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Electronic Absorption Spectra of Radical Ions

by **Tadamasa Shida**, *Dept. of Chemistry, Faculty of Science, Kyoto University, Kyoto, Japan*

(Physical Sciences Data, 34)

Rapid growth in research activities related directly and indirectly to chemical intermediates has increased the demand for dependable spectral information on radical ions. Such information is needed for identifying newly-produced intermediates under various experimental conditions such as laser photolysis, pulse radiolysis, irradiation with synchrotron radiation, electron bombardment, electrolysis, chemical reactions involving electron transfer, and so on. This new, large-format handbook represents the first comprehensive compilation of electronic absorption spectra of radical cations and anions. Most radical ions are difficult to produce by conventional methods and their highly reactive character makes their detection and measurement of their spectra difficult. However, the author of this book has employed a unique technique - a combination of matrix isolation and radiolytic methods - which has enabled him to record

more than seven hundred spectra - most of which have not been reported before. In addition, approximate extinction coefficients are provided for many radical ions.

As dependable spectral information is required in many fields of chemistry, this work will be a useful databook for those working in physical and physical organic chemistry, molecular spectroscopy, photochemistry, radiation chemistry, electrochemistry, laser photolysis, analytical chemistry and quantum chemistry.

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Physical Adsorption on Heterogeneous Solids

by **M. Jaroniec**, *Institute of Chemistry, Maria-Curie-Sklodowska University, Lublin, Poland*, and **R. Madey**, *Smith Laboratory of Physics, Kent State University, Kent, USA*

(Studies in Physical and Theoretical Chemistry, 59)

This book presents a unified description of physical adsorption on heterogeneous solids from both the gas and liquid phases. All solid adsorbents of great practical importance, such as activated carbons, silica gels, aluminum oxides, zeolites, etc., possess surface and structural heterogeneities, which play a dominant role in the adsorption process especially at low pressures. The assumption of adsorbent heterogeneity in studies of physical adsorption introduces considerable difficulties in the theoretical description of this phenomenon. To overcome this problem, the authors present a relatively simple theory of physical adsorption on heterogeneous solids which provides a quantitative description of this phenomenon and simultaneously permits elaboration of methods for characterizing adsorbent heterogeneity.

The chapter on single-gas adsorption on heterogeneous surfaces is the most extensive one in the book because there is a great deal of scientific literature concerning this problem. Moreover, the theory of single-gas adsorption provides foundations for deriving equations that apply to adsorption from multicomponent gas and liquid mixtures. Special attention has been paid to the fundamental aspects of physical adsorption on heterogeneous solids, to illustrating similarities and differences between adsorption at the gas-solid and liquid-solid interfaces, and to describing methods for characterizing energetic and structural heterogeneities of solids.

Although many books have been devoted to physical adsorption on solids, none treats gas and liquid adsorption on heterogeneous solids. This book will therefore be useful to researchers in academic institutes and industrial laboratories, whose work is concerned either directly or indirectly with adsorption phenomena at the gas-solid and liquid-solid interfaces as well as with characterization of adsorbents and catalysts.

CONTENTS: 1. Sorption Phenomena. 2. Adsorption of Single Gases. 3. Characterization of Solids. 4. Adsorption of Gas Mixtures. 5. Kinetics of Gas Adsorption on Solids. 6. Adsorption of Non-Electrolytic Liquid Mixtures. 7. Adsorption from Dilute Solutions. 8. Adsorption on Heterogeneous Microporous Solids. Appendix. Subject Index.

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2a. General

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3. GENERAL TECHNIQUES

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See also 2212, 2214.

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See also 2257, 2275, 2278, 2341, 2350, 2420, 2427, 2432, 2455, 2499, 2670, 2797, 2853, 2886, 3079.

3c. Sorbents, carriers, column and layer performance, packing procedures

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60430q, 68653k, 72148s, 72149t.

See also 2191, 2193, 2194, 2202, 2205, 2224, 2231, 2429, 2532, 2598, 3035, 3069, 3091.

3e. Preparative scale chromatography

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See also 2102, 2315, 2323, 2474, 2488, 2535, 2545, 2617, 2723, 2730.

3f. Programmed temperature, pressure, vapors, gradients

See 2099, 3097.

3g. High performance procedures

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See also 2025, 2029.

4. SPECIAL TECHNIQUES

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See also 2077, 2482, 2535, 2765.

4b. Combination of various chromatographic techniques

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See also 2101, 2414, 2415, 2813.

4c. Combination with other physico-chemical techniques (MS, IR etc.)

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See also 2101, 2106, 2227, 2243, 2279, 2329, 2391, 2446, 2505, 2520, 2920, 2957, 3067, 3089.

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See also 2268, 2306, 2318, 2480, 2533, 2658, 2659, 2690.

4f. Trace analysis and preseparation techniques

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C.A., 109 (1988) 243209y.

See also 2116, 2439, 3081.

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11. ORGANIC ACIDS AND LIPIDS

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13. STEROIDS

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15. TERPENES AND OTHER VOLATILE AROMATIC COMPOUNDS

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See also 2146, 2149, 2209, 2495, 2512, 2797.

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See also 2317, 2446, 2541, 2587, 2614, 2645, 2675, 2683, 2732.

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See also 2482, 2616.

19. PROTEINS

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20. ENZYMES AND ENZYME ACTIVITY ESTIMATION

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See also 2638, 2728, 2729.

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21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS

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110 (1989) 3922c, 6467u, 52410t, 53931a, 53939j.

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See also 2470, 2961.

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C.A., 109 (1988) 228887z.

See 2203.

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See also 2079, 2206, 2757, 2779.

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For additional information see:

C.A., 110 (1989) 7189s, 7190k, 7796n.

See also 2203, 2207, 2442, 3015, 3068.

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C.A., 109 (1988) 238080v.

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For additional information see:

C.A., 109 (1988) 226028w, 228843g, 228850g, 228870p, 228908g;
110 (1989) 6451j, 50463p, 73970r.

See also 2369, 2762, 2908, 3061.

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See also 2747, 2843.

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33. CLINICO-CHEMICAL APPLICATIONS

33a. General papers and reviews

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33b. Complex mixtures and profiling (single compounds by cross ref. only)

For additional information see:

C.A., 109 (1988) 236954j.

See also 2319, 2326, 2327, 2334, 2339, 2425, 2434, 2437, 2445, 2469, 2470, 2471, 2549, 2550, 2562, 2573, 2579, 2690, 2737, 2743, 2782, 2783, 2814, 2818, 2856,

34. FOOD ANALYSIS

34a. General papers and reviews

See 2246.

34b. Complex mixtures (single compounds by cross ref. only)

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35. ENVIRONMENTAL ANALYSIS

35a. General papers and reviews

See 2859, 2861.

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See also 2178, 2235, 2464, 2867, 3081, 3103, 3106.

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See also 2371, 2372.

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4. SPECIAL TECHNIQUES

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5. HYDROCARBONS AND HALOGEN DERIVATIVES

5a. Aliphatic hydrocarbons

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See 1184.

8c. Other compounds with heterocyclic oxygen (including tannins)

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13c. Sterols

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See also 1058, 1299.

20. ENZYMES AND ENZYME ACTIVITY ESTIMATION

20a. Oxidoreductases

See 1249.

21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS

21a. Purines, pyrimidines, nucleosides, nucleotides

See 1044.

22. ALKALOIDS

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25. ORGANIC PHOSPHORUS COMPOUNDS (INCLUDING SUGAR PHOSPHATES)

See 1126.

26. ORGANOMETALLIC AND RELATED COMPOUNDS

26a. Organometallic compounds

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29. INSECTICIDES, PESTICIDES AND OTHER AGROCHEMICALS

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See also 1288, 1313.

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See also 1290, 1294.

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See 1316, 1358, 1362.

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See also 1291.

31. PLASTICS AND THEIR INTERMEDIATES

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See also 1092, 1099, 1143, 1207, 1235, 1267, 1277, 1397.

32i. *Plant extracts*

See 1074, 1141.

33. CLINICO-CHEMICAL APPLICATIONS

33b. *Complex mixtures and profiling (single compounds by cross ref. only)*

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See also 1114.

34. FOOD ANALYSIS

34a. General papers and reviews

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See also 1096, 1133, 1185, 1197, 1396, 1408.

35. ENVIRONMENTAL ANALYSIS

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See 585.

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9. OXO COMPOUNDS, ETHERS, EPOXIDES AND QUINONES

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See 420, 433, 517.

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See 574.

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See 435.

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See also 599, 620, 621.

32h. *Toxicological and forensic applications*

See 415, 556.

32i. *Plant extracts*

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See also 448, 463, 493, 511, 514, 543.

33. CLINICO-CHEMICAL APPLICATIONS

33b. *Complex mixtures and profiling (single compounds by cross ref. only)*

See 481.

34. FOOD ANALYSIS

34b. *Complex mixtures (single compounds by cross ref. only)*

See 434, 441, 444, 555, 560, 590, 594, 605, 606.

35. ENVIRONMENTAL ANALYSIS

35b. *Air pollution (complex mixtures; single compounds by cross ref. only)*

See 432.

35c. *Water pollution (complex mixtures; single compounds by cross ref. only)*

See 558, 562, 614, 616.

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See also 570.

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36d. Complex mixtures and unidentified compounds

See 557.

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See also 529, 595.

Electrophoresis

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See also 980.

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See also 878, 1137.

3. GENERAL TECHNIQUES

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See also 879, 1108.

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See also 877, 888, 910, 927, 975, 1040, 1086.

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4. SPECIAL TECHNIQUES

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See 887, 911, 1021.

4c. Isoelectric focusing

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See also 861, 872, 883, 908, 909, 940, 1133, 1138, 1141, 1144.

4e. Isotachopheresis

See 1044.

4g. Other special techniques

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13. STEROIDS

13a. Pregnane and androstane derivatives

See 1035.

13c. Sterols

See 1039.

16. NITRO AND NITROSO COMPOUNDS

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See also 867.

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19. PROTEINS

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20. ENZYMES AND ENZYME ACTIVITY ESTIMATION

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- 1138 Jelinek, I., Dohnal, J., Snopek, J. and Smolkova-Keulemansova, E.: Use of cyclo-dextrins in isotachopheresis. VII. Resolution of structurally related and chiral phenothiazines. *J. Chromatogr.*, 464 (1989) 139-147.

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- 1139 Delgado, A., Gallardo, V., Gonzalez-Cabarello, F. and Parera, A.: (Electrophoretic study on nonstabilized nitrofurantoin suspensions). *Cienc. Ind. Farm.*, 7 (1988) 95-100; *C.A.*, 110 (1989) 44826t.

33. CLINICO-CHEMICAL APPLICATIONS

33b. Complex mixtures and profiling (single compounds by cross ref. only)

See 903, 1026, 1027, 1036, 1039, 1047, 1052, 1055, 1063.

34. FOOD ANALYSIS

34b. Complex mixtures (single compounds by cross ref. only)

- 1140 Baylac, P.L.R., Lanteaume, M.T., Pailler, F.M., Lason, A., Bergeron, M. and Durand, P.: (Verification of the detection limits of protein binders in a cooked meat product by using electrophoretic, immunological and histological methods). *Ann. Falsif. Expert. Chim. Toxicol.*, 81 (1988) 333-348; *C.A.*, 110 (1989) 93621f.
- 1141 Karovicova, J., Polonsky, J. and Drdak, M.: Utilization of capillary isotachopheresis during fermentation of cabbage. *Nahrung*, 32 (1988) 519-520; *C.A.*, 110 (1989) 36377g.
- 1142 Shalabi, S.I. and Fox, P.F.: Electrophoretic analysis of cheese: comparison of methods. *Ir. J. Food Sci. Technol.*, 11 (1987) 135-151; *C.A.*, 110 (1989) 56102s.
- 1143 Shimazaki, K., Tadami, M. and Uchida, M.: (Application of two-dimensional electrophoresis, hydrophobic chromatographic and gel filtration chromatography for judging ripening of cheese. Electrophoretic and chromatographic analysis of cheese). *Obihiro Chikusan Daigaku Gakujutsu Kenkyu Hokoku, Dai-1-Bu*, 15 (1988) 279-286; *C.A.*, 110 (1989) 37860w.

See also 908, 1115.

35. ENVIRONMENTAL ANALYSIS

35c. Water pollution (complex mixtures; single compounds by cross ref. only)

See 1144.

38. INORGANIC COMPOUNDS

38a. Cations

See 1145.

38b. Anions

- 1144 Fukushi, K. and Hiro, K.: Determination of ammonium ion in seawater by capillary isotachopheresis. *Talanta*, 35 (1988) 799-802; *C.A.*, 110 (1989) 44629f.

39. RADIOACTIVE AND OTHER ISOTOPE COMPOUNDS

- 1145 Nagasaki, S., Tanaka, S. and Takahashi, Y.: Separation and solubility of neptunium in underground environments by paper electrophoresis. *J. Radioanal. Nucl. Chem.*, 124 (1988) 383-395; *C.A.*, 110 (1989) 14871m.

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Journal of Chromatography and Journal of Chromatography, Biomedical Applications

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