

Table 4-1. Photochemical Reactions

O_x Photochemistry

A1. O ₂ + hv → O + O	N
A2. O ₃ + hv → O ₂ + O	N
O ₃ + hv → O ₂ + O(¹ D)	

HO_x Photochemistry

B1. HO ₂ + hv → products	
B2. H ₂ O + hv → H + OH	
B3. H ₂ O ₂ + hv → OH + OH	N,U

NO_x Photochemistry

C1. NO ₂ + hv → NO + O	
C2. NO ₃ + hv → NO ₂ + O	
NO ₃ + hv → NO + O ₂	
C3. N ₂ O + hv → N ₂ + O(¹ D)	N,U
C4. N ₂ O ₄ + hv → products	
C5. N ₂ O ₅ + hv → products	N,U
C6. HONO + hv → OH + NO	
C7. HNO ₃ + hv → OH + NO ₂	N,U
C8. HO ₂ NO ₂ + hv → products	N,U

Organic Photochemistry

D1. CH ₄ + hv → products	
D2. CH ₂ O + hv → products	N,R
D3. CH ₃ CHO + hv → products	
D4. C ₂ H ₅ CHO + hv → products	
D5. CH ₃ O ₂ + hv → products	
D6. C ₂ H ₅ O ₂ + hv → products	
D7. CH ₃ CO + hv → products	
D8. CH ₃ C(O)O ₂ + hv → products	
D9. CH ₃ C(O)CH ₂ O ₂ + hv → products	
D10. CH ₃ OOH + hv → products	
D11. HOCH ₂ OOH + hv → products	
D12. CH ₃ ONO + hv → products	
D13. CH ₃ ONO ₂ + hv → products	
D14. CH ₃ O ₂ NO ₂ + hv → products	
D15. CH ₃ C(O)O ₂ NO ₂ + hv → products	
D16. C ₂ H ₅ C(O)O ₂ NO ₂ + hv → products	
D17. CH ₂ =CHCHO + hv → products	
D18. CH ₂ C(CH ₃)CHO + hv → products	
D19. CH ₃ C(O)CH=CH ₂ + hv → products	
D20. HOCH ₂ CHO + hv → products	
D21. CH ₃ C(O)CH ₃ + hv → products	
D22. CH ₃ C(O)CH ₂ OH + hv → products	
D23. CHOCHO + hv → products	
D24. CH ₃ C(O)C(O)H + hv → products	
D25. HC(O)OH + hv → products	
(HC(O)OH) ₂ + hv → products	
D26. CH ₃ C(O)OH + hv → products	
D27. CH ₃ C(O)OOH + hv → products	
D28. C ₂ H ₅ C(O)OH + hv → products	
D29. CH ₃ C(O)C(O)OH + hv → products	
D30. HC(O)OCH ₃ + hv → products	
D31. HC(O)OC ₂ H ₅ + hv → products	

D32. HCN + hv → products
D33. CH ₃ CN + hv → products

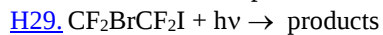
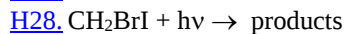
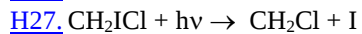
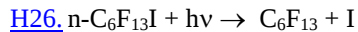
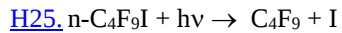
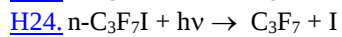
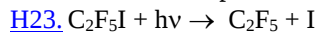
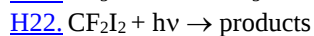
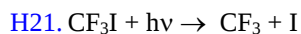
FO_x Photochemistry

E1. HF + hv → H + F	N
E2. FO ₂ + hv → products	
E3. F ₂ O + hv → products	
E4. F ₂ O ₂ + hv → products	N,R
E5. FNO + hv → F + NO	
E6. CHF ₃ (HFC-23) → products	
E7. CH ₂ F ₂ (HFC-32) → products	
E8. CHF ₂ CF ₃ (HFC-125) → products	
E9. CH ₂ FCF ₃ (HFC-134a) → products	
E10. CH ₂ FCF ₃ (HFC-143a) → products	
E11. CH ₃ CHF ₂ (HFC-152a) → products	
E12. CF ₄ + hv → products	N,U
E13. C ₂ F ₆ + hv → products	
E14. c-C ₄ F ₈ + hv → products	N,R,U
E15. C ₅ F ₁₂ + hv → products	
E16. C ₆ F ₁₄ + hv → products	
E17. (CF ₃) ₂ C-C ₄ F ₆ + hv → products	
E18. CF ₂ O + hv → products	N,U
E19. COHF + hv → products	
E20. CF ₃ O ₂ + hv → products	
E21. CF ₃ OH + hv → products	
E22. CF ₃ OOCF ₃ + hv → products	
E23. CF ₃ OCF ₃ + hv → products	
E24. CF ₃ CHO + hv → products	
E25. CF ₃ C(O)F + hv → products	N,U
E26. CF ₃ C(O)Cl + hv → products	N
E27. CF ₃ OONO ₂ + hv → products	N,R
E28. CF ₃ C(O)O ₂ NO ₂ + hv → products	
E29. CF ₃ CH ₂ CHO + hv → products	N
E30. CF ₃ C(O)OH + hv → products	N
E31. CH ₃ C(O)F + hv → products	N
E32. CH ₂ =CHCF ₃ + hv → products	
E33. CH ₂ =CFCF ₃ + hv → products	N
E34. CF ₂ =CF ₂ + hv → products	
E35. CF ₂ =CFCF ₃ + hv → products	
E36. NF ₃ + hv → products	

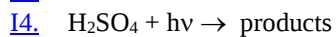
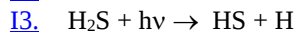
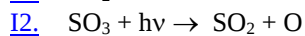
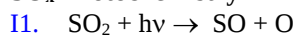
ClO_x Photochemistry

F1. Cl ₂ + hv → Cl + Cl	
F2. ClO + hv → Cl + O	
F3. ClOO + hv → products	
F4. OClO + hv → O + ClO	
F5. ClO ₃ + hv → products	
F6. Cl ₂ O + hv → products	N,R,U
F7. ClOOCl + hv → products	N,R,U
F8. ClClO ₂ + hv → products	
F9. Cl ₂ O ₃ + hv → products	N,U
F10. Cl ₂ O ₄ + hv → products	
F11. Cl ₂ O ₆ + hv → products	
F12. Cl ₂ O ₇ + hv → products	

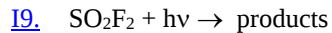
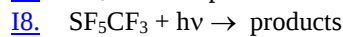
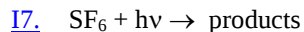
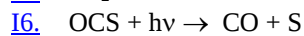
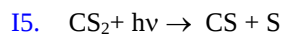
F13. $\text{HCl} + h\nu \rightarrow \text{H} + \text{Cl}$	N,U	G6. $\text{HOBr} + h\nu \rightarrow \text{products}$	
$\text{DCl} + h\nu \rightarrow \text{products}$		G7. $\text{BrNO} + h\nu \rightarrow \text{products}$	
F14. $\text{HOCl} + h\nu \rightarrow \text{products}$	N,U	G8. $\text{cis-BrONO} + h\nu \rightarrow \text{products}$	
F15. $\text{ClNO} + h\nu \rightarrow \text{Cl} + \text{NO}$		G9. $\text{BrNO}_2 + h\nu \rightarrow \text{products}$	
F16. $\text{ClNO}_2 + h\nu \rightarrow \text{products}$	N,R	G10. $\text{BrONO}_2 + h\nu \rightarrow \text{products}$	
F17. $\text{ClONO} + h\nu \rightarrow \text{products}$		G11. $\text{BrCl} + h\nu \rightarrow \text{Br} + \text{Cl}$	
F18. $\text{ClONO}_2 + h\nu \rightarrow \text{products}$	N,U	G12. $\text{BrOCl} + h\nu \rightarrow \text{products}$	
F19. $\text{CCl}_4 + h\nu \rightarrow \text{products}$	N,R,U	G13. $\text{CH}_3\text{Br} + h\nu \rightarrow \text{products}$	N,R,U
F20. $\text{CH}_3\text{OCl} + h\nu \rightarrow \text{products}$		G14. $\text{CH}_2\text{Br}_2 + h\nu \rightarrow \text{Products}$	
F21. $\text{CHCl}_3 + h\nu \rightarrow \text{products}$		G15. $\text{CHBr}_3 + h\nu \rightarrow \text{Products}$	N,R,U
F22. $\text{CH}_2\text{Cl}_2 + h\nu \rightarrow \text{products}$		G16. $\text{CH}_2\text{BrCH}_2\text{Br} + h\nu \rightarrow \text{Products}$	
F23. $\text{CH}_3\text{Cl} + h\nu \rightarrow \text{products}$	N,U	G17. $\text{C}_2\text{H}_5\text{Br} + h\nu \rightarrow \text{Products}$	
F24. $\text{CH}_3\text{CCl}_3 + h\nu \rightarrow \text{products}$	N,R,U	G18. $\text{COBr}_2 + h\nu \rightarrow \text{products}$	
F25. $\text{CH}_3\text{CH}_2\text{Cl} + h\nu \rightarrow \text{products}$		G19. $\text{COHBr} + h\nu \rightarrow \text{products}$	
F26. $\text{CH}_3\text{CHClCH}_3 + h\nu \rightarrow \text{products}$		G20. $\text{CH}_2\text{ClBr (Halon-1011)} + h\nu \rightarrow \text{Products}$	
F27. $\text{CH}_2\text{ClCH}_2\text{Cl} + h\nu \rightarrow \text{products}$		G21. $\text{CHClBr}_2 \text{ (Halon-1012)} + h\nu \rightarrow \text{Products}$	
F28. $\text{CH}_2\text{ClCH}_2\text{CH}_2\text{Cl} + h\nu \rightarrow \text{products}$		G22. $\text{CHCl}_2\text{Br (Halon-1021)} + h\nu \rightarrow \text{Products}$	
F29. $\text{CH}_2\text{Cl}(\text{CH}_2)_2\text{CH}_2\text{Cl} + h\nu \rightarrow \text{products}$		G23. $\text{CCl}_3\text{Br (Halon-1031)} + h\nu \rightarrow \text{Products}$	
F30. $\text{CCl}_2\text{O} + h\nu \rightarrow \text{products}$		G24. $\text{CHF}_2\text{Br (Halon-1201)} + h\nu \rightarrow \text{Products}$	
F31. $\text{COHCl} + h\nu \rightarrow \text{products}$		G25. $\text{CF}_2\text{Br}_2 \text{ (Halon-1202)} + h\nu \rightarrow \text{Products}$	N,R,U
F32. $\text{CClFO} + h\nu \rightarrow \text{products}$		G26. $\text{CF}_2\text{ClBr (Halon-1211)} + h\nu \rightarrow \text{Products}$	N,R,U
F33. $\text{CFCl}_3 \text{ (CFC-11)} + h\nu \rightarrow \text{products}$	N,R,U	G27. $\text{CF}_3\text{Br (Halon-1301)} + h\nu \rightarrow \text{Products}$	N,R,U
F34. $\text{CF}_2\text{Cl}_2 \text{ (CFC-12)} + h\nu \rightarrow \text{products}$	N,R,U	G28. $\text{CH}_2=\text{CHBr} + h\nu \rightarrow \text{Products}$	
F35. $\text{CF}_3\text{Cl (CFC-13)} + h\nu \rightarrow \text{products}$		G29. $\text{CHBr}=\text{CF}_2 + h\nu \rightarrow \text{Products}$	
F36. $\text{CF}_2\text{ClCFCl}_2 \text{ (CFC-113)} + h\nu \rightarrow \text{products}$		G30. $\text{CFBr}=\text{CF}_2 + h\nu \rightarrow \text{Products}$	
F37. $\text{CF}_2\text{ClCF}_2\text{Cl (CFC-114)} + h\nu \rightarrow \text{products}$		G31. $\text{CH}_2=\text{CBrCF}_3 + h\nu \rightarrow \text{Products}$	
F38. $\text{CF}_3\text{CF}_2\text{Cl (CFC-115)} + h\nu \rightarrow \text{products}$		G32. $\text{CF}_3\text{CH}_2\text{Br (Halon-2301)} + h\nu \rightarrow \text{Products}$	
F39. $\text{CHFCl}_2 \text{ (HCFC-21)} + h\nu \rightarrow \text{products}$		G33. $\text{CF}_3\text{CHClBr (Halon-2311)} + h\nu \rightarrow \text{Products}$	
F40. $\text{CHF}_2\text{Cl (HCFC-22)} + h\nu \rightarrow \text{products}$		G34. $\text{CF}_3\text{CHFBr (Halon-2401)} + h\nu \rightarrow \text{Products}$	
F41. $\text{CH}_2\text{FCl (HCFC-31)} + h\nu \rightarrow \text{products}$		G35. $\text{CF}_2\text{BrCF}_2\text{Br (Halon-2402)} + h\nu \rightarrow \text{Products}$	N,R,U
F42. $\text{CF}_3\text{CHCl}_2 \text{ (HCFC-123)} + h\nu \rightarrow \text{products}$		G36. $\text{CF}_3\text{CF}_2\text{Br (Halon-2501)} + h\nu \rightarrow \text{Products}$	
F43. $\text{CF}_3\text{CHFCl (HCFC-124)} + h\nu \rightarrow \text{products}$		G37. $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br} + h\nu \rightarrow \text{Products}$	
F44. $\text{CF}_3\text{CH}_2\text{Cl (HCFC-133a)} + h\nu \rightarrow \text{products}$		G38. $\text{CH}_3\text{CHBrCH}_3 + h\nu \rightarrow \text{Products}$	
F45. $\text{CH}_3\text{CFCl}_2 \text{ (HCFC-141b)} + h\nu \rightarrow \text{products}$		G39. $\text{CH}_3\text{C(O)CH}_2\text{Br} + h\nu \rightarrow \text{products}$	
F46. $\text{CH}_3\text{CF}_2\text{Cl (HCFC-142b)} + h\nu \rightarrow \text{products}$			
F47. $\text{CH}_2\text{ClCHO} + h\nu \rightarrow \text{products}$		IO_x Photochemistry	
F48. $\text{CHCl}_2\text{CHO} + h\nu \rightarrow \text{products}$		H1. $\text{I}_2 + h\nu \rightarrow 2 \text{ I}$	N
F49. $\text{CF}_2\text{ClCHO} + h\nu \rightarrow \text{products}$		H2. $\text{IO} + h\nu \rightarrow \text{I} + \text{O}(^3\text{P}), \text{O}(^1\text{D})$	
F50. $\text{CFCl}_2\text{CHO} + h\nu \rightarrow \text{products}$		H3. $\text{OIO} + h\nu \rightarrow \text{products}$	
F51. $\text{CCl}_3\text{CHO} + h\nu \rightarrow \text{products}$		H4. $\text{HI} + h\nu \rightarrow \text{products}$	
F52. $\text{CH}_3\text{C(O)Cl} + h\nu \rightarrow \text{products}$		H5. $\text{HOI} + h\nu \rightarrow \text{OH} + \text{I}$	
F53. $\text{CH}_2\text{ClC(O)Cl} + h\nu \rightarrow \text{products}$		H6. $\text{ICl} + h\nu \rightarrow \text{I} + \text{Cl}$	
F54. $\text{CHCl}_2\text{C(O)Cl} + h\nu \rightarrow \text{products}$		H7. $\text{IBr} + h\nu \rightarrow \text{I} + \text{Br}$	
F55. $\text{CCl}_3\text{C(O)Cl} + h\nu \rightarrow \text{products}$		H8. $\text{INO} + h\nu \rightarrow \text{I} + \text{NO}$	
F56. $\text{CF}_3\text{CF}_2\text{CHCl}_2 \text{ (HCFC-225ca)} + h\nu \rightarrow \text{products}$		H9. $\text{INO}_2 + h\nu \rightarrow \text{I} + \text{NO}_2$	N,R
F57. $\text{CF}_2\text{ClCF}_2\text{CHFCl (HCFC-225cb)} + h\nu \rightarrow \text{products}$		H10. $\text{IONO}_2 + h\nu \rightarrow \text{products}$	
F58. $\text{CH}_3\text{C(O)CH}_2\text{Cl} + h\nu \rightarrow \text{products}$		H11. $\text{CH}_3\text{I} + h\nu \rightarrow \text{CH}_3 + \text{I}$	
F59. $1,2\text{-c-C}_4\text{Cl}_2\text{F}_6(\text{E}) + h\nu \rightarrow \text{Products}$		H12. $\text{CH}_2\text{I}_2 + h\nu \rightarrow \text{CH}_2\text{I} + \text{I}$	
F60. $1,2\text{-c-C}_4\text{Cl}_2\text{F}_6(\text{Z}) + h\nu \rightarrow \text{Products}$		H13. $\text{C}_2\text{H}_5\text{I} + h\nu \rightarrow \text{C}_2\text{H}_5 + \text{I}$	
		H14. $\text{CH}_3\text{CHI}_2 + h\nu \rightarrow \text{Products}$	
BrO_x Photochemistry		H15. $\text{CH}_3\text{CH}_2\text{CH}_2\text{I} + h\nu \rightarrow \text{Products}$	
G1. $\text{Br}_2 + h\nu \rightarrow \text{products}$		H16. $\text{CH}_3\text{CHICH}_3 + h\nu \rightarrow \text{Products}$	
G2. $\text{HBr} + h\nu \rightarrow \text{products}$		H17. $n\text{-C}_4\text{H}_9\text{I} + h\nu \rightarrow \text{C}_4\text{H}_9 + \text{I}$	
G3. $\text{BrO} + h\nu \rightarrow \text{products}$		H18. $(\text{CH}_3)_2\text{CHCH}_2\text{I} + h\nu \rightarrow (\text{CH}_3)_2\text{CCH}_2 + \text{I}$	
G4. $\text{OBrO} + h\nu \rightarrow \text{products}$		H19. $(\text{CH}_3)_3\text{CI} + h\nu \rightarrow (\text{CH}_3)_3\text{C} + \text{I}$	
G5. $\text{Br}_2\text{O} + h\nu \rightarrow \text{products}$		H20. $n\text{-C}_5\text{H}_{11}\text{I} + h\nu \rightarrow \text{C}_5\text{H}_{11} + \text{I}$	



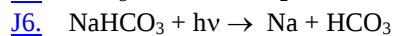
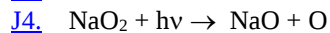
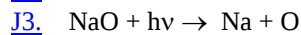
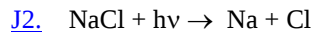
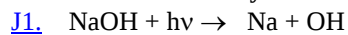
SO_x Photochemistry



N,R



Metal Photochemistry



“R” indicates that the spectrum recommendation has been revised.

“U” indicates that the recommended uncertainty factor has been revised.

“N” indicates that the note has been revised

Gray shading indicates a new entry.