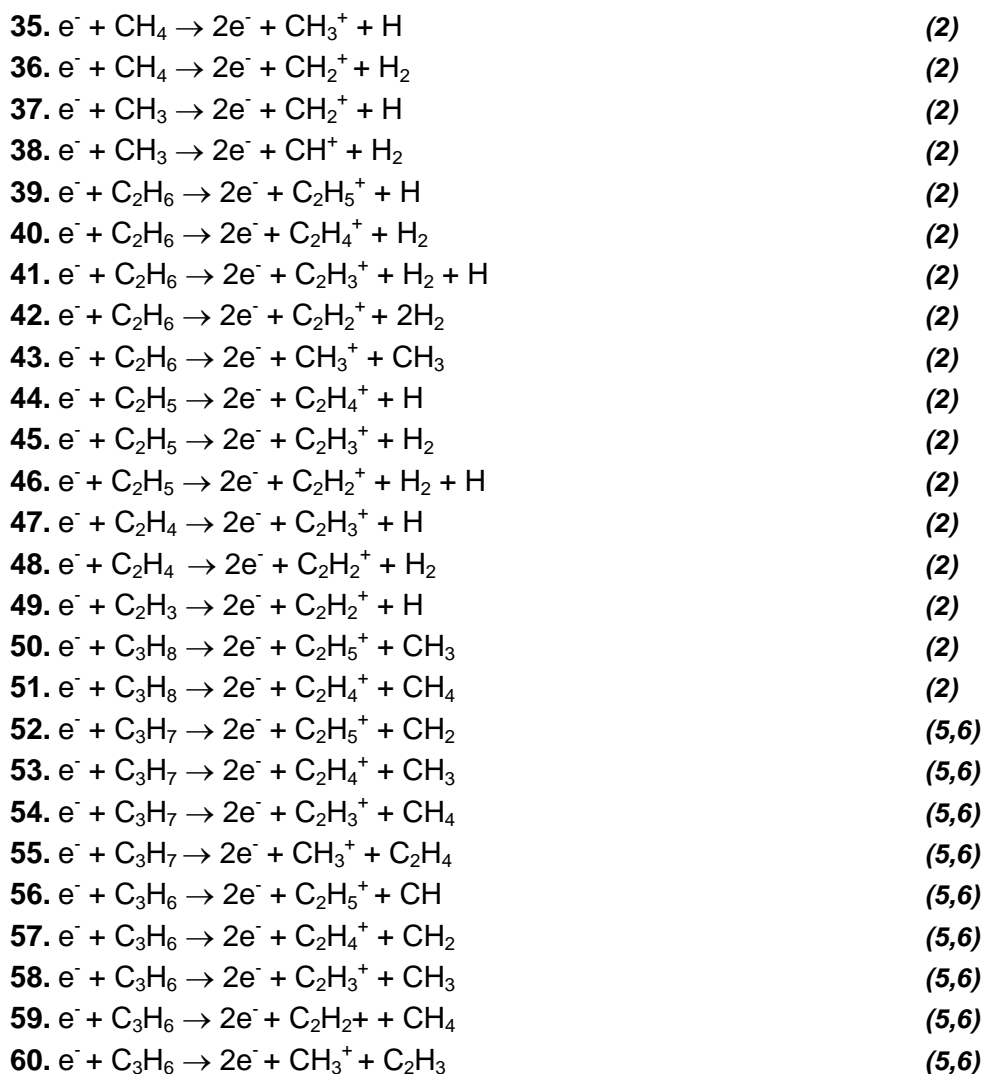
- Ataque electrónico:



▪ Ionización:



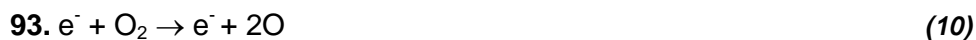
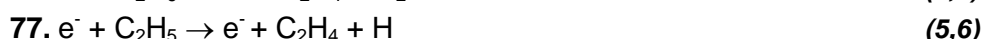
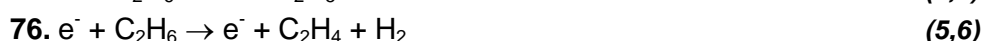
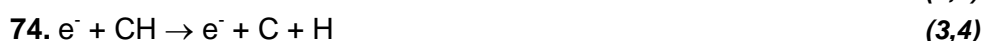
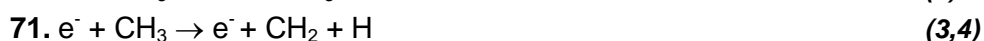
▪ Disociación por Ionización:



▪ Disociación por ataque electrónico:



▪ Disociación:



## REFERENCIAS:

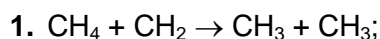
- (1)** Janev, R. K. Atomic and Molecular Processes in Fusion Edge Plasmas. (1995) Publicado por Plenum Press: New York.
- (2)** Janev, R. K.; Wang, J. G.; Murakami, I.; Kato, T. National Institute for Fusion Science (NIFS) of Japan, Cross Sections and Rate Coefficients for Electron-Impact Ionization of Hydrocarbon Molecules. (2001). Toki: Gifu.
- (3)** Janev, R. K.; Reiter, D. Collision Processes of CHy + Hydrocarbons with Plasma Electrons and Protons. Phys. Plasmas (2002), 9 (9), 4071-4081.
- (4)** Janev, R. K.; Reiter, D. Collision Processes of Hydrocarbon Species in Hydrogen Plasmas. Part 2. The Ethane and Propane Families. ChemInform (2003), 34 (37), DOI: 10.1002/chin.200325274.
- (5)** Janev, R. K.; Reiter, D. Collision Processes of Hydrocarbon Species in Hydrogen Plasmas. Part 2. The Ethane and Propane Families. ChemInform (2003), 34 (37), DOI: 10.1002/chin.20033729.
- (6)** Janev, R. K.; Reiter, D. Collision Processes of C<sub>2</sub>, 3Hy and C<sub>2</sub>,3Hy+Hydrocarbons with Electrons and Protons. Phys. Plasmas (2004), 11 (2), 780-829.
- (7)** Engelhardt, A. G.; Phelps, A. V. Elastic and Inelastic Collision Cross Sections in Hydrogen and Deuterium from Transport Coefficients. Phys. Rev (1963), 131(5), 2115-2128.
- (8)** Trajmar, S.; Register, D. F.; Chutjian, A. Electron Scattering By Molecules II. Experimental Methods and data. Phys. Rep. (1983), 97(5), 219-356.
- (9)** Corrigan, S. J. B. Dissociation of Molecular Hydrogen by Electron Impact. J. Chem. Phys. (1965), 43 (12), 4381-4386.
- (10)** Eliasson, B.; Hirth, M.; Kogelschatz, U. Ozone Synthesis From Oxygen in Dielectric Barrier Discharges. J. Phys. D Appl. Phys. (1987), 20(11), 1421-1437.
- (11)** Lawton, S. A.; Phelps, A. V. Excitation of the b 1 $\Sigma$ +g State of O<sub>2</sub> By Low Energy Electrons. J. Chem. Phys. (1978), 69 (3), 1055-1068.
- (12)** Joshipura, K. N.; Patel, P. M. Cross Sections of e—O Scattering at Intermediate and High Energies (E<sub>i</sub>=8.7-1000 eV). PhRvA (1993), 48(3), 2464-2467.
- (13)** Laher, R.R.; Gilmore, F. R. Updated Excitation and Ionization Cross Sections for Electron Impact on Atomic Oxygen. J. Phys. Chem. Ref. Data (1990), 19 (1), 277-305.

- (14) Itikawa, Y. Cross Sections for Electron Collisions With Carbon Dioxide. J. Phys. Chem. Ref. Data (2002), 32, 749-767.
- (15) Lxcat database Website; <http://www.lxcat.laplace.univ-tlse.fr>.
- (16) Rapp, D.; Briglia, D. D. Total Cross Sections for Ionization and Attachment in Gases by Electron Impact. II. Negative-Ion Formation. J. Chem. Phys. (1965), 43(5), 1480-1489.
- (17) McConkey, J. W.; Malone, C.P.; Johnson, P.V.; Winstead, C.; McKoy, V.; Kanik, I. Electron Impact Dissociation of Oxygen-Containing Molecules- A Critical Review. Phys. Rep. (2008), 466 (1-3), 1103.
- (18) Itikawa, Y.; Mason, N. Cross Sections for Electron Collisions with Water Molecules. J. Phys. Chem. Ref.Data (2005), 34(1), 122.
- (19) Riahi, R.; Teulet, P.; Ben Lakhdar, Z.; Gleizes, A. Cross-Section and Rate Coefficient Calculation for Electron Impact Excitation, Ionisation and Dissociation of H and OH Molecules. EPJD (2006), 40(2), 223-230.

Las siguientes reacciones son proporcionadas gracias a diferentes artículos que aparecen en la bibliografía, en especial al **Snoeckx, R.; Aerts, R.; Tu, X.; Bogaerts, A. *Plasma-Based Dry Reforming: A computational Study Ranging from the Nanoseconds to Seconds Time Scale***. Los datos de tasas de reacción obtenidos para cada una de ellas se han contrastado mediante diferentes documentos gracias a la ayuda del buscador NIST (NIST Chemical Kinetics Data Base) y directamente mediante el buscador UMIST 2012 (UMIST Database For Astrochemistry). Dichos documentos aparecen en las referencias indicadas.

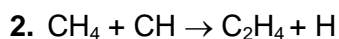
Los coeficientes cinéticos para las reacciones dadas entre moléculas neutras y las reacciones de tipo iónico, se han introducido en el programa de compilación para poder realizar las distintas simulaciones posteriores; por lo que a partir de los datos de temperatura que se consideren (K), se obtendrá el valor de coeficiente ( $\text{cm}^3 \cdot \text{s}^{-1}$ ). En función o no de la temperatura, en algunas de ellas se ha tenido en cuenta más de un valor de coeficiente, mostrándose sus respectivas referencias a continuación.

#### REACCIONES DADAS ENTRE MOLÉCULAS NEUTRAS:

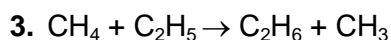


$$k = 3.010 \cdot 10^{-19} \quad (2)$$

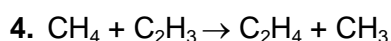
$$k = 7.13 \cdot 10^{-12} \cdot \exp(-5,050.0/T) \quad (1)$$



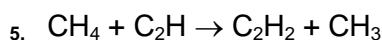
$$k = 3.95726746037557 \cdot 10^{-8} \cdot T^{(-1.04)} \cdot \exp(-36.0/T) \quad (1)$$



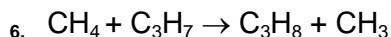
$$k = 2.51 \cdot 10^{-15} \cdot (T/298.0)^{4.14} \cdot \exp(-6,320.313/T) \quad (2)$$



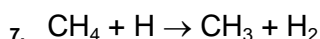
$$k = 2.13 \cdot 10^{-14} \cdot (T/298.0)^{4.02} \cdot \exp(-2,749.4626/T) \quad (2)$$



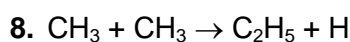
$$k = 3.01 \cdot 10^{-12} \cdot \exp(-250.1665/T) \quad (2)$$



$$k = 3.54 \cdot 10^{-16} \cdot (T/298.0)^{4.02} \cdot \exp(-5,469.987/T) \quad (3)$$



$$k = 5.83 \cdot 10^{-13} \cdot (T/298.0)^3 \cdot \exp(-4,039.949/T) \quad (4)$$



$$k = 1.46 \cdot 10^{-11} \cdot (T/298.0)^{0.1} \cdot \exp(-5,340.093/T) \quad (5)$$

9.  $^{(*)}\text{CH}_3 + \text{CH}_3 + \text{M} \rightarrow \text{C}_2\text{H}_6 + \text{M}$   
 $k = 1.68 \cdot 10^{-24} \cdot (T/298.0)^{-7} \cdot \exp(-1,390.349/T)$  (6)
10.  $\text{CH}_3 + \text{CH}_2 \rightarrow \text{C}_2\text{H}_4 + \text{H}$   
 $k = 7.01 \cdot 10^{-11}$  (4)
11.  $\text{CH}_3 + \text{C}_2\text{H}_6 \rightarrow \text{C}_2\text{H}_5 + \text{CH}_4$   
 $k = 1.74 \cdot 10^{-16} \cdot (T/298.0)^6 \cdot \exp(-3,040.485/T)$  (4)
12.  $\text{CH}_3 + \text{C}_2\text{H}_5 \rightarrow \text{C}_2\text{H}_4 + \text{CH}_4$   
 $k = 1.88 \cdot 10^{-12} \cdot (T/298.0)^{-0.5}$  (2)  
 $k = 1.91 \cdot 10^{-12}$  (4)
13.  $^{(*)}\text{CH}_3 + \text{C}_2\text{H}_5 + \text{M} \rightarrow \text{C}_3\text{H}_8 + \text{M}$   
 $k = 4.70 \cdot 10^{-11} \cdot (T/298.0)^{-0.5}$  (2)
14.  $\text{CH}_3 + \text{C}_2\text{H}_4 \rightarrow \text{C}_2\text{H}_3 + \text{CH}_4$   
 $k = 1.57 \cdot 10^{-14} \cdot (T/298.0)^{3.7} \cdot \exp(-4,779.624/T)$  (2)
15.  $\text{CH}_3 + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_2 + \text{CH}_4$   
 $k = 6.51 \cdot 10^{-13}$  (2)  
 $k = 8.83345911860127 \cdot 10^{-7} \cdot T^{(-1.5)} \cdot \exp(-300.0/T)$  (1)
16.  $^{(*)}\text{CH}_3 + \text{C}_2\text{H}_3 + \text{M} \rightarrow \text{CH}_3\text{CH}=\text{CH}_2 + \text{M}$   
 $k = 1.20 \cdot 10^{-10}$  (7)
17.  $\text{CH}_3 + \text{C}_2\text{H}_2 \rightarrow \text{CH}_4 + \text{C}_2\text{H}$   
 $k = 3.02 \cdot 10^{-13} \cdot \exp(-8,700.503/T)$  (2)
18.  $\text{CH}_3 + \text{C}_3\text{H}_8 \rightarrow \text{C}_3\text{H}_7 + \text{CH}_4$   
 $k = 1.61 \cdot 10^{-15} \cdot (T/298.0)^{3.65} \cdot \exp(-3,599.752/T)$  (3)
19.  $\text{CH}_3 + \text{C}_3\text{H}_7 \rightarrow \text{CH}_3\text{CH}=\text{CH}_2 + \text{CH}_4$   
 $k = 3.07 \cdot 10^{-12} \cdot (T/298.0)^{-0.32}$  (3)
20.  $\text{CH}_3 + \text{H}_2 \rightarrow \text{CH}_4 + \text{H}$   
 $k = 1.11946850005002 \cdot 10^{-20} \cdot T^{2.74} \cdot \exp(-4,740.0/T)$  (1)  
 $k = 6.86 \cdot 10^{-14} \cdot (T/298.0)^{2.74} \cdot \exp(-4,739.934/T)$  (4)
21.  $\text{CH}_3 + \text{H} \rightarrow \text{CH}_2 + \text{H}_2$   
 $k = 10^{-10} \cdot \exp(-7,600.0/T)$  (1,4)
22.  $^{(*)}\text{CH}_3 + \text{H} + \text{M} \rightarrow \text{CH}_4 + \text{M}$   
 $k = 3.01 \cdot 10^{-28} \cdot (T/298.0)^{-1.8}$  (4,6)

23.  $\text{CH}_2 + \text{CH}_2 \rightarrow \text{C}_2\text{H}_2 + 2\text{H}$   
 $k = 0.9 \cdot 2.0110^{-10} \cdot \exp(-400.5070/T)$  (4)
24.  $\text{CH}_2 + \text{C}_2\text{H}_5 \rightarrow \text{C}_2\text{H}_4 + \text{CH}_3$   
 $k = 3.01 \cdot 10^{-11}$  (2)
25.  $\text{CH}_2 + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_2 + \text{CH}_3$   
 $k = 3.01 \cdot 10^{-11}$  (2)
26.  $\text{CH}_2 + \text{C}_2\text{H} \rightarrow \text{C}_2\text{H}_2 + \text{CH}$   
 $k = 3.01 \cdot 10^{-11}$  (2)
27.  $\text{CH}_2 + \text{C}_3\text{H}_8 \rightarrow \text{C}_3\text{H}_7 + \text{CH}_3$   
 $k = 1.61 \cdot 10^{-15} \cdot (T/298.0)^{3.65} \cdot \exp(-3,599.752/T)$  (3)
28.  $\text{CH}_2 + \text{C}_3\text{H}_7 \rightarrow \text{C}_2\text{H}_4 + \text{C}_2\text{H}_5$   
 $k = 3.01 \cdot 10^{-11}$  (3)
29.  $\text{CH}_2 + \text{C}_3\text{H}_7 \rightarrow \text{CH}_3\text{CH}=\text{CH}_2 + \text{CH}_3$   
 $k = 3.01 \cdot 10^{-11}$  (3)
30.  $\text{CH}_2 + \text{H}_2 \rightarrow \text{CH}_3 + \text{H}$   
 $k = 1.96435124497668 \cdot 10^{-11} \cdot T^{0.17} \cdot \exp(-6,400.0/T)$  (1)
31.  $\text{CH}_2 + \text{H} \rightarrow \text{CH} + \text{H}_2$   
 $k = 1.00 \cdot 10^{-11} \cdot \exp(899.6373/T)$  (2)
32.  $(^*)\text{CH} + \text{C}_2\text{H}_6 + \text{M} \rightarrow \text{C}_3\text{H}_7 + \text{M}$   
 $k = 1.79 \cdot 10^{-10} \cdot \exp(132.2994/T)$  (4)
33.  $\text{CH} + \text{H}_2 \rightarrow \text{CH}_2 + \text{H}$   
 $k = 5.46 \cdot 10^{-10} \cdot \exp(-1,943.0/T)$  (1)
34.  $\text{CH} + \text{H} \rightarrow \text{C} + \text{H}_2$   
 $k = 1.31 \cdot 10^{-10} \cdot \exp(-80.58248/T)$  (8)
35.  $\text{C} + \text{H}_2 \rightarrow \text{CH} + \text{H}$   
 $k = 1.5 \cdot 10^{-3}$  (9)
36.  $\text{C}_2\text{H}_6 + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_5 + \text{C}_2\text{H}_4$   
 $k = 1.46 \cdot 10^{-13} \cdot (T/298.0)^{3.30} \cdot \exp(-5,279.957/T)$  (2)
37.  $\text{C}_2\text{H}_6 + \text{C}_2\text{H} \rightarrow \text{C}_2\text{H}_2 + \text{C}_2\text{H}_5$   
 $k = 5.99 \cdot 10^{-12}$  (2)



38.  $\text{C}_2\text{H}_6 + \text{C}_3\text{H}_7 \rightarrow \text{C}_3\text{H}_8 + \text{C}_2\text{H}_5$   
 $k = 1.19 \cdot 10^{-15} \cdot (T/298.0)^{3.82} \cdot \exp(-4,549.903/T)$  (3)
39.  $\text{C}_2\text{H}_6 + \text{H} \rightarrow \text{C}_2\text{H}_5 + \text{H}_2$   
 $k = 1.23 \cdot 10^{-11} \cdot (T/298.0)^{1.5} \cdot \exp(-3,729.646/T)$  (4)
40.  $\text{C}_2\text{H}_5 + \text{C}_2\text{H}_5 \rightarrow \text{C}_2\text{H}_6 + \text{C}_2\text{H}_4$   
 $k = 2.41 \cdot 10^{-12}$  (4)
41.  $\text{C}_2\text{H}_5 + \text{C}_2\text{H} \rightarrow \text{C}_2\text{H}_4 + \text{C}_2\text{H}_2$   
 $k = 3.01 \cdot 10^{-12}$  (2)
42.  $\text{C}_2\text{H}_5 + \text{C}_3\text{H}_8 \rightarrow \text{C}_2\text{H}_6 + \text{C}_3\text{H}_7$   
 $k = 1.61 \cdot 10^{-15} \cdot (T/298.0)^{3.65} \cdot \exp(-4,600.418/T)$  (3)
43.  $\text{C}_2\text{H}_5 + \text{C}_3\text{H}_7 \rightarrow \text{C}_3\text{H}_8 + \text{C}_2\text{H}_4$   
 $k = 1.91 \cdot 10^{-12}$  (3)
44.  $\text{C}_2\text{H}_5 + \text{C}_3\text{H}_7 \rightarrow \text{CH}_3\text{CH}=\text{CH}_2 + \text{C}_2\text{H}_6$   
 $k = 2.41 \cdot 10^{-12}$  (3)
45.  $\text{C}_2\text{H}_5 + \text{H}_2 \rightarrow \text{C}_2\text{H}_6 + \text{H}$   
 $k = 4.12 \cdot 10^{-15} \cdot (T/298.0)^{3.6} \cdot \exp(-4,250.425/T)$  (2)
46.  $\text{C}_2\text{H}_5 + \text{H} \rightarrow \text{CH}_3 + \text{CH}_3$   
 $k = 5.99 \cdot 10^{-11}$  (4)
47.  $\text{C}_2\text{H}_5 + \text{H} \rightarrow \text{C}_2\text{H}_4 + \text{H}_2$   
 $k = 3.01 \cdot 10^{-12}$  (2)
48.  $(^*)\text{C}_2\text{H}_5 + \text{H} + \text{M} \rightarrow \text{C}_2\text{H}_6 + \text{M}$   
 $k = 2.25 \cdot 10^{-10} \cdot (T/298)^{0.16}$  (9)
49.  $\text{C}_2\text{H}_4 + \text{C}_2\text{H} \rightarrow \text{C}_2\text{H}_2 + \text{C}_2\text{H}_3$   
 $k = 1.40 \cdot 10^{-10}$  (7)
50.  $\text{C}_2\text{H}_4 + \text{H} \rightarrow \text{C}_2\text{H}_3 + \text{H}_2$   
 $k = 4.00 \cdot 10^{-12} \cdot (T/298.0)^{2.53} \cdot \exp(-6,160.35/T)$  (2)
51.  $(^*)\text{C}_2\text{H}_4 + \text{H} + \text{M} \rightarrow \text{C}_2\text{H}_5 + \text{M}$   
 $k = 1.3 \cdot 10^{-29} \cdot \exp(-380.0607/T)$  (6)
52.  $\text{C}_2\text{H}_3 + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_4 + \text{C}_2\text{H}_2$   
 $k = 1.6 \cdot 10^{-12}$  (2)

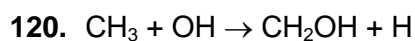
53.  $\text{C}_2\text{H}_3 + \text{C}_2\text{H} \rightarrow \text{C}_2\text{H}_2 + \text{C}_2\text{H}_2$   
 $k = 1.6 \cdot 10^{-12}$  (2)
54.  $\text{C}_2\text{H}_3 + \text{C}_3\text{H}_8 \rightarrow \text{C}_2\text{H}_4 + \text{C}_3\text{H}_7$   
 $k = 1.46 \cdot 10^{-13} \cdot (T/298.0)^{3.3} \cdot \exp(-5,279.957/T)$  (3)
55.  $\text{C}_2\text{H}_3 + \text{C}_3\text{H}_7 \rightarrow \text{C}_3\text{H}_8 + \text{C}_2\text{H}_2$   
 $k = 2.01 \cdot 10^{-12}$  (3)
56.  $\text{C}_2\text{H}_3 + \text{C}_3\text{H}_7 \rightarrow \text{CH}_3\text{CH}=\text{CH}_2 + \text{C}_2\text{H}_4$   
 $k = 2.01 \cdot 10^{-12}$  (3)
57.  $\text{C}_2\text{H}_3 + \text{H}_2 \rightarrow \text{C}_2\text{H}_4 + \text{H}$   
 $k = 1.61 \cdot 10^{-13} \cdot (T/298.0)^{2.63} \cdot \exp(-4,229.737/T)$  (2)
58.  $\text{C}_2\text{H}_3 + \text{H} \rightarrow \text{C}_2\text{H}_2 + \text{H}_2$   
 $k = 2.01 \cdot 10^{-11}$  (4)
59.  $(^*)\text{C}_2\text{H}_3 + \text{H} + \text{M} \rightarrow \text{C}_2\text{H}_4 + \text{M}$   
 $k = 2.02 \cdot 10^{-10} \cdot (T/298.0)^{0.2}$  (9)
60.  $\text{C}_2\text{H}_2 + \text{C}_2\text{H} \rightarrow \text{C}_4\text{H}_2 + \text{H}$   
 $k = 1.25 \cdot 10^{-10} \cdot (T/298)^{0.24} \cdot \exp(37.2844/T)$  (17)
61.  $\text{C}_2\text{H}_2 + \text{H} \rightarrow \text{C}_2\text{H} + \text{H}_2$   
 $k = 10^{-10} \cdot \exp(-11,199.76/T)$  (2)
62.  $(^*)\text{C}_2\text{H}_2 + \text{H} + \text{M} \rightarrow \text{C}_2\text{H}_3 + \text{M}$   
 $k = 3.31 \cdot 10^{-30} \cdot \exp(-739.6750/T)$  (4)
63.  $\text{C}_2\text{H} + \text{C}_3\text{H}_8 \rightarrow \text{C}_2\text{H}_2 + \text{C}_3\text{H}_7$   
 $k = 5.99 \cdot 10^{-12}$  (3)
64.  $\text{C}_2\text{H} + \text{C}_3\text{H}_7 \rightarrow \text{CH}_3\text{CH}=\text{CH}_2 + \text{C}_2\text{H}_2$   
 $k = 1.00 \cdot 10^{-11}$  (3)
65.  $\text{C}_2\text{H} + \text{H}_2 \rightarrow \text{C}_2\text{H}_2 + \text{H}$   
 $k = 1.91 \cdot 10^{-11} \cdot \exp(-1,450.485/T)$  (2)  
 $k = 2.51 \cdot 10^{-11} \cdot \exp(-1,559.933/T)$  (4)
66.  $(^*)\text{C}_2\text{H} + \text{H} + \text{M} \rightarrow \text{C}_2\text{H}_2 + \text{M}$   
 $k = 3.01 \cdot 10^{-10}$  (2)
67.  $\text{C}_3\text{H}_8 + \text{H} \rightarrow \text{C}_3\text{H}_7 + \text{H}_2$   
 $k = 4.23 \cdot 10^{-12} \cdot (T/298.0)^{2.54} \cdot \exp(-3,400.1/T)$  (3)

68.  $\text{C}_3\text{H}_7 + \text{C}_3\text{H}_7 \rightarrow \text{CH}_3\text{CH}=\text{CH}_2 + \text{C}_3\text{H}_8$   
 $k = 2.81 \cdot 10^{-12}$  (3)
69.  $\text{C}_3\text{H}_7 + \text{H}_2 \rightarrow \text{C}_3\text{H}_8 + \text{H}$   
 $k = 3.19 \cdot 10^{-14} \cdot (T/298.0)^{2.84} \cdot \exp(-4,600.418/T)$  (3)
70.  $\text{C}_3\text{H}_7 + \text{H} \rightarrow \text{CH}_3\text{CH}=\text{CH}_2 + \text{H}_2$   
 $k = 3.01 \cdot 10^{-12}$  (3)
71.  $(^*)\text{C}_3\text{H}_7 + \text{H} + \text{M} \rightarrow \text{C}_3\text{H}_8 + \text{M}$   
 $k = 9.67 \cdot 10^{-11} \cdot (T/298.0)^{0.22}$  (9)
72.  $(^*)\text{CH}_3\text{CH}=\text{CH}_2 + \text{H} + \text{M} \rightarrow \text{C}_3\text{H}_7 + \text{M}$   
 $k = 2.19 \cdot 10^{-11} \cdot \exp(-1,640.515/T)$  (10)
73.  $(^*)\text{H} + \text{H} + \text{M} \rightarrow \text{H}_2 + \text{M}$   
 $k = 6.04 \cdot 10^{-33} \cdot (T/298.0)^{-1}$  (4)
74.  $\text{O} + \text{O} + \text{O} \rightarrow \text{O}_2 + \text{O}$   
 $k = 5.21 \cdot 10^{-35} \cdot \exp(899.6373/T)$  (2)
75.  $(^*)\text{O} + \text{O} + \text{M} \rightarrow \text{O}_2 + \text{M}$   
 $k = 5.21 \cdot 10^{-35} \cdot \exp(899.6373/T)$  (2)
76.  $\text{CH}_4 + \text{O} \rightarrow \text{CH}_3 + \text{OH}$   
 $k = 8.32 \cdot 10^{-12} \cdot (T/298.0)^{1.56} \cdot \exp(-4,269.669/T)$  (4)
77.  $\text{CH}_3 + \text{O} \rightarrow \text{CH}_2\text{O} + \text{H}$   
 $k = 1.30 \cdot 10^{-10}$  (2)  
 $k = 1.40 \cdot 10^{-10}$  (4)
78.  $\text{CH}_3 + \text{O} \rightarrow \text{CO} + \text{H}_2 + \text{H}$   
 $k = 3.6 \cdot 10^{-11} \cdot \exp(-202.0/T)$  (1)  
 $k = 2.80 \cdot 10^{-11}$  (11)
79.  $\text{CH}_2 + \text{O} \rightarrow \text{CO} + \text{H}_2$   
 $k = 0.4 \cdot 3.4 \cdot 10^{-10} \cdot \exp(-270.0/T)$  (11)
80.  $\text{CH}_2 + \text{O} \rightarrow \text{CO} + 2\text{H}$   
 $k = 1.33 \cdot 10^{-10}$  (1)  
 $k = 0.6 \cdot 2.01 \cdot 10^{-10}$  (4)
81.  $\text{CH}_2 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2$   
 $k = 4.36398241626825 \cdot 10^{-3} \cdot T^{-3.3} \cdot \exp(-1,443.0/T)$  (1)

82.  $\text{CH}_2 + \text{O}_2 \rightarrow \text{CO} + \text{H}_2\text{O}$   
 $k = 37.0639602477578 \cdot 10^{-3} \cdot T^{-3.3} \cdot \exp(-1,443.0/T)$  (1)
83.  $\text{CH}_2 + \text{O}_2 \rightarrow \text{CH}_2\text{O} + \text{O}$   
 $k = 2.2 \cdot 10^{-11} \cdot \exp(-750.0/T)$  (18)  
 $k = 4.1 \cdot 10^{-11} \cdot \exp(-750.4986486/T)$  (6)
84.  $\text{CH} + \text{O} \rightarrow \text{CO} + \text{H}$   
 $k = 3.40317565492586 \cdot 10^{-11} \cdot T^{0.1} \cdot \exp(4.5/T)$  (1)  
 $k = 6.59 \cdot 10^{-11}$  (4)
85.  $\text{CH} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}$   
 $k = 1.76166389485061 \cdot 10^{-10} \cdot T^{-0.48}$  (1)  
 $k = 0.3 \cdot 4.0 \cdot 10^{-11}$  (11)
86.  $\text{CH} + \text{O}_2 \rightarrow \text{CO} + \text{OH}$   
 $k = 1.17444259656707 \cdot 10^{-10} \cdot T^{-0.48}$  (1)  
 $k = 0.2 \cdot 4.0 \cdot 10^{-11}$  (11)
87.  $\text{CH} + \text{O}_2 \rightarrow \text{CHO} + \text{O}$   
 $k = 1.17444259656707 \cdot 10^{-10} \cdot T^{-0.48}$  (1)  
 $k = 0.2 \cdot 4.0 \cdot 10^{-11}$  (11)
88.  $\text{CH} + \text{O}_2 \rightarrow \text{CO} + \text{H} + \text{O}$   
 $k = 1.76166389485061 \cdot 10^{-10} \cdot T^{-0.48}$  (1)  
 $k = 0.3 \cdot 4.0 \cdot 10^{-11}$  (11)
89.  $\text{C} + \text{O}_2 \rightarrow \text{CO} + \text{O}$   
 $k = 5.36358388360843 \cdot 10^{-12} \cdot T^{0.41} \cdot \exp(26.9/T)$  (1)
90.  $\text{C}_2\text{H}_6 + \text{O} \rightarrow \text{C}_2\text{H}_5 + \text{OH}$   
 $k = 8.54 \cdot 10^{-12} \cdot (T/298.0)^{1.5} \cdot \exp(-2,920.213/T)$  (1)
91.  $\text{C}_2\text{H}_5 + \text{O} \rightarrow \text{CH}_3\text{CHO} + \text{H}$   
 $k = 1.33 \cdot 10^{-10}$  (1,2)  
 $k = 0.4 \cdot 2.2 \cdot 10^{-10}$  (11)
92.  $\text{C}_2\text{H}_5 + \text{O} \rightarrow \text{CH}_2\text{O} + \text{CH}_3$   
 $k = 0.3 \cdot 2.2 \cdot 10^{-10}$  (11)  
 $k = 0.17 \cdot 1.10 \cdot 10^{-10}$  (4)
93.  $\text{C}_2\text{H}_5 + \text{O} \rightarrow \text{C}_2\text{H}_4 + \text{OH}$   
 $k = 0.2 \cdot 2.2 \cdot 10^{-10}$  (11)

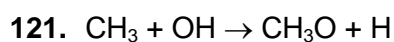
94.  $\text{C}_2\text{H}_5 + \text{O}_2 \rightarrow \text{C}_2\text{H}_4 + \text{HO}_2$   
 $k = 1.40 \cdot 10^{-12} \cdot \exp(-1,949.615/T)$  (1)  
 $k = 1.69 \cdot 10^{-13} \cdot \exp(1,100.492/T)$  (4)
95.  $\text{C}_2\text{H}_5 + \text{O}_2 + \text{CH}_4 \rightarrow \text{C}_2\text{H}_5\text{O}_2 + \text{CH}_4$   
 $k = 5.9 \cdot 10^{-29} \cdot (T/298.0)^{-3.8}$  (19)
96.  $\text{C}_2\text{H}_4 + \text{O} \rightarrow \text{CH}_2\text{CHO} + \text{H}$   
 $k = 0.35 \cdot 2.25 \cdot 10^{-17} \cdot T^{1.88} \cdot \exp(-92.0/T)$  (11)
97.  $\text{C}_2\text{H}_4 + \text{O} \rightarrow \text{CHO} + \text{CH}_3$   
 $k = 0.60 \cdot 2.25 \cdot 10^{-17} \cdot T^{1.88} \cdot \exp(-92.0/T)$  (11)  
 $k = 0.60 \cdot 8.05 \cdot 10^{-13} \cdot (T/298.0)^{2.08}$  (4)
98.  $\text{C}_2\text{H}_3 + \text{O} \rightarrow \text{C}_2\text{H}_2 + \text{OH}$   
 $k = 0.25 \cdot 5.0 \cdot 10^{-11}$  (11)
99.  $\text{C}_2\text{H}_3 + \text{O} \rightarrow \text{CO} + \text{CH}_3$   
 $k = 0.25 \cdot 5.0 \cdot 10^{-11}$  (11)
100.  $\text{C}_2\text{H}_3 + \text{O} \rightarrow \text{CHO} + \text{CH}_2$   
 $k = 0.25 \cdot 5.0 \cdot 10^{-11}$  (11)
101.  $\text{C}_2\text{H}_3 + \text{O} \rightarrow \text{CH}_2\text{CO} + \text{H}$   
 $k = 0.25 \cdot 5.0 \cdot 10^{-11}$  (11)
102.  $\text{C}_2\text{H}_3 + \text{O}_2 \rightarrow \text{CH}_2\text{O} + \text{CHO}$   
 $k = 9 \cdot 10^{-12}$  (4)
103.  $\text{C}_2\text{H}_2 + \text{O} \rightarrow \text{CH}_2 + \text{CO}$   
 $k = 0.50 \cdot 3.06 \cdot 10^{-13} \cdot (T/298.0)^{2.8} \cdot \exp(-250.1665/T)$  (4)
104.  $\text{C}_2\text{H}_2 + \text{O} \rightarrow \text{C}_2\text{HO} + \text{H}$   
 $k = 0.5 \cdot 3.6 \cdot 10^{-20} \cdot T^{2.8} \cdot \exp(-250.1665/T)$  (4)
105.  $\text{C}_2\text{H} + \text{O} \rightarrow \text{CH} + \text{CO}$   
 $k = 1.69 \cdot 10^{-11}$  (4)
106.  $\text{C}_2\text{H} + \text{O}_2 \rightarrow \text{CHO} + \text{CO}$   
 $k = 4 \cdot 10^{-12}$  (2)  
 $k = 2.7018330098448 \cdot 10^{-10} \cdot T^{-0.35}$  (1)
107.  $\text{C}_2\text{H} + \text{O}_2 \rightarrow \text{C}_2\text{HO} + \text{O}$   
 $k = 1 \cdot 10^{-12}$  (2)

- 108.**  $\text{C}_3\text{H}_8 + \text{O} \rightarrow \text{C}_3\text{H}_7 + \text{OH}$   
 $k = 1.37 \cdot 10^{-12} \cdot (T/298.0)^{2.68} \cdot \exp(-1,870.0235/T)$  (3)
- 109.**  $\text{H}_2 + \text{O} \rightarrow \text{OH} + \text{H}$   
 $k = 6.43727793143278 \cdot 10^{-20} \cdot T^{2.7} \cdot \exp(-3150.0/T)$  (1)  
 $k = 3.44 \cdot 10^{-13} \cdot (T/298.0)^{2.67} \cdot \exp(-3,159.555/T)$  (4)
- 110.**  $\text{H} + \text{O} + \text{CH}_4 \rightarrow \text{OH} + \text{CH}_4$   
 $k = 4.36 \cdot 10^{-32} \cdot (T/298.0)^{-1}$  (2)
- 111.**  $\text{H} + \text{O}_2 \rightarrow \text{OH} + \text{O}$   
 $k = 1.66 \cdot 10^{-9} \cdot (T/298.0)^{-0.9} \cdot \exp(-8,749.814/T)$  (2)  
 $k = 3.30 \cdot 10^{-10} \cdot \exp(-8,459.958/T)$  (4)
- 112.**  $\text{H} + \text{O}_2 + \text{CH}_4 \rightarrow \text{HO}_2 + \text{CH}_4$   
 $k = 5.93 \cdot 10^{-32} \cdot (T/298.0)^{-1}$  (2)  
 $k = 6.09 \cdot 10^{-32} \cdot (T/298.0)^{-0.8}$  (6)  
 $k = 5.47 \cdot 10^{-32} \cdot (T/298.0)^{-1.8}$  (12)  
 $k = 4.52 \cdot 10^{-32} \cdot (T/298.0)^{-0.8}$  (4)
- 113.**  $\text{CH}_4 + \text{OH} \rightarrow \text{CH}_3 + \text{H}_2\text{O}$   
 $k = 2.77 \cdot 10^{-13} \cdot (T/298.0)^{2.4} \cdot \exp(1,059.6/T)$  (2)  
 $k = 3.81687479297624 \cdot 10^{-19} \cdot T^{2.42} \cdot \exp(-1,162/T)$  (1)  
 $k = 8.77 \cdot 10^{-13} \cdot (T/298.0)^{1.83} \cdot \exp(-1,399.97/T)$  (4)
- 114.**  $\text{CH}_4 + \text{HO}_2 \rightarrow \text{CH}_3 + \text{H}_2\text{O}_2$   
 $k = 3.01 \cdot 10^{-13} \cdot \exp(9,349.973/T)$  (2)
- 115.**  $\text{CH}_4 + \text{CHO} \rightarrow \text{CH}_3 + \text{CH}_2\text{O}$   
 $k = 1.36 \cdot 10^{-13} \cdot (T/298.0)^{2.85} \cdot \exp(-11,299.59/T)$  (2)
- 116.**  $\text{CH}_4 + \text{CH}_3\text{O} \rightarrow \text{CH}_3\text{OH} + \text{CH}_3$   
 $k = 2.61 \cdot 10^{-13} \cdot \exp(4,450.077/T)$  (2)
- 117.**  $\text{CH}_3 + \text{CO} + \text{CH}_4 \rightarrow \text{CH}_3\text{CO} + \text{CH}_4$   
 $k = 7.89 \cdot 10^{-29} \cdot (T/298.0)^{-7.56} \cdot \exp(-5,490.433/T)$  (2)  
 $k = 4.19 \cdot 10^{-36}$  (6)  
 $k = 3.01 \cdot 10^{-34} \cdot \exp(-1,909.925/T)$  (6)
- 118.**  $\text{CH}_3 + \text{H}_2\text{O} \rightarrow \text{CH}_4 + \text{OH}$   
 $k = 1.20 \cdot 10^{-14} \cdot (T/298.0)^{2.9} \cdot \exp(-7,479.738/T)$  (2)
- 119.**  $\text{CH}_3 + \text{OH} \rightarrow \text{CH}_2 + \text{H}_2\text{O}$   
 $k = 1.20 \cdot 10^{-10} \cdot \exp(-1,399.97/T)$  (6)



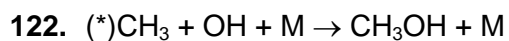
$$k = 1.31 \cdot 10^{-11} \text{ (13)}$$

$$k = 3.18 \cdot 10^{-12} \cdot (T/298.0)^{1.00} \cdot \exp(-1,605.636/T) \text{ (14)}$$



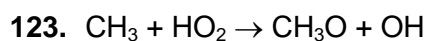
$$k = 1.6 \cdot 10^{-10} \text{ (13)}$$

$$k = 6.45 \cdot 10^{-13} \cdot (T/298.0)^{1.01} \cdot \exp(-6,012.415/T) \text{ (14)}$$

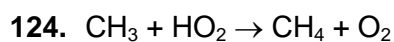


$$k = 2.25 \cdot 10^{-24} \cdot (T/298.0)^{-8.20} \text{ (6)}$$

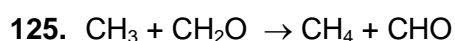
$$k = 9.31 \cdot 10^{-11} \cdot (T/298.0)^{-0.02} \cdot \exp(16.83813/T) \text{ (14)}$$



$$k = 3.01 \cdot 10^{-11} \text{ (4)}$$



$$k = 5.99 \cdot 10^{-12} \text{ (2)}$$

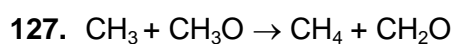


$$k = 8.25 \cdot 10^{-14} \cdot (T/298.0)^{2.81} \cdot \exp(-2,950.281/T) \text{ (2)}$$

$$k = 1.60 \cdot 10^{-16} \cdot (T/298.0)^{6.10} \cdot \exp(-989.8415/T) \text{ (6)}$$



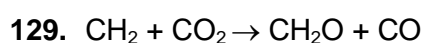
$$k = 2.01 \cdot 10^{-10} \text{ (2)}$$



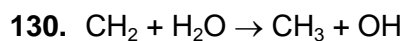
$$k = 4.00 \cdot 10^{-11} \text{ (2)}$$



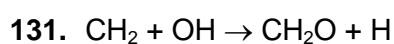
$$k = 2.97 \cdot 10^{-16} \cdot (T/298.0)^{5.64} \cdot \exp(-1,240.008/T) \text{ (6)}$$



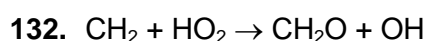
$$k = 3.90 \cdot 10^{-14} \text{ (2)}$$



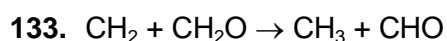
$$k = 1.60 \cdot 10^{-16} \text{ (2)}$$



$$k = 3.01 \cdot 10^{-11} \text{ (2)}$$



$$k = 3.01 \cdot 10^{-11} \text{ (2)}$$



$$k = 1.00 \cdot 10^{-14} \text{ (2)}$$

134.  $\text{CH}_2 + \text{CHO} \rightarrow \text{CH}_3 + \text{CO}$   
 $k = 3.01 \cdot 10^{-11}$  (2)
135.  $\text{CH}_2 + \text{CH}_3\text{O} \rightarrow \text{CH}_3 + \text{CH}_2\text{O}$   
 $k = 3.01 \cdot 10^{-11}$  (2)
136.  $\text{CH} + \text{CO}_2 \rightarrow \text{CHO} + \text{CO}$   
 $k = 1.6974097914175 \cdot 10^{-14} \cdot T^{0.5} \cdot \exp(-3,000.0/T)$  (1)  
 $k = 0.5 \cdot 1.06 \cdot 10^{-16} \cdot T^{1.51} \cdot \exp(360/T)$  (11)
137.  $\text{CH} + \text{CO}_2 \rightarrow 2\text{CO} + \text{H}$   
 $k = 1.06 \cdot 10^{-16} \cdot T^{1.51} \cdot \exp(360/T)^{0.5}$  (11)
138.  $(*)\text{CH} + \text{CO} + \text{M} \rightarrow \text{C}_2\text{HO} + \text{M}$   
 $k = 6.3 \cdot 10^{-24} \cdot T^{-2.5}$  (11)
139.  $\text{C}_2\text{H}_6 + \text{OH} \rightarrow \text{C}_2\text{H}_5 + \text{H}_2\text{O}$   
 $k = 5.50 \cdot 10^{-12} \cdot (T/298.0)^{1.04} \cdot \exp(-912.8672/T)$  (2)  
 $k = 1.06 \cdot 10^{-12} \cdot (T/298.0)^2 \cdot \exp(-435.3860/T)$  (4)
140.  $\text{C}_2\text{H}_6 + \text{HO}_2 \rightarrow \text{C}_2\text{H}_5 + \text{H}_2\text{O}_2$   
 $k = 4.90 \cdot 10^{-13} \cdot \exp(-7,519.428/T)$  (2)
141.  $\text{C}_2\text{H}_6 + \text{CHO} \rightarrow \text{C}_2\text{H}_5 + \text{CH}_2\text{O}$   
 $k = 4.18 \cdot 10^{-13} \cdot (T/298.0)^{2.72} \cdot \exp(-9,180.389/T)$  (2)
142.  $\text{C}_2\text{H}_6 + \text{CH}_3\text{O} \rightarrow \text{C}_2\text{H}_5 + \text{CH}_3\text{OH}$   
 $k = 4.00 \cdot 10^{-13} \cdot \exp(-3,569.684/T)$  (2)
143.  $\text{C}_2\text{H}_5 + \text{OH} \rightarrow \text{C}_2\text{H}_4 + \text{H}_2\text{O}$   
 $k = 4.00 \cdot 10^{-11}$  (2)
144.  $\text{C}_2\text{H}_5 + \text{HO}_2 \rightarrow \text{C}_2\text{H}_6 + \text{O}_2$   
 $k = 5.00 \cdot 10^{-13}$  (2)
145.  $\text{C}_2\text{H}_5 + \text{HO}_2 \rightarrow \text{C}_2\text{H}_4 + \text{H}_2\text{O}_2$   
 $k = 5.00 \cdot 10^{-13}$  (2)
146.  $\text{C}_2\text{H}_5 + \text{CH}_2\text{O} \rightarrow \text{C}_2\text{H}_6 + \text{CHO}$   
 $k = 8.19 \cdot 10^{-14} \cdot (T/298.0)^{2.81} \cdot \exp(-2,950.281/T)$  (2)
147.  $\text{C}_2\text{H}_5 + \text{CHO} \rightarrow \text{C}_2\text{H}_6 + \text{CO}$   
 $k = 2.01 \cdot 10^{-10}$  (2)
148.  $\text{C}_2\text{H}_5 + \text{CH}_3\text{O} \rightarrow \text{C}_2\text{H}_6 + \text{CH}_2\text{O}$   
 $k = 4.00 \cdot 10^{-11}$  (2)



149.  $\text{C}_2\text{H}_4 + \text{OH} \rightarrow \text{C}_2\text{H}_3 + \text{H}_2\text{O}$   
 $k = 1.66 \cdot 10^{-13} \cdot (T/298.0)^{2.75} \cdot \exp(-2,099.955/T)$  (2)  
 $k = 3.40 \cdot 10^{-11} \cdot \exp(-2,989.971/T)$  (4)
150.  $\text{C}_2\text{H}_4 + \text{HO}_2 \rightarrow \text{CH}_3\text{CHO} + \text{OH}$   
 $k = 1.00 \cdot 10^{-14} \cdot \exp(-4,000.259/T)$  (2)
151.  $\text{C}_2\text{H}_3 + \text{H}_2\text{O} \rightarrow \text{C}_2\text{H}_4 + \text{OH}$   
 $k = 1.20 \cdot 10^{-14} \cdot (T/298.0)^{2.90} \cdot \exp(-7,479.738/T)$  (2)
152.  $\text{C}_2\text{H}_3 + \text{OH} \rightarrow \text{C}_2\text{H}_2 + \text{H}_2\text{O}$   
 $k = 5.00 \cdot 10^{-11}$  (1,2)
153.  $\text{C}_2\text{H}_3 + \text{CH}_2\text{O} \rightarrow \text{C}_2\text{H}_4 + \text{CHO}$   
 $k = 8.07 \cdot 10^{-14} \cdot (T/298.0)^{2.81} \cdot \exp(-2,950.281/T)$  (2)
154.  $\text{C}_2\text{H}_3 + \text{CHO} \rightarrow \text{C}_2\text{H}_4 + \text{CO}$   
 $k = 1.50 \cdot 10^{-10}$  (2)
155.  $\text{C}_2\text{H}_3 + \text{CH}_3\text{O} \rightarrow \text{C}_2\text{H}_4 + \text{CH}_2\text{O}$   
 $k = 4.00 \cdot 10^{-11}$  (2)
156.  $\text{C}_2\text{H}_2 + \text{OH} \rightarrow \text{C}_2\text{H} + \text{H}_2\text{O}$   
 $k = 1.03 \cdot 10^{-13} \cdot (T/298.0)^{2.68} \cdot \exp(-6,060.524/T)$  (2)  
 $k = 2.41270562328612 \cdot 10^{-20} \cdot T^{2.68} \cdot \exp(-6,060.0/T)$  (1)
157.  $\text{C}_2\text{H}_2 + \text{HO}_2 \rightarrow \text{CH}_2\text{CO} + \text{OH}$   
 $k = 1.00 \cdot 10^{-14} \cdot \exp(-4,000.25/T)$  (2)
158.  $\text{C}_2\text{H} + \text{OH} \rightarrow \text{CH}_2 + \text{CO}$   
 $k = 3.01 \cdot 10^{-11}$  (2)
159.  $\text{C}_2\text{H} + \text{OH} \rightarrow \text{C}_2\text{H}_2 + \text{O}$   
 $k = 3.01 \cdot 10^{-11}$  (2)
160.  $\text{C}_2\text{H} + \text{HO}_2 \rightarrow \text{C}_2\text{H}_2 + \text{O}_2$   
 $k = 3.01 \cdot 10^{-11}$  (2)
161.  $\text{C}_2\text{H} + \text{HO}_2 \rightarrow \text{C}_2\text{HO} + \text{OH}$   
 $k = 3.01 \cdot 10^{-11}$  (2)
162.  $\text{C}_2\text{H} + \text{CHO} \rightarrow \text{C}_2\text{H}_2 + \text{CO}$   
 $k = 1.00 \cdot 10^{-10}$  (2)
163.  $\text{C}_2\text{H} + \text{CH}_3\text{O} \rightarrow \text{C}_2\text{H}_2 + \text{CH}_2\text{O}$   
 $k = 4.00 \cdot 10^{-11}$  (2)

- 164.**  $\text{C}_3\text{H}_8 + \text{OH} \rightarrow \text{C}_3\text{H}_7 + \text{H}_2\text{O}$   
 $k=0.56 \cdot (T/298.0)^{-0.1} \cdot \exp(-447.4132/T)$  (3)
- 165.**  $\text{C}_3\text{H}_8 + \text{CH}_3\text{O} \rightarrow \text{C}_3\text{H}_7 + \text{CH}_3\text{OH}$   
 $k=7.21 \cdot 10^{-13} \cdot \exp(-3,249.759/T)$  (3)
- 166.**  $\text{C}_3\text{H}_7 + \text{CH}_2\text{O} \rightarrow \text{C}_3\text{H}_8 + \text{CHO}$   
 $k=7.49 \cdot 10^{-14} \cdot (T/298.0)^{2.9} \cdot \exp(-2,950.281/T)$  (3)
- 167.**  $\text{C}_3\text{H}_7 + \text{CHO} \rightarrow \text{C}_3\text{H}_8 + \text{CO}$   
 $k=1.00 \cdot 10^{-10}$  (3)
- 168.**  $\text{C}_3\text{H}_7 + \text{CH}_3\text{O} \rightarrow \text{C}_3\text{H}_8 + \text{CH}_2\text{O}$   
 $k=4.00 \cdot 10^{-11}$  (3)
- 169.**  $\text{H}_2 + \text{OH} \rightarrow \text{H} + \text{H}_2\text{O}$   
 $k=9.40 \cdot 10^{-13} \cdot (T/298.0)^{2.00} \cdot \exp(-1,490.175/T)$  (2)  
 $k=1.55 \cdot 10^{-12} \cdot (T/298.0)^{1.60} \cdot \exp(-1,659.759/T)$  (4)  
 $k=7.70 \cdot 10^{-12} \cdot \exp(-2,099.955/T)$  (12)
- 170.**  $\text{H}_2 + \text{CHO} \rightarrow \text{H} + \text{CH}_2\text{O}$   
 $k=2.66 \cdot 10^{-13} \cdot (T/298.0)^{2.00} \cdot \exp(-8,969.913/T)$  (2)
- 171.**  $\text{H} + \text{CO}_2 \rightarrow \text{CO} + \text{OH}$   
 $k=2.51 \cdot 10^{-10} \cdot \exp(-13,350.23/T)$  (2)  
 $k=3.38 \cdot 10^{-10} \cdot \exp(-13,163.0/T)$  (1)
- 172.**  $(^*)\text{H} + \text{CO} + \text{M} \rightarrow \text{CHO} + \text{M}$   
 $k=5.29 \cdot 10^{-34} \cdot \exp(-370.4389/T)$  (6)
- 173.**  $\text{H} + \text{H}_2\text{O} \rightarrow \text{H}_2 + \text{OH}$   
 $k=6.82 \cdot 10^{-12} \cdot (T/298.0)^{1.60} \cdot \exp(-9,720.412/T)$  (4)
- 174.**  $\text{H} + \text{OH} \rightarrow \text{H}_2 + \text{O}$   
 $k=6.86 \cdot 10^{-14} \cdot (T/298.0)^{2.80} \cdot \exp(-1,949.615/T)$  (2)  
 $k=8.10098191306592 \cdot 10^{-21} \cdot T^{2.8} \cdot \exp(-1,950.0/T)$  (1)
- 175.**  $(^*)\text{H} + \text{OH} + \text{M} \rightarrow \text{H}_2\text{O} + \text{M}$   
 $k=4.38 \cdot 10^{-30} \cdot (T/298.0)^{-2.00}$  (4)
- 176.**  $\text{H} + \text{HO}_2 \rightarrow \text{H}_2 + \text{O}_2$   
 $k=1.10 \cdot 10^{-10} \cdot \exp(-1,070.424/T)$  (2)  
 $k=5.60 \cdot 10^{-12}$  (12)  
 $k=7.11 \cdot 10^{-11} \cdot \exp(-709.6069/T)$  (4)

177.  $\text{H} + \text{HO}_2 \rightarrow \text{H}_2\text{O} + \text{O}$   
 $k = 5.00 \cdot 10^{-11} \cdot \exp(-8,659.610/T)$  (4)  
 $k = 2.40 \cdot 10^{-12}$  (12)
178.  $\text{H} + \text{HO}_2 \rightarrow \text{OH} + \text{OH}$   
 $k = 2.81 \cdot 10^{-10} \cdot \exp(-440.1968/T)$  (2,4)  
 $k = 7.20 \cdot 10^{-11}$  (12)
179.  $\text{H} + \text{CH}_2\text{O} \rightarrow \text{H}_2 + \text{CHO}$   
 $k = 2.14 \cdot 10^{-12} \cdot (T/298.0)^{1.62} \cdot \exp(-1,089.668/T)$  (6)
180.  $\text{H} + \text{CHO} \rightarrow \text{H}_2 + \text{CO}$   
 $k = 1.50 \cdot 10^{-10}$  (1,4)  
 $k = 2.01 \cdot 10^{-10}$  (2)
181.  $\text{H} + \text{CH}_3\text{O} \rightarrow \text{H}_2 + \text{CH}_2\text{O}$   
 $k = 0.7 \cdot 9.00 \cdot 10^{-11} \cdot \exp(-300.0/T)$  (11)
182.  $\text{H} + \text{CH}_3\text{O} \rightarrow \text{CH}_3 + \text{OH}$   
 $k = 0.3 \cdot 9.00 \cdot 10^{-11} \cdot \exp(-300.0/T)$  (11)
183.  $\text{H} + \text{CH}_3\text{CHO} \rightarrow \text{H}_2 + \text{CH}_3\text{CO}$   
 $k = 6.8 \cdot 10^{-15} \cdot T^{1.16} \cdot \exp(-1,210.0/T)$  (4)
184.  $\text{H} + \text{CH}_2\text{CO} \rightarrow \text{CH}_3 + \text{CO}$   
 $k = 5.68 \cdot 10^{-11} \cdot \exp(-1,897.0/T)$  (1)
185.  $\text{H} + \text{C}_2\text{HO} \rightarrow \text{CH}_2 + \text{CO}$   
 $k = 2.51 \cdot 10^{-10}$  (4)
186.  $(^*)\text{O} + \text{CO} + \text{M} \rightarrow \text{CO}_2 + \text{M}$   
 $k = 1.70 \cdot 10^{-33} \cdot \exp(-1,509.418/T)$  (2)
187.  $\text{O} + \text{H}_2\text{O} \rightarrow \text{OH} + \text{OH}$   
 $k = 1.25 \cdot 10^{-11} \cdot (T/298.0)^{1.30} \cdot \exp(-8,599.474/T)$  (2)
188.  $\text{O} + \text{OH} \rightarrow \text{H} + \text{O}_2$   
 $k = 2.40 \cdot 10^{-11} \cdot \exp(109.4478/T)$  (12)  
 $k = 2.41 \cdot 10^{-11} \cdot \exp(-353.6007/T)$  (4)
189.  $\text{O} + \text{HO}_2 \rightarrow \text{O}_2 + \text{OH}$   
 $k = 2.91 \cdot 10^{-11} \cdot \exp(199.6521/T)$  (2)  
 $k = 2.70 \cdot 10^{-11} \cdot \exp(223.7066/T)$  (12)
190.  $\text{O} + \text{CH}_2\text{O} \rightarrow \text{OH} + \text{CHO}$   
 $k = 1.78 \cdot 10^{-11} \cdot (T/298.0)^{0.57} \cdot \exp(-1,390.349/T)$  (4)

191.  $\text{O} + \text{CHO} \rightarrow \text{CO} + \text{OH}$   
 $k=5.00 \cdot 10^{-11}$  (1,2,4)
192.  $\text{O} + \text{CHO} \rightarrow \text{H} + \text{CO}_2$   
 $k=5.00 \cdot 10^{-11}$  (1,2,4)
193.  $\text{O} + \text{CH}_3\text{O} \rightarrow \text{CH}_3 + \text{O}_2$   
 $k=0.12 \cdot 2.51 \cdot 10^{-11}$  (4)
194.  $\text{O} + \text{CH}_3\text{O} \rightarrow \text{OH} + \text{CH}_2\text{O}$   
 $k=1.00 \cdot 10^{-11}$  (2)
195.  $\text{O} + \text{CH}_3\text{CHO} \rightarrow \text{OH} + \text{CH}_3\text{CO}$   
 $k=9.71 \cdot 10^{-12} \cdot \exp(-909.9796/T)$  (4)
196.  $\text{O} + \text{CH}_2\text{CO} \rightarrow \text{CH}_2 + \text{CO}_2$   
 $k=0.6 \cdot 3.8 \cdot 10^{-12} \cdot \exp(-679.538/T)$  (4)
197.  $\text{O} + \text{CH}_2\text{CO} \rightarrow \text{CH}_2\text{O} + \text{CO}$   
 $k=0.2 \cdot 3.8 \cdot 10^{-12} \cdot \exp(-679.538/T)$  (4)
198.  $\text{O} + \text{CH}_2\text{CO} \rightarrow \text{CHO} + \text{CO} + \text{H}$   
 $k=0.1 \cdot 3.8 \cdot 10^{-12} \cdot \exp(-679.538/T)$  (4)
199.  $\text{O} + \text{CH}_2\text{CO} \rightarrow \text{CHO} + \text{CHO}$   
 $k=0.1 \cdot 3.8 \cdot 10^{-12} \cdot \exp(-679.538/T)$  (4)
200.  $\text{O} + \text{C}_2\text{HO} \rightarrow \text{CO} + \text{CO} + \text{H}$   
 $k=1.6 \cdot 10^{-10}$  (4)
201.  $\text{O}_2 + \text{CHO} \rightarrow \text{CO} + \text{HO}_2$   
 $k=8.50 \cdot 10^{-11} \cdot \exp(-850.3256/T)$  (2)
202.  $\text{O}_2 + \text{CH}_3\text{O} \rightarrow \text{CH}_2\text{O} + \text{HO}_2$   
 $k=1.10 \cdot 10^{-13} \cdot \exp(-1,309.766/T)$  (2)  
 $k=3.60 \cdot 10^{-14} \cdot \exp(-880.393/T)$  (6)
203.  $\text{O}_2 + \text{CH}_2\text{CHO} \rightarrow \text{CH}_2\text{O} + \text{CO} + \text{OH}$   
 $k=3.01 \cdot 10^{-14}$  (4)
204.  $\text{O}_2 + \text{C}_2\text{HO} \rightarrow \text{CO} + \text{CO} + \text{OH}$   
 $k=2.71 \cdot 10^{-12} \cdot \exp(-430.574/T)$  (4)

- 205.**  $\text{CO} + \text{OH} \rightarrow \text{CO}_2 + \text{H}$   
 $k=5.40 \cdot 10^{-14} \cdot (T/298.0)^{1.50} \cdot \exp(250.1665/T)$  (4)
- 206.**  $\text{CO} + \text{CH}_3\text{O} \rightarrow \text{CO}_2 + \text{CH}_3$   
 $k=2.61 \cdot 10^{-11} \cdot \exp(-5,940.252/T)$  (2)
- 207.**  $\text{H}_2\text{O} + \text{CH}_3\text{O} \rightarrow \text{CH}_3\text{OH} + \text{OH}$   
 $k=1.46 \cdot 10^{-15} \cdot (T/298.0)^{3.8} \cdot \exp(-5,780.290/T)$  (15)
- 208.**  $\text{OH} + \text{OH} \rightarrow \text{H}_2\text{O} + \text{O}$   
 $k=6.20 \cdot 10^{-14} \cdot (T/298.0)^{2.60} \cdot \exp(945.3408/T)$  (12)  
 $k=1.65 \cdot 10^{-12} \cdot (T/298.0)^{1.14} \cdot \exp(-50.51439/T)$  (4)
- 209.**  $^{\text{(*)}}\text{OH} + \text{OH} + \text{M} \rightarrow \text{H}_2\text{O}_2 + \text{M}$   
 $k=6.04 \cdot 10^{-31} \cdot (T/298.0)^{-3.00}$  (2)  
 $k=6.94 \cdot 10^{-31} \cdot (T/298.0)^{-0.8}$  (12)
- 210.**  $\text{OH} + \text{HO}_2 \rightarrow \text{O}_2 + \text{H}_2\text{O}$   
 $k=4.80 \cdot 10^{-11} \cdot \exp(250.1665/T)$  (4,12)
- 211.**  $\text{OH} + \text{CH}_2\text{O} \rightarrow \text{H}_2\text{O} + \text{CHO}$   
 $k=4.75 \cdot 10^{-12} \cdot (T/298.0)^{1.18} \cdot \exp(250.1665/T)$  (2)  
 $k=4.73 \cdot 10^{-12} \cdot (T/298.0)^{1.18} \cdot \exp(250.1665/T)$  (4)
- 212.**  $\text{OH} + \text{CHO} \rightarrow \text{CO} + \text{H}_2\text{O}$   
 $k=1.7 \cdot 10^{-10}$  (1)  
 $k=1.69 \cdot 10^{-10}$  (4)
- 213.**  $\text{OH} + \text{CH}_3\text{O} \rightarrow \text{CH}_2\text{O} + \text{H}_2\text{O}$   
 $k=3.01 \cdot 10^{-11}$  (2)
- 214.**  $\text{OH} + \text{CH}_3\text{CHO} \rightarrow \text{CH}_3\text{CO} + \text{H}_2\text{O}$   
 $k=4.4 \cdot 10^{-12} \cdot \exp(364.4248/T)$  (20)
- 215.**  $\text{OH} + \text{CH}_2\text{CO} \rightarrow \text{CO} + \text{CH}_2\text{OH}$   
 $k=1.69 \cdot 10^{-11}$  (4)
- 216.**  $\text{HO}_2 + \text{HO}_2 \rightarrow \text{H}_2\text{O}_2 + \text{O}_2$   
 $k=2.20 \cdot 10^{-13} \cdot \exp(600.1591/T)$  (12)
- 217.**  $\text{HO}_2 + \text{CH}_2\text{O} \rightarrow \text{CHO} + \text{H}_2\text{O}_2$   
 $k=3.30 \cdot 10^{-12} \cdot \exp(-5,870.494/T)$  (2)
- 218.**  $\text{HO}_2 + \text{CHO} \rightarrow \text{OH} + \text{H} + \text{CO}_2$   
 $k=5.00 \cdot 10^{-13}$  (2)

219.  $\text{HO}_2 + \text{CH}_3\text{O} \rightarrow \text{CH}_2\text{O} + \text{H}_2\text{O}_2$   
 $k=5.00 \cdot 10^{-13}$  (2)
220.  $\text{CH}_2\text{O} + \text{CH}_3\text{O} \rightarrow \text{CH}_3\text{OH} + \text{CHO}$   
 $k=1.69 \cdot 10^{-13}$  (2)
221.  $\text{CHO} + \text{CHO} \rightarrow \text{CH}_2\text{O} + \text{CO}$   
 $k=3.01 \cdot 10^{-11}$  (2)  
 $k=5.00 \cdot 10^{-11}$  (2)
222.  $\text{CHO} + \text{CH}_3\text{O} \rightarrow \text{CH}_3\text{OH} + \text{CO}$   
 $k=1.50 \cdot 10^{-10}$  (2)
223.  $\text{CH}_3\text{O} + \text{CH}_3\text{O} \rightarrow \text{CH}_2\text{O} + \text{CH}_3\text{OH}$   
 $k=1.00 \cdot 10^{-10}$  (2)
224.  $\text{CH}_4 + \text{CH}_3\text{CO} \rightarrow \text{CH}_3\text{CHO} + \text{CH}_3$   
 $k=4.82 \cdot 10^{-14} \cdot (T/298.0)^{2.88} \cdot \exp(-10,800.46/T)$  (2)
225.  $\text{CH}_4 + \text{CH}_2\text{OH} \rightarrow \text{CH}_3\text{OH} + \text{CH}_3$   
 $k=1.68 \cdot 10^{-15} \cdot (T/298.0)^{3.10} \cdot \exp(-8,170.102/T)$  (16)  
 $k=5.03 \cdot 10^{-15} \cdot (T/298.0)^5 \cdot \exp(-7,474.927/T)$  (15)
226.  $\text{CH}_3 + \text{H}_2\text{O}_2 \rightarrow \text{CH}_4 + \text{HO}_2$   
 $k=2.01 \cdot 10^{-14} \cdot \exp(299.4782/T)$  (2)
227.  $\text{CH}_3 + \text{CH}_3\text{OH} \rightarrow \text{CH}_4 + \text{CH}_3\text{O}$   
 $k=1.12 \cdot 10^{-15} \cdot (T/298.0)^{3.10} \cdot \exp(-3,490.304/T)$  (16)
228.  $\text{CH}_3 + \text{CH}_3\text{OH} \rightarrow \text{CH}_4 + \text{CH}_2\text{OH}$   
 $k=4.38 \cdot 10^{-15} \cdot (T/298.0)^{3.20} \cdot \exp(-3,610.576/T)$  (16)  
 $k=1.35 \cdot 10^{-15} \cdot (T/298.0)^{4.90} \cdot \exp(-3,379.653/T)$  (15)
229.  $\text{CH}_3 + \text{CH}_2\text{OH} \rightarrow \text{CH}_4 + \text{CH}_2\text{O}$   
 $k=4.00 \cdot 10^{-12}$  (16)
230.  $\text{CH}_2 + \text{H}_2\text{O}_2 \rightarrow \text{CH}_3 + \text{HO}_2$   
 $k=1.00 \cdot 10^{-14}$  (2)
231.  $\text{CH}_2 + \text{CH}_3\text{CO} \rightarrow \text{CH}_2\text{CO} + \text{CH}_3$   
 $k=3.01 \cdot 10^{-11}$  (2)
232.  $\text{CH}_2 + \text{CH}_3\text{OH} \rightarrow \text{CH}_3\text{O} + \text{CH}_3$   
 $k=1.12 \cdot 10^{-15} \cdot (T/298.0)^{3.10} \cdot \exp(-3,490.304/T)$  (16)
233.  $\text{CH}_2 + \text{CH}_3\text{OH} \rightarrow \text{CH}_2\text{OH} + \text{CH}_3$   
 $k=4.38 \cdot 10^{-15} \cdot (T/298.0)^{3.20} \cdot \exp(-3,610.576/T)$  (16)

234.  $\text{CH}_2 + \text{CH}_2\text{OH} \rightarrow \text{CH}_2\text{O} + \text{CH}_3$   
 $k=2.01 \cdot 10^{-12}$  (16)
235.  $\text{CH}_2 + \text{CH}_2\text{OH} \rightarrow \text{C}_2\text{H}_4 + \text{OH}$   
 $k=4.00 \cdot 10^{-11}$  (16)
236.  $\text{C}_2\text{H}_5 + \text{H}_2\text{O}_2 \rightarrow \text{C}_2\text{H}_6 + \text{HO}_2$   
 $k=1.45 \cdot 10^{-14} \cdot \exp(-489.5085/T)$  (2)
237.  $\text{C}_2\text{H}_5 + \text{CH}_3\text{OH} \rightarrow \text{C}_2\text{H}_6 + \text{CH}_3\text{O}$   
 $k=1.12 \cdot 10^{-15} \cdot (T/298.0)^{3.10} \cdot \exp(-4,500.592/T)$  (16)
238.  $\text{C}_2\text{H}_5 + \text{CH}_3\text{OH} \rightarrow \text{C}_2\text{H}_6 + \text{CH}_2\text{OH}$   
 $k=4.38 \cdot 10^{-15} \cdot (T/298.0)^{3.20} \cdot \exp(-4,610.040/T)$  (16)
239.  $\text{C}_2\text{H}_5 + \text{CH}_2\text{OH} \rightarrow \text{C}_2\text{H}_6 + \text{CH}_2\text{O}$   
 $k=4.00 \cdot 10^{-12}$  (16)
240.  $\text{C}_2\text{H}_5 + \text{CH}_2\text{OH} \rightarrow \text{CH}_3\text{OH} + \text{C}_2\text{H}_4$   
 $k=4.00 \cdot 10^{-12}$  (16)
241.  $\text{C}_2\text{H}_3 + \text{H}_2\text{O}_2 \rightarrow \text{C}_2\text{H}_4 + \text{HO}_2$   
 $k=2.01 \cdot 10^{-14} \cdot \exp(299.4782/T)$  (2)
242.  $\text{C}_2\text{H}_3 + \text{CH}_3\text{OH} \rightarrow \text{C}_2\text{H}_4 + \text{CH}_3\text{O}$   
 $k=1.12 \cdot 10^{-15} \cdot (T/298.0)^{3.10} \cdot \exp(-3,490.304/T)$  (16)
243.  $\text{C}_2\text{H}_3 + \text{CH}_3\text{OH} \rightarrow \text{C}_2\text{H}_4 + \text{CH}_2\text{OH}$   
 $k=4.38 \cdot 10^{-15} \cdot (T/298.0)^{3.20} \cdot \exp(-3,610.576/T)$  (16)
244.  $\text{C}_2\text{H}_3 + \text{CH}_2\text{OH} \rightarrow \text{C}_2\text{H}_4 + \text{CH}_2\text{O}$   
 $k=5.00 \cdot 10^{-11}$  (16)
245.  $\text{C}_2\text{H}_2 + \text{CH}_2\text{OH} \rightarrow \text{C}_2\text{H}_3 + \text{CH}_2\text{O}$   
 $k=1.20 \cdot 10^{-12} \cdot \exp(-4,529.457/T)$  (16)
246.  $\text{C}_2\text{H} + \text{CH}_3\text{OH} \rightarrow \text{C}_2\text{H}_2 + \text{CH}_3\text{O}$   
 $k=2.01 \cdot 10^{-12}$  (16)
247.  $\text{C}_2\text{H} + \text{CH}_3\text{OH} \rightarrow \text{C}_2\text{H}_2 + \text{CH}_2\text{OH}$   
 $k=1.00 \cdot 10^{-11}$  (16)
248.  $\text{C}_2\text{H} + \text{CH}_2\text{OH} \rightarrow \text{C}_2\text{H}_2 + \text{CH}_2\text{O}$   
 $k=5.99 \cdot 10^{-11}$  (16)

- 249.**  $\text{C}_3\text{H}_7 + \text{OH} \rightarrow \text{C}_3\text{H}_6 + \text{H}_2\text{O}$   
 $k=4.00 \cdot 10^{-11}$  **(3)**
- 250.**  $\text{C}_3\text{H}_7 + \text{H}_2\text{O}_2 \rightarrow \text{C}_3\text{H}_8 + \text{HO}_2$   
 $k=5.1 \cdot 10^{-15} \cdot (T/298.0)^{2.11} \cdot \exp(-1,290.522/T)$  **(3)**
- 251.**  $\text{C}_3\text{H}_7 + \text{CH}_3\text{OH} \rightarrow \text{C}_3\text{H}_8 + \text{CH}_3\text{O}$   
 $k=1.12 \cdot 10^{-15} \cdot (T/298.0)^{3.10} \cdot \exp(-4,500.592/T)$  **(3)**
- 252.**  $\text{C}_3\text{H}_7 + \text{CH}_3\text{OH} \rightarrow \text{C}_3\text{H}_8 + \text{CH}_2\text{OH}$   
 $k=3.90 \cdot 10^{-15} \cdot (T/298.0)^{3.17} \cdot \exp(-4,610.040/T)$  **(3)**
- 253.**  $\text{C}_3\text{H}_7 + \text{CH}_2\text{OH} \rightarrow \text{C}_3\text{H}_8 + \text{CH}_2\text{O}$   
 $k=1.60 \cdot 10^{-12}$  **(3)**
- 254.**  $\text{C}_3\text{H}_7 + \text{CH}_2\text{OH} \rightarrow \text{C}_3\text{H}_6 + \text{CH}_3\text{OH}$   
 $k=8.00 \cdot 10^{-13}$  **(3)**
- 255.**  $\text{H} + \text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \text{OH}$   
 $k=1.7 \cdot 10^{-11} \cdot \exp(-1,800.0/T)$  **(1)**  
 $k=1,69 \cdot 10^{-11} \cdot \exp(-1,800.477/T)$  **(4)**
- 256.**  $\text{H} + \text{H}_2\text{O}_2 \rightarrow \text{H}_2 + \text{HO}_2$   
 $k=2.81 \cdot 10^{-12} \cdot \exp(-1,889.479/T)$  **(16)**
- 257.**  $\text{H} + \text{CH}_3\text{OH} \rightarrow \text{CH}_2\text{OH} + \text{H}_2$   
 $k=1.86 \cdot 10^{-13} \cdot (T/298.0)^{3.20} \cdot \exp(-1,754.774/T)$  **(15)**
- 258.**  $\text{H} + \text{CH}_3\text{OH} \rightarrow \text{CH}_3\text{O} + \text{H}_2$   
 $k=2.93 \cdot 10^{-14} \cdot (T/298.0)^{3.40} \cdot \exp(-3,639.442/T)$  **(15)**
- 259.**  $\text{H} + \text{CH}_2\text{OH} \rightarrow \text{CH}_2\text{O} + \text{H}_2$   
 $k=1.00 \cdot 10^{-11}$  **(16)**
- 260.**  $\text{H} + \text{CH}_2\text{OH} \rightarrow \text{CH}_3 + \text{OH}$   
 $k=1.60 \cdot 10^{-10}$  **(16)**
- 261.**  $^{\text{(*)}}\text{H} + \text{CH}_2\text{OH} + \text{M} \rightarrow \text{CH}_3\text{OH} + \text{M}$   
 $k=2.89 \cdot 10^{-10} \cdot (T/298.0)^{0.04}$  **(14)**
- 262.**  $\text{O} + \text{H}_2\text{O}_2 \rightarrow \text{HO}_2 + \text{OH}$   
 $k=0.5 \cdot 1.4 \cdot 10^{-12} \cdot \exp(-2000.0/T)$  **(11)**
- 263.**  $\text{O} + \text{H}_2\text{O}_2 \rightarrow \text{O}_2 + \text{H}_2\text{O}$   
 $k=0.5 \cdot 1.4 \cdot 10^{-12} \cdot \exp(-2000.0/T)$  **(11)**

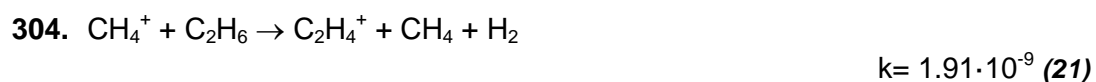
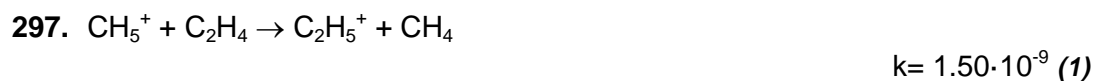
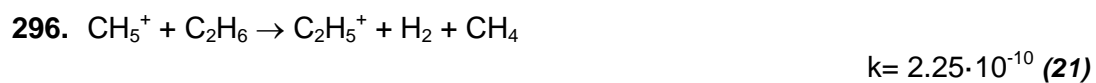


264.  $\text{O} + \text{CH}_3\text{CO} \rightarrow \text{OH} + \text{CH}_2\text{CO}$   
 $k = 0.25 \cdot 3.5 \cdot 10^{-10}$  (11)
265.  $\text{O} + \text{CH}_3\text{CO} \rightarrow \text{CO}_2 + \text{CH}_3$   
 $k = 0.75 \cdot 3.5 \cdot 10^{-10}$  (11)
266.  $\text{O} + \text{CH}_3\text{OH} \rightarrow \text{OH} + \text{CH}_2\text{OH}$   
 $k = 9.86 \cdot 10^{-13} \cdot (T/298.0)^{2.50} \cdot \exp(-1,550.038084/T)$  (16)
267.  $\text{O} + \text{CH}_3\text{OH} \rightarrow \text{OH} + \text{CH}_3\text{O}$   
 $k = 4.15 \cdot 10^{-23} \cdot T^{3.64} \cdot \exp(-974.0/T)$  (24)
268.  $\text{O} + \text{CH}_2\text{OH} \rightarrow \text{CH}_2\text{O} + \text{OH}$   
 $k = 7.01 \cdot 10^{-11}$  (16)
269.  $\text{O}_2 + \text{CH}_2\text{OH} \rightarrow \text{CH}_2\text{O} + \text{HO}_2$   
 $k = 2.01 \cdot 10^{-12}$  (16)  
 $k = 2.6 \cdot 10^{-9} \cdot T^{(-10.0)+1.2 \cdot 10^{-10}} \cdot \exp(-1,800.0/T)$  (4)
270.  $\text{OH} + \text{H}_2\text{O}_2 \rightarrow \text{HO}_2 + \text{H}_2\text{O}$   
 $k = 2.91 \cdot 10^{-12} \cdot \exp(-159.9622/T)$  (2)  
 $k = 1.70 \cdot 10^{-12}$  (12)
271.  $\text{OH} + \text{CH}_3\text{CO} \rightarrow \text{CH}_2\text{CO} + \text{H}_2\text{O}$   
 $k = 2.01 \cdot 10^{-11}$  (2)
272.  $\text{OH} + \text{CH}_3\text{CO} \rightarrow \text{CH}_3 + \text{CO} + \text{OH}$   
 $k = 1.00 \cdot 10^{-8} \cdot \exp(-7,080.434/T)$  (6)
273.  $\text{OH} + \text{CH}_3\text{OH} \rightarrow \text{H}_2\text{O} + \text{CH}_2\text{OH}$   
 $k = 3.44 \cdot 10^{-13} \cdot (T/298.0)^{2.80} \cdot \exp(210.4766/T)$  (15)
274.  $\text{OH} + \text{CH}_3\text{OH} \rightarrow \text{H}_2\text{O} + \text{CH}_3\text{O}$   
 $k = 7.43 \cdot 10^{-15} \cdot (T/298.0)^{3.40} \cdot \exp(574.9019/T)$  (15)
275.  $\text{OH} + \text{CH}_2\text{OH} \rightarrow \text{CH}_2\text{O} + \text{H}_2\text{O}$   
 $k = 4.00 \cdot 10^{-11}$  (16)
276.  $\text{HO}_2 + \text{CH}_3\text{CO} \rightarrow \text{CH}_3 + \text{CO}_2 + \text{OH}$   
 $k = 5.01 \cdot 10^{-11}$  (2)
277.  $\text{HO}_2 + \text{CH}_3\text{OH} \rightarrow \text{CH}_2\text{OH} + \text{H}_2\text{O}_2$   
 $k = 1.60 \cdot 10^{-13} \cdot \exp(-6,329.934/T)$  (16)
278.  $\text{HO}_2 + \text{CH}_2\text{OH} \rightarrow \text{CH}_2\text{O} + \text{H}_2\text{O}_2$   
 $k = 2.01 \cdot 10^{-11}$  (16)

- 279.**  $\text{CH}_2\text{O} + \text{CH}_3\text{CO} \rightarrow \text{CH}_3\text{CHO} + \text{CHO}$   
 $k=3.01 \cdot 10^{-13} \cdot \exp(-6,499.518/T)$  (2)
- 280.**  $\text{CH}_2\text{O} + \text{CH}_2\text{OH} \rightarrow \text{CH}_3\text{OH} + \text{CHO}$   
 $k=7.72 \cdot 10^{-14} \cdot (T/298.0)^{2.80} \cdot \exp(-2,950.281/T)$  (16)
- 281.**  $\text{CHO} + \text{H}_2\text{O}_2 \rightarrow \text{CH}_2\text{O} + \text{HO}_2$   
 $k=1.69 \cdot 10^{-13} \cdot \exp(-3,490.304/T)$  (2)
- 282.**  $\text{CHO} + \text{CH}_3\text{CO} \rightarrow \text{CH}_3\text{CHO} + \text{CO}$   
 $k=1.50 \cdot 10^{-11}$  (2)
- 283.**  $\text{CHO} + \text{CH}_3\text{OH} \rightarrow \text{CH}_2\text{O} + \text{CH}_2\text{OH}$   
 $k=2.41 \cdot 10^{-13} \cdot (T/298.0)^{2.90} \cdot \exp(-6,600.547/T)$  (16)
- 284.**  $\text{CHO} + \text{CH}_2\text{OH} \rightarrow \text{CH}_2\text{O} + \text{CH}_2\text{O}$   
 $k=3.01 \cdot 10^{-10}$  (16)
- 285.**  $\text{CHO} + \text{CH}_2\text{OH} \rightarrow \text{CH}_3\text{OH} + \text{CO}$   
 $k=2.01 \cdot 10^{-10}$  (16)
- 286.**  $\text{CH}_3\text{O} + \text{CH}_3\text{CO} \rightarrow \text{CH}_3\text{OH} + \text{CH}_2\text{CO}$   
 $k=1.00 \cdot 10^{-11}$  (2)
- 287.**  $\text{CH}_3\text{O} + \text{CH}_3\text{OH} \rightarrow \text{CH}_3\text{OH} + \text{CH}_2\text{OH}$   
 $k=5.00 \cdot 10^{-13} \cdot \exp(-2,049.441/T)$  (16)
- 288.**  $\text{CH}_3\text{O} + \text{CH}_2\text{OH} \rightarrow \text{CH}_2\text{O} + \text{CH}_3\text{OH}$   
 $k=4.00 \cdot 10^{-11}$  (16)
- 289.**  $\text{H}_2\text{O}_2 + \text{CH}_3\text{CO} \rightarrow \text{CH}_3\text{CHO} + \text{HO}_2$   
 $k=3.01 \cdot 10^{-13} \cdot \exp(-4,139.775/T)$  (2)
- 290.**  $\text{H}_2\text{O}_2 + \text{CH}_2\text{OH} \rightarrow \text{CH}_3\text{OH} + \text{HO}_2$   
 $k=5.00 \cdot 10^{-15} \cdot \exp(-1,300.144/T)$  (16)
- 291.**  $\text{CH}_3\text{CO} + \text{CH}_3\text{OH} \rightarrow \text{CH}_3\text{CHO} + \text{CH}_2\text{OH}$   
 $k=2.13 \cdot 10^{-13} \cdot (T/298.0)^3 \cdot \exp(-6,209.662/T)$  (16)
- 292.**  $\text{CH}_2\text{OH} + \text{CH}_2\text{OH} \rightarrow \text{CH}_2\text{O} + \text{CH}_3\text{OH}$   
 $k=8.00 \cdot 10^{-12}$  (16)

(\*) *Reacciones de Recombinación* donde *M* se refiere a un tercer cuerpo cuya concentración influye en la tasa de reacción.

REACCIONES DE TIPO IÓN-PARTÍCULA NEUTRA E IÓN-IÓN:



307.  $\text{CH}_4^+ + \text{C}_2\text{H}_2 \rightarrow \text{C}_2\text{H}_3^+ + \text{CH}_3$   
 $k = 1.23 \cdot 10^{-9} \text{ (1)}$
308.  $\text{CH}_4^+ + \text{C}_2\text{H}_2 \rightarrow \text{C}_2\text{H}_2^+ + \text{CH}_4$   
 $k = 1.13 \cdot 10^{-9} \text{ (1)}$
309.  $\text{CH}_4^+ + \text{H}_2 \rightarrow \text{CH}_5^+ + \text{H}$   
 $k = 1.08669041084713 \cdot 10^{-10} \cdot T^{(-0.14)} \cdot \exp(36.1/T) \text{ (1)}$
310.  $\text{CH}_4^+ + \text{H} \rightarrow \text{CH}_3^+ + \text{H}_2$   
 $k = 1.00 \cdot 10^{-11} \text{ (1)}$
311.  $\text{CH}_4^+ + \text{O} \rightarrow \text{CH}_3^+ + \text{OH}$   
 $k = 1.00 \cdot 10^{-9} \text{ (1)}$
312.  $\text{CH}_4^+ + \text{O}_2 \rightarrow \text{O}_2^+ + \text{CH}_4$   
 $k = 3.90 \cdot 10^{-10} \text{ (1)}$
313.  $\text{CH}_4^+ + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O}^+ + \text{CH}_3$   
 $k = 4.50333209967908 \cdot 10^{-8} \cdot T^{(-0.5)} \text{ (1)}$
314.  $\text{CH}_3^+ + \text{CH}_4 \rightarrow \text{CH}_4^+ + \text{CH}_3$   
 $k = 1.36 \cdot 10^{-10} \text{ (22)}$
315.  $\text{CH}_3^+ + \text{CH}_4 \rightarrow \text{C}_2\text{H}_5^+ + \text{H}_2$   
 $k = 1.20 \cdot 10^{-9} \text{ (1)}$
316.  $\text{CH}_3^+ + \text{CH}_2 \rightarrow \text{C}_2\text{H}_3^+ + \text{H}_2$   
 $k = 9.90 \cdot 10^{-10} \text{ (1)}$
317.  $\text{CH}_3^+ + \text{CH} \rightarrow \text{C}_2\text{H}_2^+ + \text{H}_2$   
 $k = 7.10 \cdot 10^{-10} \text{ (1)}$
318.  $\text{CH}_3^+ + \text{C}_2\text{H}_6 \rightarrow \text{C}_2\text{H}_5^+ + \text{CH}_4$   
 $k = 1.48 \cdot 10^{-9} \text{ (1)}$
319.  $\text{CH}_3^+ + \text{C}_2\text{H}_4 \rightarrow \text{C}_2\text{H}_3^+ + \text{CH}_4$   
 $k = 3.50 \cdot 10^{-10} \text{ (1)}$
320.  $\text{CH}_3^+ + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_3^+ + \text{CH}_3$   
 $k = 3.00 \cdot 10^{-10} \text{ (1)}$
321.  $\text{CH}_2^+ + \text{CH}_4 \rightarrow \text{CH}_3^+ + \text{CH}_3$   
 $k = 1.38 \cdot 10^{-10} \text{ (22)}$

322.  $\text{CH}_2^+ + \text{CH}_4 \rightarrow \text{C}_2\text{H}_5^+ + \text{H}$   
 $k = 3.60 \cdot 10^{-10}$  (1)
323.  $\text{CH}_2^+ + \text{CH}_4 \rightarrow \text{C}_2\text{H}_4^+ + \text{H}_2$   
 $k = 8.40 \cdot 10^{-10}$  (1)
324.  $\text{CH}_2^+ + \text{CH}_4 \rightarrow \text{C}_2\text{H}_3^+ + \text{H}_2 + \text{H}$   
 $k = 2.31 \cdot 10^{-10}$  (22)
325.  $\text{CH}_2^+ + \text{CH}_4 \rightarrow \text{C}_2\text{H}_2^+ + 2\text{H}_2$   
 $k = 3.97 \cdot 10^{-10}$  (22)
326.  $\text{CH}_2^+ + \text{H}_2 \rightarrow \text{CH}_3^+ + \text{H}$   
 $k = 1.60 \cdot 10^{-9}$  (1)
327.  $\text{CH}^+ + \text{CH}_4 \rightarrow \text{C}_2\text{H}_4^+ + \text{H}$   
 $k = 6.50 \cdot 10^{-11}$  (1)
328.  $\text{CH}^+ + \text{CH}_4 \rightarrow \text{C}_2\text{H}_3^+ + \text{H}_2$   
 $k = 1.09 \cdot 10^{-9}$  (1)
329.  $\text{CH}^+ + \text{CH}_4 \rightarrow \text{C}_2\text{H}_2^+ + \text{H}_2 + \text{H}$   
 $k = 1.43 \cdot 10^{-10}$  (1)
330.  $\text{CH}^+ + \text{H}_2 \rightarrow \text{CH}_2^+ + \text{H}$   
 $k = 1.20 \cdot 10^{-9}$  (1)
331.  $\text{CH}^+ + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O}^+ + \text{C}$   
 $k = 1.00458946838995 \cdot 10^{-8} \cdot T^{(-0.5)}$  (1)
332.  $\text{C}_2\text{H}_6^+ + \text{C}_2\text{H}_4 \rightarrow \text{C}_2\text{H}_4^+ + \text{C}_2\text{H}_6$   
 $k = 1.15 \cdot 10^{-9}$  (1)
333.  $\text{C}_2\text{H}_6^+ + \text{C}_2\text{H}_2 \rightarrow \text{C}_2\text{H}_5^+ + \text{C}_2\text{H}_3$   
 $k = 2.47 \cdot 10^{-10}$  (1)
334.  $\text{C}_2\text{H}_6^+ + \text{H} \rightarrow \text{C}_2\text{H}_5^+ + \text{H}_2$   
 $k = 1.00 \cdot 10^{-10}$  (1)
335.  $\text{C}_2\text{H}_6^+ + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O}^+ + \text{C}_2\text{H}_5$   
 $k = 2.95 \cdot 10^{-9}$  (1)
336.  $\text{C}_2\text{H}_5^+ + \text{H} \rightarrow \text{C}_2\text{H}_4^+ + \text{H}_2$   
 $k = 1.00 \cdot 10^{-11}$  (1)

- 337.**  $\text{C}_2\text{H}_5^+ + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O}^+ + \text{C}_2\text{H}_4$   
 $k = 2.42487113059643 \cdot 10^{-8} \cdot T^{(-0.5)} \text{ (1)}$
- 338.**  $\text{C}_2\text{H}_4^+ + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_5^+ + \text{C}_2\text{H}_2$   
 $k = 8.66025403784439 \cdot 10^{-9} \cdot T^{(-0.5)} \text{ (1)}$
- 339.**  $\text{C}_2\text{H}_4^+ + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_3^+ + \text{C}_2\text{H}_4$   
 $k = 8.66025403784439 \cdot 10^{-9} \cdot T^{(-0.5)} \text{ (1)}$
- 340.**  $\text{C}_2\text{H}_4^+ + \text{H} \rightarrow \text{C}_2\text{H}_3^+ + \text{H}_2$   
 $k = 3.00 \cdot 10^{-10} \text{ (1)}$
- 341.**  $\text{C}_2\text{H}_4^+ + \text{O} \rightarrow \text{CH}_3^+ + \text{CHO}$   
 $k = 1.08 \cdot 10^{-10} \text{ (1)}$
- 342.**  $\text{C}_2\text{H}_3^+ + \text{C}_2\text{H}_6 \rightarrow \text{C}_2\text{H}_5^+ + \text{C}_2\text{H}_4$   
 $k = 2.91 \cdot 10^{-10} \text{ (1)}$
- 343.**  $\text{C}_2\text{H}_3^+ + \text{C}_2\text{H}_4 \rightarrow \text{C}_2\text{H}_5^+ + \text{C}_2\text{H}_2$   
 $k = 8.90 \cdot 10^{-10} \text{ (1)}$
- 344.**  $\text{C}_2\text{H}_3^+ + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_5^+ + \text{C}_2\text{H}$   
 $k = 8.66025403784439 \cdot 10^{-9} \cdot T^{(-0.5)} \text{ (1)}$
- 345.**  $\text{C}_2\text{H}_3^+ + \text{C}_2\text{H} \rightarrow \text{C}_2\text{H}_2^+ + \text{C}_2\text{H}_2$   
 $k = 3.30 \cdot 10^{-10} \text{ (1)}$
- 346.**  $\text{C}_2\text{H}_3^+ + \text{H} \rightarrow \text{C}_2\text{H}_2^+ + \text{H}_2$   
 $k = 6.80 \cdot 10^{-11} \text{ (1)}$
- 347.**  $\text{C}_2\text{H}_3^+ + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O}^+ + \text{C}_2\text{H}_2$   
 $k = 1.92257639640145 \cdot 10^{-8} \cdot T^{(-0.5)} \text{ (1)}$
- 348.**  $\text{C}_2\text{H}_2^+ + \text{CH}_4 \rightarrow \text{C}_2\text{H}_3^+ + \text{CH}_3$   
 $k = 4.10 \cdot 10^{-10} \text{ (22)}$
- 349.**  $\text{C}_2\text{H}_2^+ + \text{C}_2\text{H}_6 \rightarrow \text{C}_2\text{H}_5^+ + \text{C}_2\text{H}_3$   
 $k = 1.31 \cdot 10^{-10} \text{ (21)}$
- 350.**  $\text{C}_2\text{H}_2^+ + \text{C}_2\text{H}_6 \rightarrow \text{C}_2\text{H}_4^+ + \text{C}_2\text{H}_4$   
 $k = 2.48 \cdot 10^{-10} \text{ (1)}$
- 351.**  $\text{C}_2\text{H}_2^+ + \text{C}_2\text{H}_4 \rightarrow \text{C}_2\text{H}_4^+ + \text{C}_2\text{H}_2$   
 $k = 4.14 \cdot 10^{-10} \text{ (1)}$

- 352.**  $\text{C}_2\text{H}_2^+ + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_3^+ + \text{C}_2\text{H}_2$   
 $k = 5.71576766497729 \cdot 10^{-9} \cdot T^{(-0.5)} \text{ (1)}$
- 353.**  $\text{C}_2\text{H}_2^+ + \text{H}_2 \rightarrow \text{C}_2\text{H}_3^+ + \text{H}$   
 $k = 1.00 \cdot 10^{-11} \text{ (1)}$
- 354.**  $\text{C}_2\text{H}_2^+ + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O}^+ + \text{C}_2\text{H}$   
 $k = 2.20 \cdot 10^{-10} \text{ (1)}$
- 355.**  $\text{O}_2^+ + \text{CH}_2 \rightarrow \text{CH}_2^+ + \text{O}_2$   
 $k = 4.30 \cdot 10^{-10} \text{ (1)}$
- 356.**  $\text{O}_2^+ + \text{CH} \rightarrow \text{CH}^+ + \text{O}_2$   
 $k = 5.36935750346352 \cdot 10^{-9} \cdot T^{(-0.5)} \text{ (1)}$
- 357.**  $\text{O}_2^+ + \text{C}_2\text{H}_4 \rightarrow \text{C}_2\text{H}_4^+ + \text{O}_2$   
 $k = 6.80 \cdot 10^{-10} \text{ (1)}$
- 358.**  $\text{O}_2^+ + \text{C}_2\text{H}_2 \rightarrow \text{C}_2\text{H}_2^+ + \text{O}_2$   
 $k = 1.11 \cdot 10^{-9} \text{ (1)}$
- 359.**  $\text{O}_2^+ + \text{O}^- \rightarrow \text{O} + \text{O}_2$   
 $k = 2.60 \cdot 10^{-14} \cdot (300/T)^{(0.44)} \text{ (23)}$
- 360.**  $\text{O}_2^+ + \text{O}^- \rightarrow \text{O} + \text{O} + \text{O}$   
 $k = 2.60 \cdot 10^{-14} \cdot (300/T)^{(0.44)} \text{ (23)}$
- 361.**  $\text{O}^- + \text{CH}_4 \rightarrow \text{OH}^- + \text{CH}_3$   
 $k = 1.00 \cdot 10^{-10} \text{ (1)}$
- 362.**  $\text{O}^- + \text{C} \rightarrow \text{CO} + \text{e}^-$   
 $k = 5.00 \cdot 10^{-10} \text{ (1)}$
- 363.**  $\text{O}^- + \text{H}_2 \rightarrow \text{H}_2\text{O} + \text{e}^-$   
 $k = 7.00 \cdot 10^{-10} \text{ (1)}$
- 364.**  $\text{O}^- + \text{H}_2 \rightarrow \text{OH}^- + \text{H}$   
 $k = 3.00 \cdot 10^{-11} \text{ (1)}$
- 365.**  $\text{O}^- + \text{H} \rightarrow \text{OH} + \text{e}^-$   
 $k = 5.00 \cdot 10^{-10} \text{ (1)}$
- 366.**  $\text{O}^- + \text{O} \rightarrow \text{O}_2 + \text{e}^-$   
 $k = 1.90 \cdot 10^{-10} \text{ (1)}$

367.  $\text{O}^- + \text{O}_2 \rightarrow \text{O} + \text{O}_2 + \text{e}^-$   
 $k = 7.30 \cdot 10^{-10}$  (1)
368.  $\text{O}^- + \text{CO} \rightarrow \text{CO}_2 + \text{e}^-$   
 $k = 6.50 \cdot 10^{-10}$  (1)
369.  $\text{CO}_2^+ + \text{CH}_4 \rightarrow \text{CH}_4^+ + \text{CO}_2$   
 $k = 5.50 \cdot 10^{-10}$  (1)
370.  $\text{CO}_2^+ + \text{C}_2\text{H}_4 \rightarrow \text{C}_2\text{H}_4^+ + \text{CO}_2$   
 $k = 1.50 \cdot 10^{-10}$  (1)
371.  $\text{CO}_2^+ + \text{C}_2\text{H}_2 \rightarrow \text{C}_2\text{H}_2^+ + \text{CO}_2$   
 $k = 7.30 \cdot 10^{-10}$  (1)
372.  $\text{CO}_2^+ + \text{O}_2 \rightarrow \text{O}_2^+ + \text{CO}_2$   
 $k = 5.30 \cdot 10^{-11}$  (1)
373.  $\text{CO}_2^+ + \text{O} \rightarrow \text{O}_2^+ + \text{CO}$   
 $k = 1.64 \cdot 10^{-10}$  (1)
374.  $\text{H}_3\text{O}^+ + \text{CH}_2 \rightarrow \text{CH}_3^+ + \text{H}_2\text{O}$   
 $k = 9.40 \cdot 10^{-10}$  (1)
375.  $\text{H}_3\text{O}^+ + \text{CH} \rightarrow \text{CH}_2^+ + \text{H}_2\text{O}$   
 $k = 6.80 \cdot 10^{-10}$  (1)
376.  $\text{H}_3\text{O}^+ + \text{C}_2\text{H}_3 \rightarrow \text{C}_2\text{H}_4^+ + \text{H}_2\text{O}$   
 $k = 2.00 \cdot 10^{-9}$  (1)
377.  $\text{OH}^- + \text{CH}_3 \rightarrow \text{CH}_3\text{OH} + \text{e}^-$   
 $k = 1.00 \cdot 10^{-9}$  (1)
378.  $\text{OH}^- + \text{CH} \rightarrow \text{CH}_2\text{O} + \text{e}^-$   
 $k = 5.00 \cdot 10^{-10}$  (1)
379.  $\text{OH}^- + \text{C} \rightarrow \text{CHO} + \text{e}^-$   
 $k = 5.00 \cdot 10^{-10}$  (1)
380.  $\text{OH}^- + \text{H} \rightarrow \text{H}_2\text{O} + \text{e}^-$   
 $k = 1.40 \cdot 10^{-9}$  (1)



REFERENCIAS:

- (1) The UMIST Database for Astrochemistry. (2012). [www.astrochemistry.net](http://www.astrochemistry.net).
- (2) Tsang, W.; Hampson, R. F. Chemical Kinetic Data Base for Combustion Chemistry. Part I. Methane and Related Compounds. J. Phys. Chem. Ref. Data (1986), 15(3), 1087-1279.
- (3) Tsang, W. Chemical Kinetic Data Base for Combustion Chemistry. Part 3: Propane. J. Phys. Chem. Ref. Data (1988), 17(2), 887-951.
- (4) Baulch, D. L.; Cobos, C. J.; Cox, R. A.; Esser, C.; Frank, P.; Just, T.; Kerr, J. A.; Pilling, M. J.; Troe, J.; Walker, R. W.; Warnatz, J. Evaluated Kinetic Data for Combustion Modelling. J. Phys. Chem. Ref. Data (1992), 21(3), 411-734.
- (5) Stewart, P. H.; Larson, C. W.; Golden, D. M. Pressure and Temperature Dependence of Reactions Proceeding Via a Bound Complex. 2. Application to  $2\text{CH}_3 \rightarrow \text{C}_2\text{H}_6 + \text{H}$ . Combust. Flame (1989), 75 (1), 25-31.
- (6) Baulch, D. L.; Cobos, C. J.; Cox, R. A.; Frank, P.; Hayman, G.; Just, T.; Kerr, J. A.; Murrells, T.; Pilling, M. J.; Troe, J.; Walker, R. W.; Warnatz, J. Evaluated Kinetic Data for Combustion Modelling. Supplement I. J. Phys. Chem. Ref. Data (1994), 23, 847-1033.
- (7) Laufer, A. H.; Fahr, A. Reactions and Kinetics of Unsaturated C2 Hydrocarbon Radicals. Chem. Rev. (2004), 104 (6), 2813-2832.
- (8) Harding, L. B.; Guadagnini, R.; Schatz, G. G. Theoretical Studies of the Reactions Hydrogen Atom + Methylidyne  $\rightarrow$  carbon + Hydrogen and Carbon + Hydrogen  $\rightarrow$  Methylene Using an Ab Initio Global Ground – State Potential Surface for Methylene. J. Phys. Chem. (1993), 97 (21), 5472-5481.
- (9) Harding, L. B.; Georgievskii, Y.; Klippenstein, S. J. Predictive Theory for Hydrogen Atom – Hydrocarbon Radical Association Kinetics. J. Phys. Chem. A (2005), 109 (21), 4646 – 4656.
- (10) Tsang, W. Chemical Kinetic Data Base for Combustion Chemistry Part V. Propene. J. Phys. Chem. Ref. Data (1991), 20 (2), 221-273.
- (11) Baulch, D. L.; Bowman, C. T.; Cobos, C. J.; Cox, R. A.; Just, T.; Kerr, J. A.; Pilling, M. J.; Stocker, D.; Troe, J.; Tsang, W.; Walker, R. W.; Warnatz, J. Evaluated Kinetic Data for Combustion Modelling: Supplement II. J. Phys. Chem. Ref. Data (2005), 34, 757-1397.

(12)Atkinson, R.; Baulch, D. L.; Cox, R. A.; Crowley, J. N.; Hampson, R. F.; Hynes, R. G.; Jenkin, M. E.; Rossi, M. J.; Troe, J. Evaluated Kinetic and Photochemical Data for Atmospheric Chemistry: Volume I – Gas Phase Reactions of Ox, HOx, NOx and SOx. *Atmos. Chem. Phys.* (2004), 4, 1410-1738.

(13)Pereira, R. D.; Baulch, D. L.; Pilling, M. J.; Robertson, S. H.; Zeng, G. Temperature and Pressure Dependence of the Multichannel Rate Coefficients for the CH<sub>3</sub> + OH System. *J. Phys. Chem. A* (1997), 101 (50), 9681-9693.

(14)Jasper, A. W.; Klippenstein, S. J.; Harding, L. B.; Ruscic, B. Kinetics of the Reaction of Methyl radical with Hydroxyl Radical and Methanol Decomposition. *J. Phys. Chem. A* (2007), 111 (19), 3932-3950.

(15)Jodkowski, J. T.; Rayez, M. T.; Rayez, J. C.; Berces, T.; Dobe, S. Theoretical Study of the Kinetics of the Hydrogen Abstraction from Methanol. 3. Reaction of Methanol with Hydrogen Atom, Methyl, and Hydroxyl Radicals. *J. Phys. Chem. A* (1999), 103, 3750 – 3765.

(16)Tsang, W. Chemical Kinetic Data Base for Combustion Chemistry. Part 2. Methanol. *J. Phys. Chem. Ref. Data* (1987), 16, 471-508.

(17)Eiteneer, B.; Frenklach, M. Experimental and Modeling Study of Shock-Tube Oxidation of Acetylene. *Int J. Chem. Kinet.* (2003), 35, 391-414.

(18)Warnatz, J. Rate coefficients in the C/H/O system. *Combustion Chemistry* (1984). Publicado por Springer-Verlag, NY, ed. W. C. Gardiner, Jr.

(19)Atkinson, R.; Baulch, D. L.; Cox, R. A.; Hampson, R. F., Jr.; Kerr, J. A.; Rossi, M.J.; Troe, J. Evaluated Kinetic, Photochemical and Heterogeneous Data for Atmospheric Chemistry: Supplement V, IUPAC subcommittee on Gas Kinetic Data Evaluation for Atmospheric Chemistry. *J. Phys. Chem. Ref. Data* (1997), 26, 521-1011.

(20)Atkinson, R.; Baulch, D. L.; Cox, R. A.; Crowley, J. N.; Hampson, R. F., Jr.; Kerr, J. A.; Rossi, M.J.; Troe, J. Summary of Evaluated Kinetic and Photochemical Data for Atmospheric Chemistry. *J. Article* (2001), 1-56.

(21)Kim, Y. H.; Fox, J. L. The Chemistry of Hydrocarbon Ions in the Jovian Ionosphere. *Icarus* (1994), 112 (2), 310-325.

(22)Tahara, H.; Minami, K.; Murai, A.; Yasui, T.; Yoshikawa, T. Diagnostic Experiment and Kinetic Model Analysis of Microwave CH<sub>4</sub>/H<sub>2</sub> Plasmas for Deposition of Diamondlike Carbon Films. *Jpn. J. Appl. Phys.* 1 (1995), 34, 1972-1779.

(23)Gudmundsson, J. T.; Thorsteinsson, E. G. Oxygen Discharges Diluted with Argon: Dissociation Processes. *Plasma Sources Sci. T.* (2007), 16, 399-412.

**(24)** Lu, C. W.; Chou, S. L.; Lee, Y. P.; Xu, S. C.; Xu, Z. F.; Lin, M. C. J. Experimental and Theoretical Studies of Rate Coefficients for the Reaction  $O(3P) + CH_3OH$  at High Temperatures. Chem. Phys. 2005, 122 (24), 244-314.