

REFERENCES

1. Wilhelmy, L., Ann. Physik. Chemie (Poggendorf), 81, 413, 499 (1850).
2. Berthelot, M. and St. Gilles, L.P., Ann. Chim. et. Phys.(3) 63, 385 (1862); Berthelot, ibid, 66, 110(1862).
3. Harcourt, A.V. and Esson, W., Proc. Roy. Soc. (London), 14, 470 (1865); Phil Trans., 156, 193 (1866), 157, 117 (1867).
4. Latimer, W.H., 'The oxidation states of elements and their potentials in aqueous solutions, Prentice Hall, New York, Page 78 (1952).
5. Marshall, H., J. Chem. Soc., 59, 771 (1891).
6. House, D.A., Chem. Rev., 62, 185 (1962).
7. Wilmarth, W.K. and Haim, A., 'Mechanism of oxidation of peroxydisulphate in peroxide reaction mechanism' J.O. Edwards, John Wiley, New York 2nd Ed.(1972).
8. Elbs, K. and Schonherr, Z. Electrochem., 1, 468 (1895).
9. Caro, H., Z. angew chem., 845 (1898).

10. Green, L. and Masson, O., J. Chem. Soc., 2083 (1910).
11. Kailan, A. and Olbrich, L., Montash, 47, 449(1927).
12. Bartlett, P.D. and Cotman, J.D., J. Am. Chem. Soc., 71, 1419 (1949).
13. Rius, A. and Zuleta, C., An. real Soc., esp. Fis. Quim., 46, 79(1950).
14. Kolthoff, I.M. and Miller, I.K., J. Am. Chem. Soc., 73, 3055 (1951).
15. Bawn, C.E.H. and Margerison, D., Trans. Far. Soc., 51, 925 (1955).
16. Srivastava, S.P. and Ghosh, S., Z. Phys. Chem., 202, 191 (1953); *ibid*; 205, 332 (1956); *ibid*; 207, 161(1957).
17. Fager, R.L. and McCallum, K.J., Can. J. Chem., 32, 692(1954).
18. Tsao, Massk - Sang and Wilmarth, W.K., J. Phys. Chem., 63, 346 (1959).
19. Yost, D.M., J. Am. Chem. Soc., 48, 152 (1926).
20. Franchuk, I.P., Ukr. Khim. Zh., 29, 1272 (1963).
21. Morgan, K.J., Quat. Rev., 8, 129 (1954).

22. Meeratola, A., Ann. Acad. Sci. Fennicae Ser. A., II
Chem. No. 24, 59(1947).
23. King, C.V. and Jette, E., J. Am. Chem. Soc. 51,1034(1929).
24. Kiss, A. and Zombory, L., Rec. Trav. Chim., 46,225(1927).
25. Price, T.S., J. Phy. Chem., 27, 474 (1898).
26. Moeass, P.C. Jr. and Petrucci, R.H., J. Chem. Educ., 41,
549 (1964).
27. King, C.V. and Jacobs, M.B., J. Am. Chem. Soc. 53,
1704 (1931).
28. Kiss, A., Rec. Trav. Chim., 48, 509 (1929).
29. Kiss, A. and Bossanyi, J., Z. Physik Chem., 134,26(1928).
30. Kiss, A. and Bossanyi, J., Rec. Trav. Chim.47,619(1928).
31. Kiss, A. and Bossanyi, J., Acta. Sci. Univ. Fransisco
Josephine, Acta. Chem. mineral physics., 1,
59(1929).
32. Kiss, A., Bossanyi, J. and Uranczy, A., Acta. lit. Sci.
Univ. Hung. Fransisco Josephine, Sec. Chem.,
mineral physics, 2, 210 (1932).
33. Bronsted, J.N., Z.Physik Chem.,102,191 (1922).

34. Carassiti, V. and Dejak, C., *Boll. Sci. Fac. Chem. ind. Bologna*, 15, 63 (1959).
35. Carassiti, V. and Dejak, C., *Ann. Chim. (Rome)*, 49, 233 (1959).
36. Howelle, W.J., *J. Chem. Soc.*, 463 (1939); *ibid*; 641 (1941); *ibid*; 203 (1946).
37. Indelli, A. and Prue, J.E., *J. Chem. Soc.*, 107(1959).
38. Rolla, M. and Carassiti, V., *Boll. Sci. Fac. Chem. ind. Univ. Bologna*, 7, 37 (1949).
39. Indelli, A. and Amis, E.S., *J. Am. Chem. Soc.*, 82, 333 (1960).
40. Kolthoff, I.M., Medalia, A.I. and Raon, N.C., *J. Am. Chem. Soc.*, 73, 1733 (1951).
41. Gupta, J.C. and Srivastava, S.P., *Proc. Nat. Acad. Sci. India.*, 33A, Pt II, 221 (1963).
42. Gupta, J.C. and Srivastava, S.P., *Z. Physik. Chem. (Leipzig)*, 227, 152 (1964).
43. Stehlik, B. and Nedbalkova, J., *Collection Czech. Chem. Commun.*, 31, 2269 (1966).

44. Yost, D.M., J.Am. Chem. Soc., 48, 374 (1926).
45. Yost, D.M. and Claussen, W., J. Am. Chem. Soc., 53, 3349 (1931)
46. Yost, D.M., Levy, H.A., and Dekker, A.O., J. Am. Chem. Soc., 59, 2129 (1937).
47. Malaguti, A., Ann. Chim. (Rome), 42, 138 (1952).
48. Csanyi, L.J. and Solyami, F., Acta. Univ. Szegediensis, Acta. Phy. et. Chem., 5, 34 (1959).
49. Gupta, Y.K. and Ghosh, S., J. Inorg. Nucl. Chem. 9, 178 (1957).
50. Higginson, W.C. and Marshall, J.W., J. Chem. Soc. 447(1957).
51. Beckier, E. and Kijowski, W., Roczn. Chem., 14, 1004 (1934); *ibid*; 15, 136 (1935).
52. King, C.V., J. Am. Chem. Soc., 49, 2697 (1927).
53. King, C.V., J.Am. Chem. Soc., 50, 2089 (1928).
54. Srivastava, S.P. and Ghosh, S., Proc. Nat. Acad. Sci. India., 22, Sec. A., Pt IV-VI, 91 (1953).
55. Shinghal, R.K., Agrawal, M.C. and Mushran, S.P., Z. Phys., Chem. (Frankfurt), 60, 34(1968).

56. Shinghal, R.K., Mehrotra, U.S. and Mushran, S.P.,
Proc. Nat. Acad. Sci., India, 39, Sec. A. Pt I,
73(1969).
57. Agrawal, M.C., Shinghal, R.K. and Mushran, S.P., Z.
Phys. Chem. (Frankfurt), 62, 112 (1968).
58. Eager, R.L. and Winkler, C.A., Can. J. Res. B., 26,
527 (1948).
59. Nozaki, K. and Bartlett, P.D., J. Polymer Sci., 3,
216 (1948).
60. Evans, M.G. and Baxendale, J.M., Trans. Far. Soc., 42,
195 (1946).
61. Riggs, J.P. and Rodriguez, F., J. Polymer Sci.,
Part A-1, 5, 3151 (1967).
62. Subraman, L.R. and Santappa, M., Z. Physik. Chem., 48,
172 (1966).
63. Khulbe, K.C. and Srivastava, S.P., Proc. Nat. Acad.
Sci. (India), Sec. A., 32, Pt.1, 60 (1962).
64. Khulbe, K.C. and Srivastava, S.P., Agra Univ. J. Res.
(Sci.), 9, 177 (1960); *ibid*; 14, 85 (1965).
65. Srivastava, S.P., Maheshwari, G.L. and Singhal, S.K.,
Ind. J. Chemistry, 12, 72 (1974).

66. Bacon, R.G.R., Hanna, W.J.W. and Stewart, D., J. Chem. Soc., 1384 (1966); *ibid*; 1380 (1966).
67. Srivastava, S.N. and Chandra, G., Bull. Chem. Soc. (Jap.), 44, 3008 (1971).
68. Srivastava, S.N. and Chandra, G., J. Inorganic and Nucl. Chem., 34, 197 (1972).
69. Reddy, M.G. Ram, Sethuram, B., Rao T. Navaneeth, Ind. J. Chem. Sec. A., 16A(7), 591 (1978).
70. Reddy, M.G. Ram, Sethuram, B., Rao T. Navaneeth, Ind. J. Chem., Sec. A, 17(A), 378 (1979).
71. Srivastava, S.P., Mathur, B.B., J. Ind. Chem. Soc., 56 (10), 991 (1979).
72. Boyland, E., Manson, D. and Sims, P., J. Chem. Soc., 3823 (1953).
73. Boyland, E. and Sims, P., J. Chem. Soc., 980 (1954).
74. Sims, P., J. Chem. Soc., 44 (1958).
75. Royland, E. and Sims, P., J. Chem. Soc., 4198 (1958).
76. Behrman, E.J., J. Am. Chem. Soc., 89, 2424 (1967).
77. Venkatsubramanian, N. and Sabesan, A., Can. J. Chem., 47 (19), 3710 (1969).

78. Srivastava, S.P. and Gupta, R.C., Ind. J. Chem., 91(11), 1303 (1971).
79. Srivastava, S.P. and Gupta, R.C., Zeit. Physik. Chem., 8(1974).
80. Srivastava, S.P., Gupta, R.C. and Shukla, A.K., Ind. J. Chem. 15(A), 605 (1977).
81. Babu J. Shreekanta, Joshi, K., Veena, Bhattacharya, A.K., Z. Phys. Chem. (Leipzig), 258(4) (1977).
82. Beilerian, N.M. and Chaltykyan, O.A., Dokl. Acad. Nauk. Arm. SSSR., 31, 147 (1960).
83. Subraman, L.R. and Santappa, M., Current Sci. (India), 33, 208 (1964).
84. Subraman, L.R. and Santappa, M., Z. Physik. Chem. (Frankfurt), 48, 163 (1966).
85. Venkatsubramanian, N. and Sabesan, A., Current Sci., 36, 632 (1967).
86. Gallopo, A.R., Diss. Abs., 28(B) 3204 (1968).
87. John, E.M. and Edwards, J.O., J. Org. Chem., 34, 2565 (1969).

88. Mishra, D.D. and Ghosh, S., Proc. Nat., Acad. Sci. (India), Sec A., 31 Pt II, 119 (1965).
89. Srivastava, S.P. and Bisht, S.S., Ph.D. Thesis, Agra University (1970).
90. Khulbe, K.C. and Srivastava, S.P., Agra University, J.Res.(Sci.) India, 125 (1965).
91. Srivastava, S.P. and Gupta, V.K., Ind. J. Chemistry, 20(A), 1221 (1981).
92. Edward, J.O. and Crutchfield, M., J. Org. Chem., 25, 1599 (1960).
93. Levitt, L.S. and Levitt, W., Can. J. Chem., 41, 209(1963).
94. Stehlik, B. and Fiala, F., Chem. Zvesti, 20,97 (1966).
95. Srivastava, S.P. Singhal, S.K. and Sharma, R.G., Ind. J. Chem., 12, 684 (1974).
96. Srivastava, S.P., Singhal, S.K. and Sharma, R.G., Proc. Natl. Acad. Sci. India 47(A), 111 (1977).
97. Edward, J.O., Andrew, R.G. and John E.M., J.Am. Chem. Soc., 88(16), 3891 (1966).
98. Bakore, G.V. and Menghani, G.D., Z. Phys. Chem., 61, 220 (1968).

99. Bakore, G.V. and Menghani, G.D., Ind. J. Chem., 7, 786 (1969).
100. Bakore, G.V. and Menghani, G.D., Bull. Chem. Soc. (Japan), 41, 2574 (1968).
101. Khan, M.M. and Srivastava, S.P., J. Ind. Chem. Soc., 46(6), 574 (1969).
102. Mishra, D.D. and Ghosh, S., J. Ind. Chem. Soc. 41(6), 402 (1964).
103. Srivastava, S.P., Sharma, R.G. and Singhal, S.K., J. Ind. Chem. Soc., 53(7), 725 (1976).
104. Singh, R.N., Singh, L.N. and Singh, H.S. Ind. J. Chem. Sec. A., 15A(1), 40 (1977).
105. Srivastava, S.P. and Kumar Anil, Ind. J. Chem. Sec A. 15A (12), 1114 (1977).
106. Bakore, G.V. and Menghani, G.D., Current Sci. (India), 37, 641 (1968).
107. Singh, R.N., Acta. Cienc. Indica, 3(4), 320 (1977).
108. Gupta, J.C., Maheshwari, M.K. Srivastava, S.P. and Kumar Anil,, Ind. J. Chem., Sec. A, 18A(1), 31(1979).

109. Srivastava, S.P., Gupta, V.K. and Kumar Anil. Rev. Roum. Chim., 26(7), 939 (1981).
110. Srivastava, S.P. and Laxmi Dutta, Ind. J. Chem., 9, 950 (1971).
111. Srivastava, S.P. and Laxmi Dutta, Ind. J. Chem., 11, 18 (1973).
112. Behrman, E.J. and Walker, P.P., J. Am. Chem. Soc., 43, 343 (1966).
113. Bacon, R.G.R. and Munro, D.J., J. Chem. Soc., 268, 1339 (1960).
114. Elbs, K., J. Prakt. Chem., 48, 179 (1893).
115. Behrman, E.J. and Walker, P.P., J. Am. Chem. Soc., 84, 3454 (1962).
116. Baker, M. and Brown, N.C., J. Chem. Soc., 2303 (1948).
117. Behrman, E.J. J. Am. Chem. Soc., 85 (21), 3478 (1963).
118. Srivastava, S.P., Sharma, L.D., Gupta, R.C., Ind. J. Chem., 13(9), 978 (1975).
119. Sethna, S.M., Chem. Revs., 49, 91(1951).
120. Panagrahi, G.P. and Panda Radhashyam, Ind. J. Chem., Sec. A. 15(A) (12), 1070 (1977).

121. Agrawal, Giridharilal, Z. Phys. Chem. (Leipzig),
265 (4), 691 (1984).
122. Khan Mubarak, Hasmi, Hussain, Ann. Chim. (Rome),
72(1-2), 83 (1982).
123. Srivastava, S.P. and Ghosh, S., Z. Phys., 211,
148 (1959).
124. Kappana, A.M., Z. Physik. Chem., 205, 47 (1956).
125. Gupta, Y.K. and Migam, R.K., J. Ind. Chem. Soc.,
37, 125 (1964).
126. Chaltykyn, O.A., Beilerian, N.M. and Gukasyan, T.T.,
Isv. Akad. Nauk. Arm. S.S.R. Khim. Nanki, 17,
14 (1964).
127. Mishra, D.D. and Ghosh, S.J., J. Ind. Chem., Soc.,
41(6) 397 (1964).
128. Bakore, G.V. and Joshi, S.N., Current Sci. (India),
37, 346 (1968).
129. Bakore, G.V. and Joshi, S.N., Z. Physik. Chem., 229,
250 (1965).
130. Venkatsubramanian, N. and Sabesan, A., Tetrahedron
letters, 40, 4919 (1966).

131. Agrawal, S.C. and Saxena, L.K., J. Inorganic Nucl. Chem., 42(6), 932 (1980).
132. Hambir Singh, Prasad Mahesh, Saxena, S.C. and Kansal, B.D., J. Chin Chem. Soc., (Taipei) 27 (3), 119 (1980).
133. Kumar, K. and Saxena, L.K., J. Ind. Chem. Soc., 44,(7), 612 (1967).
134. Saxena, L.K. and Singhal, C.P., J. Ind. Chem. Soc., 38, 346 (1961).
135. Srivastava, S.N. and Vasudeva, W.C., Z. Physik. Chem., 225, 63 (1964).
136. Mhala, M.M. and Iyer, R.C., Ind. J. Chem., 3(12), 568 (1965).
137. Anderson, J.M. and Kochi, J.K., J. Am. Chem. Soc., 92(6), 1951 (1970).
138. Allen, T.L. and Po, H.N., J. Am. Chem. Soc., 90, 1127 (1968).
139. Allen, T.L., J. Am. Chem. Soc., 73, 3589 (1951).
140. Bhakuni, R.S. and Srivastava, S.P., Z. Physik. Chem., 210, 246 (1959); *ibid*; 213, 129 (1960).

141. Senger, H.G.S. and Gupta, Y.K., Ind. J. Chem., 6, 119 (1968).
142. Saxena, L.K. and Singhal, C.P., Z. Physik. Chem., 211, 1161 (1959).
143. Srivastava, S.P. and Ghosh, S., Z. Physik. Chem., 205, 332 (1956).
144. Kemp, R., Ber., 38, 3965 (1905).
145. Allen, T.L. and Benzvi, E.B., J. Am. Chem. Soc., 83, 4352 (1961).
146. Saxena, L.K. and Singhal, C.P., Agra. Univ. J. Res.Sci.
147. Allen, T.L. and Kalb, A.J., J. Am. Chem. Soc., 86, 5107 (1964).
148. Agrawal, S.C., Chandra, G. and Jha, S.K., Bull. Soc. Chim. Belg., 86(5), 383 (1977).
149. Radhakrishnamurti, P.S., Swamy, B.R.K., Ind. J. Chem., Sec A., 15A(2), 1115 (1977).
150. Singh, R.N., Singh, L.N. and Singh, H.S., Ind. J. Chem. Sec. A., 15A(12), 1118 (1977).
151. Malhotra, S.P. and Saxena, L.K., J.Ind. Chem. Soc., 55(2), 126 (1978).

152. Vasudeva, W.C., Suliman, M.R. and Hossady, A., J. Inorg. Nucl. Chem. 40(9), 1705 (1978).
153. Vasudeva, W.C., Sherif, Z. and Hossady, A., Libyan J. Sci., 7B, 27 (1977).
154. Vasudeva, Wazir C. and Suliman, M.R., Z. Phys. Chem. (Leipzig), 260(1), 27(1979).
155. Hambir Singh, Verma, L.R. and Kansal, B.D., J. Ind. Chem. Soc., 55(1), 37 (1979).
156. Agrawal, S.C., Chandra, G. and Jha, S.K., J. Inorg. Nucl. Chem., 41(6), 899 (1979).
157. Agrawal, S.C., Pal, R.S. and Agrawal, V.B., Bull. Soc. Chim. Fr. (1-2 Pt.1), 43(1979).
158. Agrawal, S.C., Singh Mahabir and Agrawal, V.B., Chem. Era, 15(11), 14 (1979).
159. Meyerstein, Dan., J. Inorg. Nucl. Chem., 43(2), 401 (1981).
160. Srivastava, S.P., Mehrotra, R.N. and Shukla, A.K., J. Ind. Chem. Soc., 54(11), 1043 (1977).
161. Meheshwari, G.L., Singhal, L.K. and Tyagi, B.D., J. Ind. Chem. Soc., L II, 1029(1975).

162. Arumugam, N., Srinivasan, C., and Kuthalingam, P.,
Ind. J. Chem., Sec. A., 16(6), 478 (1978).
163. Murty, P.S.N., Rao, P.V. Subba, J. Ind. Chem. Soc.,
54 (11), 1043 (1977).
164. Srinivasan, C., Kuthalingam, P. and Arumugam, N.,
Can. J. Chem., 56(24), 3043 (1978).
165. Reddy, M.G., Ram Seturam, B., Rao. T. Navneeth, Ind.
J. Chem. Sec A, 19A(3), 263 (1980).
166. Srivastava, S.P., Kumar Anil and Mittal Adarsh, K.,
Ind. J. Chem., Sec A, 17(A) (6), 593 (1979).
167. Kadam, S.D., Salunkhe, M.M. and Jagdale, M.M., Acta.
Cienc. Indica, 5(3), 121 (1979).
168. Hambir Singh, Chauhan, K.S. and Rathi Umesh Kumar, J.
Ind. Chem. Soc. 57(8), 809 (1980).
169. Anees Qaiser, Nand, K.C., J. Sci. Res. (Bhopal, India),
2(2), 121 (1980).
170. Agrawal, M.C. and Mushran, S.P., J. Ind. Chem. Soc.,
42, 629 (1965).

171. Agrawal, M.C. and Mushran, S.P. J. Ind. Chem. Soc.,
43, 343 (1966).
172. Srivastava, S.P. and Hambir Singh, Ind. J. Chem.,
48(8), 725 (1971).
173. Srivastava, S.P. and Hambir Singh, Ind. J. Chem., VI,
14A(g), 667 (1976).
174. Srivastava, S.P. Hambir Singh and Anil Kumar, 52(5),
404 (1975).
175. Vāsudeva Wazir Chand, Wasif Saad, Libyan J. Sci., 3,
25 (1973).
176. Patil, Nandini, Sankpal, S.G. and Jagdale, M.H., J.
Shivaji Univ. (Science), 18, 75 (1978).
177. Patil, Nandini, Sankpal, S.G. and Jagdale, M.H., J.
Shivaji Univ. (Science), 19, 35(1979).
178. Patil, Nandini, Sankpal, S.G. and Jagdale, M.H., J.
Shivaji Univ. (Science), 19, 27 (1979).
179. Patil Nandini, Sankpal, S.G. and Jagdale, M.H., J.
Shivaji Univ. (Science), 16, 23 (1976).
180. Patil, N.S. Sankpal, S.G. and Jagdale, M.H., J.
Shivaji Univ. (Science), 15, 149 (1975).

181. Sankpal, S.G., Patil, J.B. and Jagdale, M.H., J. Shivaji Univ. (Science), 15, 157 (1975).
182. Sankpal, S.G. and Jagdale, M.H. J. Shivaji Univ. (Science), 16, 29 (1976).
183. Jagdale, M.H. and Sankpal, S.G. Acta Ciencia Indica, 41, 157 (1979).
184. Jagdale, M.H. and Sankpal, S.G., Acta Ciencia Indica, 1. 28 (1976).
185. Blank Eckardt, L., Chem. News., 38, 81 (1900).
186. Szabo, Z.G., Csanyi, L. and Galiba, H., Z. Anal. Chem., 135, 269 (1952).
187. Vant Hoff, J.H., 'Etudes de dynamique', F. Muller and Company, Amsterdam, p. 87 (1884).
188. Bronsted, J.N., Z. Physik Chem., 102, 169 (1922).
189. Kolthoff, I.M., Meehan, E.J. and Karr, E.M., J. Am. Chem. Soc., 75, 1439 (1953)
190. Wiberg, K.B., J. Am. Chem. Soc., 81, 252 (1959).
191. Ball, D.L., Crutchfield, M.M. and Edward, J.O., J. Org. Chem., 25, 1599 (1960).

192. Feigl, Fritz, 'Spot Test in Organic Analysis', Elsevier Pub. Co., London (1972).
193. Arrhenius, S., Z. Physik. Chem., 4, 226 (1889).
194. Evans, M.G. and Polanyi, M., Trans. Faraday Soc., 31, 875 (1935); *ibid*; 33, 448 (1937).
195. Eyring, H. J. Chem. Phys., 3, 107 (1935).
196. Pelzer, H. and Wigner, E., Z. Physik. Chem., 15, 445 (1932).
197. Wynne-Jones, W.F.K. and Eyring, H., J. Chem. Phys., 3, 492 (1935).
198. Eyring H., Chem. Revs., 17, 65 (1935).
199. Frost, A.A. and Pearson, R.G., 'Kinetics and Mechanism', J. Willey and Sons, New York, P. 98 (1953).
200. Postmus, C. and King, E.J., J. Phy. Chem., 59, 1216 (1955).
201. Benson, S.W., 'The foundation of Chemical Kinetics', McGrew Hill publication, P. 591 (1960).
202. Amis, E.S., 'Solvent effects on reaction rates and mechanism', Acak. Press., New York and London (1966).

203. Scatchard, G., Chem. Rev., 10, 229 (1932).
204. Laidler, K.J. and Eyring, H., Ann. N.Y. Acad. Sci.,
39, 303 (1940).
205. Bjerrum, N., Z. Physik. Chem. 108, 82 (1924); *ibid*;
118, 251 (1925).
206. Christiansen, J.A., Z. Physik. Chem., 113, 35 (1924).
207. Uri, N. Chem. Revs. 50, 375 (1951).
208. Haber, F. and Weiss, J. Proc. Roy. Soc., 147, 332(1934).
209. Bacon, R.G.R., Grime, R. and Munro, D.J., J. Chem.,
Soc., 2275 (1954).
210. Chaltykyan, O.A. and Beilerian, N.M., Izvest. Akad.
Nauk. Arm. S.S.R. Khim. Nanki, 11,
13 (1958).