

เอกสารอ้างอิง



1. Perhsen, G.N., et al. "Antibacterial and Antiviral Effect of Some Lactones and Lactams." Zh. Mikrobiol., Epidemiol. i Immunobiol. 41 (1964): 109 - 114. through Chemical Abstracts. Vol. 61 (August 1964): 4892 C.
2. Daniels, W.E. "Stable Complex of Bromine and 2 - Pyrrolidone." United States Patent 3,174,981. (March 23, 1965): through Chemical Abstracts. Vol. 63 (July 1965): P 1769 g.
3. Pinelli, P., Jr. "Experimental Electroencephalographic Study of Certain Derivatives of GABOB (γ - amino - β - hydroxybutyric acid)." Farmaco, Ed. Sci. 25 (1970): 187 - 202. through Chemical Abstracts. Vol. 72 (June 1970): 130846 C.
4. De La Mora, M.P., and Tapia, R. "Anticonvulsant Effect of 5 - Ethyl - 5 - Phenyl - 2 - Pyrrolidinone and Its Possible Relationships to γ - Aminobutyric Acid - Dependent Inhibitory Mechanisms." Biological Pharmacology. 22 (October 1973): 2635 - 2639.
5. Everitt, B.J.; Hall, G.H.; and Taylor, E.M. "The Sedative and Anticonvulsant Activity of Some Substituted Pyrrolidones and Piperidones." British Journal of Pharmacology and Chemotherapy. 25 (October 1965): 790 - 799.

6. Yamamoto, K.; Hirata, F.; and Oyama, I. "2 - Pyrrolidinone Compounds." Japan Patent 67 21,350 (October 21, 1967): through Chemical Abstracts. Vol. 69 (August 1968): P 27237 U.
7. Okuma, K., et al. "Synthesis and Antiinflammatory Activity of a Series 1 - Aryl - 2 - Pyrrolidinone Derivatives." Journal of Medicinal Chemistry. 9 (May 1966): 315 - 319.
8. Jiro, H., and Kyoko, D. "Stabilizing Aqueous Cysteine or Glutathione." Japan Patent 71 31,994 (September 17, 1971): through Chemical Abstracts. Vol. 75 (December 1971): P 143993 k.
9. សំណើរកិរឿវចនា. "Povidone - Iodine U.S.P. XIX." ថ្មីភេជ្ជសារ. 4 (អគ្គភាគម - មិថុនាយោង 2522): 129 - 146.
10. Stupak, E.I., and Bates, T.R. "Enhanced Absorption and Dissolution of Reserpine from Reserpine - Polyvinyl - pyrrolidone Coprecipitates." Journal of Pharmaceutical Sciences. 61 (March 1972): 400 - 404.
11. Kornblum, S.S., and Stoopak, S.B. "A New Tablet Disintegrating Agent: Cross - Linked Polyvinylpyrrolidone." Journal of Pharmaceutical Sciences. 62 (January 1973): 43 - 49.
12. Moss, J.N., et al. "Effect of Polyvinylpyrrolidone (PVP) on Pharmaceutical Activity." American Journal of Pharmacy. 124 (1952): 94 - 97. through Chemical Abstracts. Vol. 46 (August 1952): 7225 f.

13. Chas. Pfizer & Co., Inc. "Penicillin Compositions." British Patent 811,717 (April 8, 1959): through Chemical Abstracts. Vol. 53 (October 1959: P 18397 f.
14. Freytag, H. "Stabilized Solutions of Hydrogen Peroxide" German Patent 968,992 (April 17, 1958): through Chemical Abstracts Vol. 54 (May 1960): P 9216 i.
15. Dachs, K., and Schwartz, E. "Pyrrolidinone, Caprolactam and Laurolactam as New Raw Materials for Polyamide Fibers." Angewandte Chemie. 74 (1962): 540 - 545. through Chemical Abstracts. Vol. 57 (October 1962): 11411 e.
16. Inoue, I.; Terauchi, A.; and Ueno, T. (Pentel Co.; Ltd.) "Water - soluble Ink Compositions." Japan Patent (Japan. Kokai) 75 71,423 (June 13, 1975): through Chemical Abstracts. Vol. 83 (November 1975): P 166002 r.
17. Hessel, F.A. "Controlling Soil Nematodes." United States Patent 3,086,907 (April 23, 1963): through Chemical Abstracts. Vol. 59 (July 1963): P 1044 d.
18. Lubowe, I.I. "Nontoxic Pesticidal Composition." British Patent 802,111 (October 1, 1958): through Chemical Abstracts. Vol. 53 (May 1959): P 9557 h.
19. Oka, S. "Studies on Lactone Formation in Vapor Phase. I. "Synthesis of γ - Butyrolactone" Bulletin of the Chemical Society of Japan. 34 (January 1961): 12 - 14.

20. Pine, S.H., et al. Organic Chemistry 4 th ed. (International Student Edition) Tokyo: McGraw - Hill Kogakusha., 1980, p. 676 - 677.
21. Brownlee, H.J., and Miner, C.S. "Industrial Development of Furfural." Industrial and Engineering Chemistry. 40 (February 1948): 201 - 204.
22. Fronseca, P.G., and Buschinelli, J. "Acid Hydrolysis of Corncob Fractions." Bol. Dept. Quim. Escola Politec. (Univ. Sao Paulo) No. 13 (1960): 13 - 19. through Chemical Abstracts. Vol. 55 (April 1961): 6730 d.
23. Dunlop, A.P. "Furfural Formation and Behavior." Industrial and Engineering Chemistry. 40 (February 1948): 205 - 209.
24. Bagaev, A.N. "Chemical Composition of Furfural from Various Plant Materials." Zh. Prikl. Khim. (Leningrad) 41 (1968): 2287 - 2292. through Chemical Abstracts. Vol. 70 (March 1969): 48820 q.
25. Riklis, S.G., and Ketotilo, D.M. "Production of Furfural (from corncobs) under Atmospheric Pressure in A Medium of Superheated Steam." Gidrolizn. i. Lesokhim. Prom. 14 (1961): 3 - 5. through Chemical Abstracts. Vol. 59 (December 1963): 15487 g.
26. Rovesti, P. "Furfural." Italian Patent 523,594 (April 16, 1955): through Chemical Abstracts. Vol. 52 (January 1958): P 618 h.

27. Repka, V.P.; Panasyuk, L.V.; and Panasyuk, V.G. "Use of Salt Catalysts in the Production of Furfural" Zh. Prikl. Khim. 36 (1963): 2719 - 2724. through Chemical Abstracts. Vol. 60 (April 1964): 9223 h.
28. Dunlop, A.P.; Stout, P.R.; and Swadeph, S. "Autoxidation of Furfural." Industrial and Engineering Chemistry. 38 (July 1946): 705 - 708.
29. Comstock, R.L. "Stabilized Furfural" United States Patent 2,384,238 (September 4, 1945): through Chemical Abstracts. Vol. 40 (January 1946): 365^{8, 9}
30. Khol'kin, Yu. I., and Chernyaeva, G.N. "Method for Increased Stability of Technical Furfural" Gidrolizn. i. Lesokhim. Prom. 16 (1963): 6 - 8. through Chemical Abstracts. Vol. 60 (January 1964): 1674 C.
31. Williams, D.L., and Dunlop, A.P. "Kinetics of Furfural Destruction in Acidic Aqueous Media." Industrial and Engineering Chemistry. 40 (February 1948): 239 - 241.
32. Dunlop, A.P. and Peters, F.N., Jr. "Thermal Stability of Furfural" Industrial and Engineering Chemistry. 32 (December 1940): 1639 - 1641.

33. Pervier, N.C., and Gortner, R.A. "The Estimation of Pentoses and Pentosans I. The Formation and Distillation of Furfural." Industrial and Engineering Chemistry. 15 (November 1923): 1167 - 1169.
34. Proewig, F.W. "Method of Stimulating Appetite and Relieving Parkinson's Symptoms." United States Patent 3,172,807 (March 9, 1965): through Chemical Abstracts. Vol. 62 (May 1965): P 12990 a.
35. Quaker Oats Co. (Miner, C.S.). "Fungicides and Disinfectants." British Patent 218,616 (July 5, 1923): through Chemical Abstracts. Vol. 19 (February 1925): P 556.
36. Tharaldsen, C.E. "Furfural as a Biological Reagent." Science. 57 (1923): 305 - 306 through Chemical Abstracts. Vol. 17 (June 1923): 1975⁶.
37. The United States Pharmacopeia. 20 th ed. Rockville: United States Pharmacopeial Convention., 1980 , p. - 551, 344, 549.
38. Hunt, G. "The Preparation of Activated Carbon from Furfural Residues." Proc. Iowa Acad. Sci. 31 (1924): 281. through Chemical Abstracts. Vol. 20 (July 1926): 2230⁴.
39. McKee, R.H. "Furfural from Vegetable Matter." United States Patent 2,784,203 (March 3, 1957): through Chemical Abstracts. Vol. 51 (July 1957): P 10856 f.

40. Panasyuk, V.G., and Repka V.P. "Furfural and Other Chemical from Plant Waste. II Experiment with Semiplant Installation." Gidrolizn. i. Lesokhim. Prom. 13 (1960): 6 - 7. through Chemical Abstracts. Vol. 55 (May 1961): 9720 i.
41. Dambrine, F.; Giorgi, J.C.; and Frouin, J. "Furfural and Paper Pulp from Vegetable Materials" French Patent 1,539,107 (September 13, 1968): through Chemical Abstracts. Vol. 72 (March 1970): P 45228 h.
42. Adams, R., and Voorhees, V. "Furfural." (2 - Furaldehyde). Organic Synthesis. Collective Volume I. (1941): 280 - 283.
43. Goel, J.N. "Furfural from Sugar - cane Bagasse." Indian Sugar. 12 (1962): 129. through Chemical Abstracts. Vol. 57 (December 1962): 16945 i.
44. Quaker Oats Co. "Furfural." British Patent 203,691 (September 4, 1923): through Chemical Abstracts. Vol. 18 (March 1924): P 692⁹.
45. de Belsunce, G. "Production of Alcohol, Acetic Acid and Other By - products from Peanut Hulls by the Meunier Process." Bull. Mat. Grasses. (1926): 1 - 3. through Chemical Abstracts. Vol. 20 (July 1926): 20.
46. Ting - Hsun P'ang. "Production of Furfural from Tea Husks by Hydrolysis." Lin Yeh K'o Hsueh. 11 (1966): 202 - 7. (Ch.) through Chemical Abstracts. 65 (November 1966): 17193 h.

47. Aliwalas, P.P.; Platon, N.Q.; and Recato, P. "Single Stage Digestion of Coconut Shells for the Extraction of Furfural." Philippine J. Sci. 95 (1966): 295 - 301 (Eng.) through Chemical Abstracts. Vol. 70 (January 1969): 5316 n.
48. E. Merck A. - G. "Preservative of Food." German Patent 1,172,938 (June 25, 1964): through Chemical Abstracts. Vol. 61 (December 1964): P 16707 a.
49. Noyori, G.; Kurokaw, H.; and Okazaki, H. "Synthesis of Glutamic Acid from Furfural." United States Patent 3,342,838 (September 19, 1967): through Chemical Abstracts. Vol. 68 (February 1968): P 30054 s.
50. Vogel, I.A. A Textbook of Practical Organic Chemistry Including Qualitative Organic Analysis 3d ed. London: English Language Book Society, 1971, p 706,832.
51. Kharasch, M.S., and Foy, M. "The Peroxide Effect in the Cannizzaro Reaction." Journal of the American Chemical Society. 57 (August 1935): 1510.
52. Isenhour, L.L. "Method for the Production of Furoic Acid." United States Patent 2,041,184 (May 19, 1936).
53. Harrisson, R.J., and Moye, M. "2 - Furoic Acid." Organic Synthesis. Collective Volume 4. (1963): 493 - 496.

54. Hurd, D.C.; Garrett, J.W.; and Osborne, E.N. "Furan Reactions. IV. Furoic Acid from Furfural." Journal of the American Chemical Society. 55 (March 1933): 1082 - 1084.
55. Kuwada, T., et al. "Furoic Acid from Furfural." Japan Patent 52 4576. (November 6, 1952): through Chemical Abstracts. Vol. 47 (November 1953): P 11248 a.
56. Arita, H., and Odawara, T. "Furoic Acid from Furfural." Japan Patent 50 1130 (March 31, 1950): through Chemical Abstracts. Vol. 47 (March 1953): P 2214 d.
57. Koch, E.M., and Cahan, M.H. "Physiological Action of Furan" Journal of Pharmacology. 26 (1925): 281 - 285. through Chemical Abstracts. Vol. 20 (January 1926): 242.
58. Glazunova, N.B., et al. "Antibiotic Activity of Some Furylacetylene Compounds." Antibiotiki. 13 (1968): 131 - 134 (Russ) through Chemical Abstracts. Vol. 68 (May 1968): 8516 g.
59. Lapkova, L.B.; Kul'nevich, V.G.; and Guozdetskaya, V.P. "Oxidation of Furan in Heterogeneous and Homogeneous Media." Zh. Prikl. Khim. (Leningrad) 42 (1969): 1358 - 1362 through Chemical Abstracts. Vol. 71 (November 1969): 101245 e.

60. Hurd, C.D.; Goldsby, A.R.; and Osborne, E.N. "Furan Reactions. II. Furan from Furfural." The Journal of the American Chemical Society. 54 (June 1932): 2532 - 2536.
61. Hurd, C.D., and Goldsby, A.R. "Furan Reactions. I. The Pyrolysis of Furan." The Journal of the American Chemical Society. 54 (June 1932): 2530 - 2531.
62. Manly, D.G., and O'Halloran, J.P. "Furan Manufacture from Furfural." United States Patent 3,223,714 (December 14, 1965): through Chemical Abstracts. Vol. 64 (February 1966): P 6618 h.
63. Dunlop, A.P., and Huffman, G.W. "Furan from Furfural." United States Patent 3,257,417 (June 21, 1966): through Chemical Abstracts. Vol. 65 (August 1966): P 5441 f.
64. Wilson, W.C. "Furan." Organic Syntheses. Collective Volume I (1941): 274 - 275.
65. Wagner, E.C., and Simons, J.K. "Student Experiments in the Heterocyclic Series." Journal of Chemical Education. 13 (1936): 265 - 272 through Chemical Abstracts. Vol. 30 (September 1936): 6374³.
66. Gilman, H., and Lousinian, M.B. "An Improved Procedure for the Preparation of Furan from Furoic Acid." Rec. Trav. Chim. 52 (1933): 156 - 159 through Chemical Abstracts. Vol. 27 (June 1933): 2952⁴.

67. Starr, D., and Hixon, R.M. "Reduction of Furan and the Preparation of Tetramethylene Derivatives." Journal of the American Chemical Society. 56 (July 1934): 1595 - 1596.
68. Starr, D., and Hixon, R.M. "Tetrahydrofuran." Organic Syntheses. Collective Volume II (1943): 566 - 569.
69. Shriner, R.L., and Adams, R. "The Preparation of Palladous Oxide and its Uses as a Catalyst in the Production of Organic Compounds. VI." The Journal of the American Chemical Society. 46 (July 1924): 1683 - 1693.
70. Covert, L.W., and Adkins, H. "Nickel by the Raney Process as a Catalyst of Hydrogenation." The Journal of the American Chemical Society. 54 (October 1932): 4416 - 4417.
71. Cloke, J.B., and Ayers, O. "The Formation of Alpha-Phenyltetrahydropyridine by the Action of Phenylmagnesium Bromide on Delta - Bromovaleronitrile." Journal of the American Chemical Society. 56 (October 1934): 2144 - 2145.
72. Banford, W.H.; Lewiston, N.Y.; and Manes, M.M. "Production of Tetrahydrofuran." United States Patent 2,846,449 (August 5, 1958).
73. Wojcik, B.H. "Catalytic Hydrogenation of Furan Compound." Industrial and Engineering Chemistry. 40 (February 1948): 210 - 216.

74. Manly, D.G. "Hydrogenation of Pyrans and Furans." United States Patent 3,021,342 (February, 13, 1962).
75. Acheson, R.M. "An Introduction to the Chemistry of Heterocyclic Compounds." 2d ed. (Wiley International Edition) New York: Interscience Publishers., 1967, p. 87, 102 - 103.
76. Ivanskii, V.I., and Dolgov, B.N. "New Catalyst for Obtaining Tetrahydrofuran and γ - Butyrolactone from 1, 4 - Butanediol." Kinetika i. Kataliz. 4 (1963): 165 - 6 through Chemical Abstracts. Vol. 59 (July 1963): 538 h.
77. Kanetaka, J.; Asano, T.; and Masamune, S. "New Process for Production of Tetrahydrofuran." Industrial and Engineering Chemistry. 62 (April 1970): 24 - 32.
78. Minoda, S., and Miyajima, M. "Make γ - BL and THF from Maleic." International "Hydrocarbon Processing" 49 (November 1970): 176 - 178.
79. Yoshimura, T. "No Agricultural Wastes in New Tetrahydrofuran Route." Chemical Engineering (New York). 76 (August 1969): 70 - 72.
80. Yoshida, K., and Yoichi, K. "Tetrahydrofuran" Japan Patent 69 32,045 (December 20, 1969): through Chemical Abstracts. Vol. 72 (March 1970): P 55233 v.
81. Nishimura, S., and Sumitani, K. " γ - Butyrolactone and Tetrahydrofuran. Japan Patent 69 26,864 (November 10, 1969): through Chemical Abstracts. Vol. 72 (February 1970): P 21602 z.

82. Mc Shane, H.F., Jr., and Gilbert, W.W. "Hydrogenation of Maleic Anhydride." United States Patent 2,772,291 (November 27, 1956): through Chemical Abstracts. Vol. 51 (July 1957): P 10584 i.
83. Heine, H.W., et al. "On Cyclic Intermediates in Substitution Reactions. IV. The Hydrolysis of Trimethylene - and Tetramethylene Chlorohydrins." The Journal of the American Chemical Society. 75 (October 1953): 4778 - 4779.
84. Ogata, Y.; Tomizawa, K.; and Ikeda, T. "Novel Oxidation of Tetrahydrofuran to γ - Butyrolactone with Peroxyphosphoric Acid." The Journal of Organic Chemistry 45 (March 1980): 1320 - 1322.
85. Murai, S.; Sonoda, N.; and Tsutsumi, S. "Redox Reaction of Tetrahydrofuran Hydroperoxide." Bulletin of the Chemical Society of Japan. 36 (May 1963): 527 - 530.
86. Kulevsky, N.; Wang, C.T.; and Stenberg, V. "Photochemical Oxidations. II. Rate and Product Formation Studies on the Phototchemical Oxidation of Ethers." The Journal of Organic Chemistry. 34 (May 1969): 1345 - 1348.
87. Howard, J.A., and Ingold, K.U. "Absolute Rate Constants for Hydrocarbon Autoxidation. XVII. The Oxidation of some Cyclic Ethers." Canadian Journal of Chemistry. 47 (October 1969): 3809 - 3815.

88. Bordner, C.A. "Stabilization of Tetrahydrofuran." United States Patent 2,489,260 (November 29, 1949).
89. Hinegardner, W.S. "Stabilization of Tetrahydrofuran." United States Patent 2,525,410 (October 10, 1950).
90. Campbell, H.C. "Stabilized Saturated Cyclic Ether Compositions." United States Patent 3,029,257 (April 10, 1962).
91. Corey, E.J., et al. "Purification of Tetrahydrofuran." Organic Syntheses 46 (1966): 105 - 106.
92. Oka, S. "Studies on Lactone Formation in Vapor Phase. III. Mechanism of Lactone Formation from Diols." Bulletin of the Chemical Society of Japan. 35 (June 1962): 986 - 989.
93. Oka, S. "Studies on Lactone Formation in Vapor Phase. I. Synthesis of γ - Butyrolactone." Bulletin of the Chemical Society of Japan. 34 (January 1961): 12 - 14.
94. Stenberg, V.I., and Perkins, R.J. "Oxidation of 1, 4 - Diols to Lactones." The Journal of Organic Chemistry. 28 (February 1963): 323 - 324.
95. Franko - Filipasic, B.R.; Kolyer, J.M.; and Burks, R.E., Jr. "Butyrolactone." United States Patent 3,133,138 (December 3, 1963): through Chemical Abstracts. Vol. 60 (March 1964): P 6754 b.

96. Kamiya, Y. (née Ando); Takemura, S.; and Ueno, Y. "Reaction of N - Haloamide. VII. A Cleavage Reaction of Ether with N, N - Dihalobenzenesulfonamide. (2). Reaction of Tetrahydrofuran with N, N - Dibromobenzenesulfonamide, N - Bromosuccinimide, or Bromine (1)." Chemical & Pharmaceutical Bulletin. 17 (March 1969): 520 - 522.
97. Kamiya, Y. and Takemura, S. "Reaction of N - Haloamide. XVIII. Oxidation of Ether to Ester with N - Haloamide." Chemical & Pharmaceutical Bulletin. 21 (July 1973): 1401 - 1403.
98. Kamiya, Y., and Takemura, S. "Kinetic Studies of the Reaction of Tetrahydrofuran with N - Haloamide under Irradiation." Chemical & Pharmaceutical Bulletin. 18 (April 1970): 848 - 850.
99. Kamiya, Y., and Takemura, S. "Reaction of N - Haloamide KV. Reaction of Tetrahydrofuran with N, N - Dibromobenzenesulfonamide (2). Kinetics and Mechanism." Chemical & Pharmaceutical Bulletin. 20 (November 1972): 2471 - 2476.
100. Ogata, Y.; Tomizawa, K.; and Ikeda, T. "Oxidation of trans Stilbene with Peroxymonophosphoric acid." The Journal of Organic Chemistry. 44 (July 1979): 2362 - 2364.

101. Juenge, E.C.; Spangler, F.L.; and Duncan, W.P. "The Reaction of 1, 3, 5 - Trichloro - 2, 4, 6 - trioxo - hexahydro - s - triazine with Tetrahydrofuran and Related Cyclic Ethers." The Journal of Organic Chemistry. 31 (November 1966): 3836 - 3838.
102. Berkowitz, L.M., and Rylander, P.N. "Use of Rhuthenium Tetroxide as a Multi - purpose Oxidant." The Journal of the American Chemical Society 80 (December 1958): 6682 - 6684.
103. Wasserman, H.H., and Murray, R.W. Singlet Oxygen. (Organic Chemistry, A Series of Monograph - Volume 40). New York: Academic Press., 1979, p. 431 - 440.
104. Walraven, H.G.M., and Pandit, U.K. "A Facile Two Synthon Approach to the Camptothecin Skeleton." Tetrahedron. 36 (January 1980): 321 - 327.
105. East, G.C.; Lupton, C.J.; and Truter, E.V. "Thermal Oxidation of Pyrrolidine." Anal. Chim. Acta. 75 (1975): 468 - 473 (Eng.) through Chemical Abstracts. Vol. 84 (January 1976): 4762 g.
106. Lohr, L.J. "The System of 2 - Pyrrolidone - Water." The Journal of Physical Chemistry 62 (September 1958): 1150 - 1151.
107. Start, J.F. "Liquid Phase Ammonolysis of Butyrolactone in the Presence of Boric Acid as Catalyst." United States Patent 3,133,085 (May 12, 1964).

108. Daiichi Seiyaku Co., Ltd. "2 - Pyrrolidinone." Japan Patent 63 6,757 (May 22, 1963): through Chemical Abstracts. Vol. 59 (November 1963): P 11435 h.
109. Sidel'kovskaya, F.P. "Synthesis of 2 - Pyrrolidinone." Med. Prom. SSSR. 16 (1962): 26 - 30. through Chemical Abstracts. Vol. 59 (September 1963): 5110 f.
110. Schulz, A.; Stichnoth, O.; and Palm, A. "Synthesis of Pyrrolidone." German Patent 1,085,525 (January 12, 1961).
111. Lidov, R.E. "2 - Pyrrolidone" United States Patent 3,109,005 (October 29, 1963): through Chemical Abstracts. Vol. 60 (February 1964): P 2901 a.
112. Pouchert, C.J. The Aldrich Library of Infrared Spectra 2 d ed. Milwaukee: Aldrich Chemical Company., 1975, p. 127 D, 360 H, 415 E, 1045 F, 1047 F, 1048 C.
113. Windholz, M., comps. The Merck Index 9 th ed. Rathway, N.J.: Merck & Co., 1976., no. 4155, 4160, 4146, 8929, 1583, 7804.

จุฬาลงกรณ์มหาวิทยาลัย



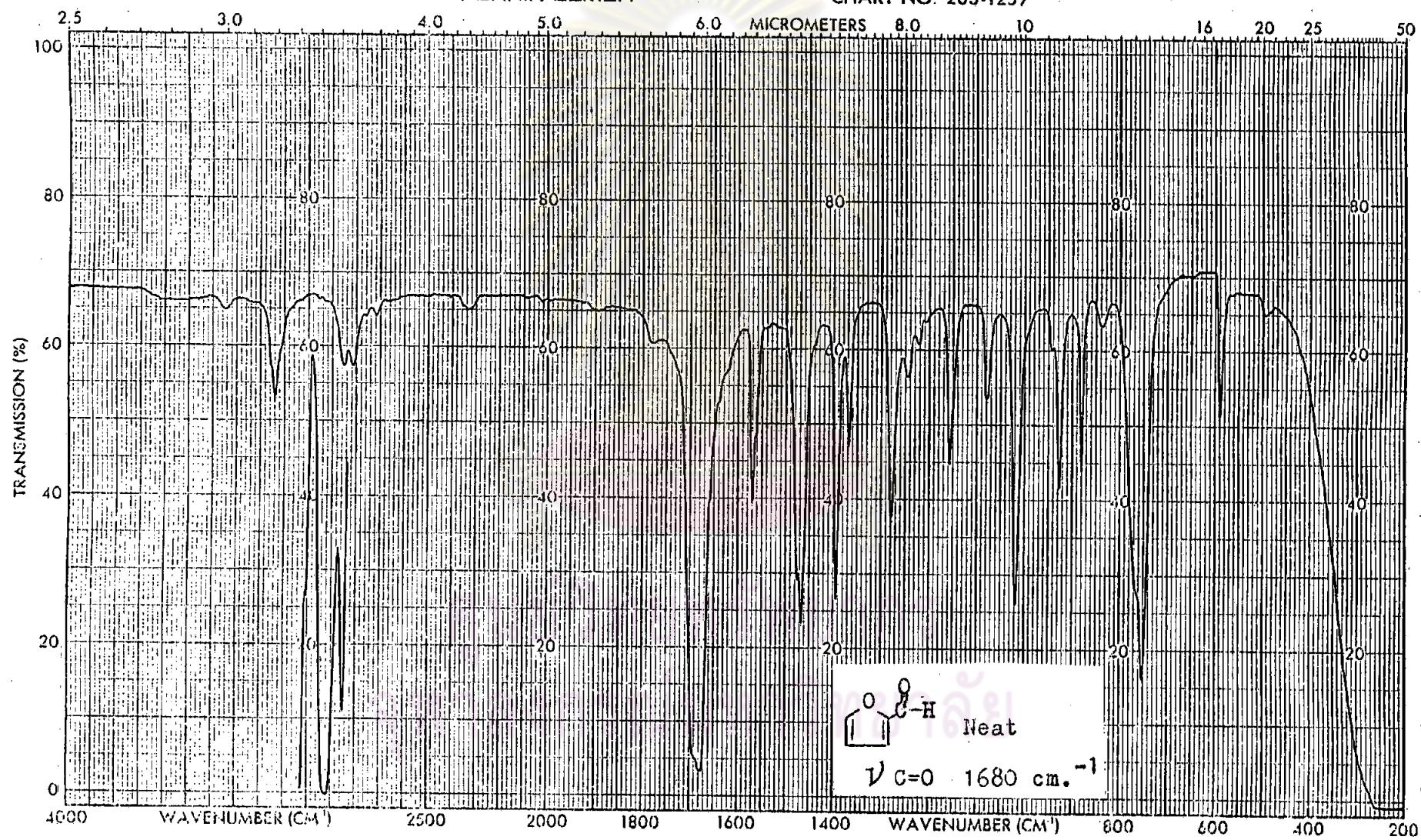
ศูนย์วิทยทรัพยากร จุฬาลงกรณ์มหาวิทยาลัย

ภาพที่ 10

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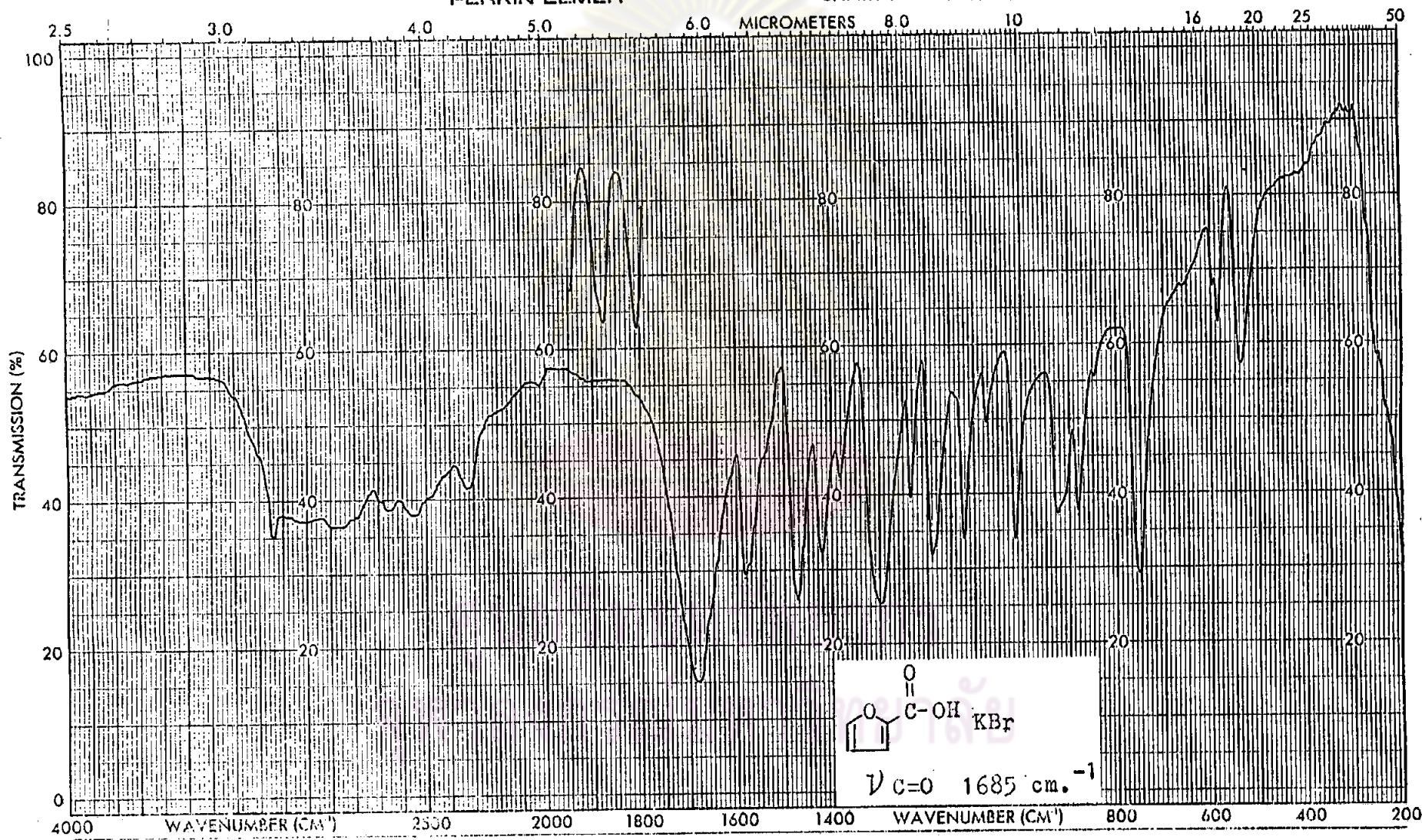
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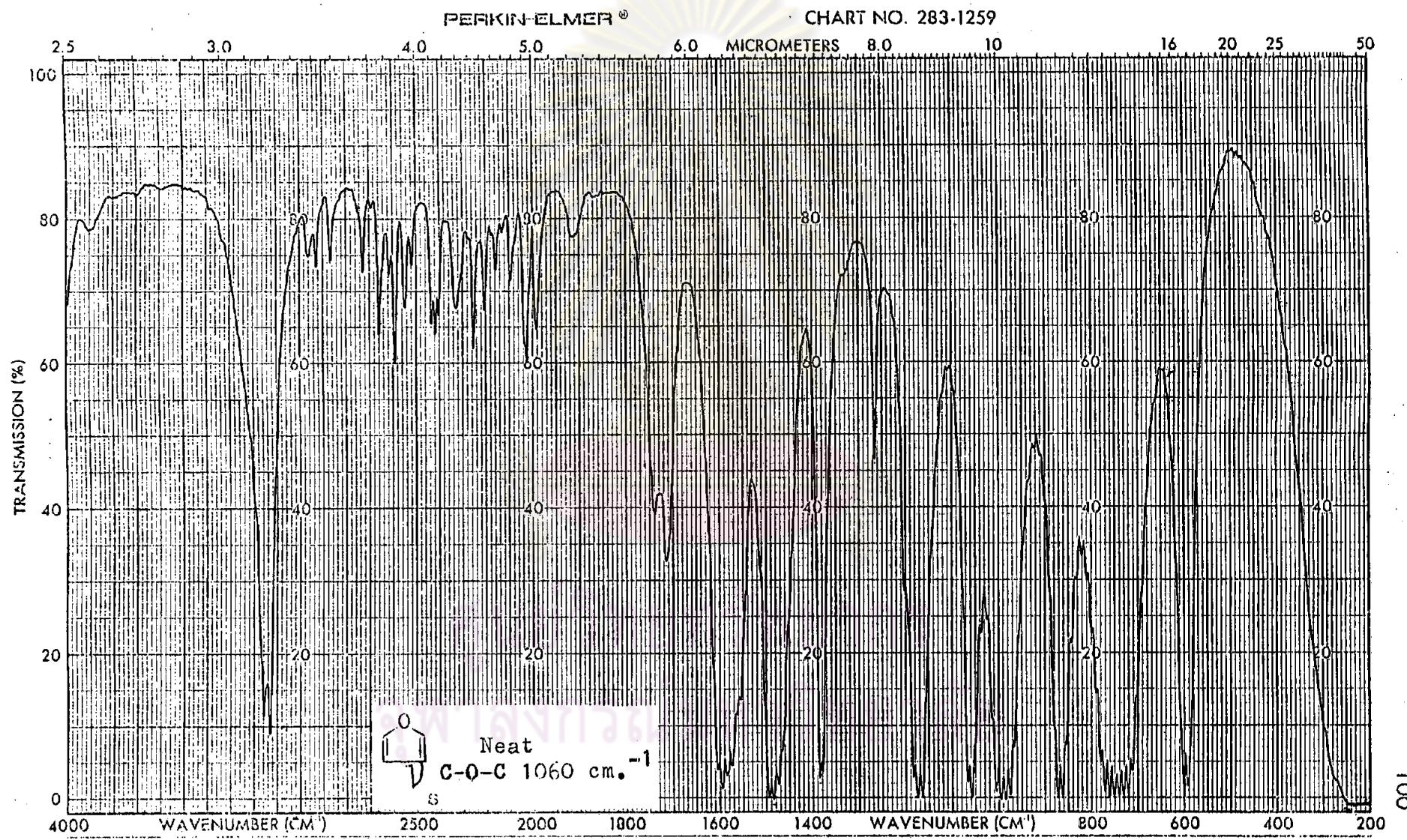
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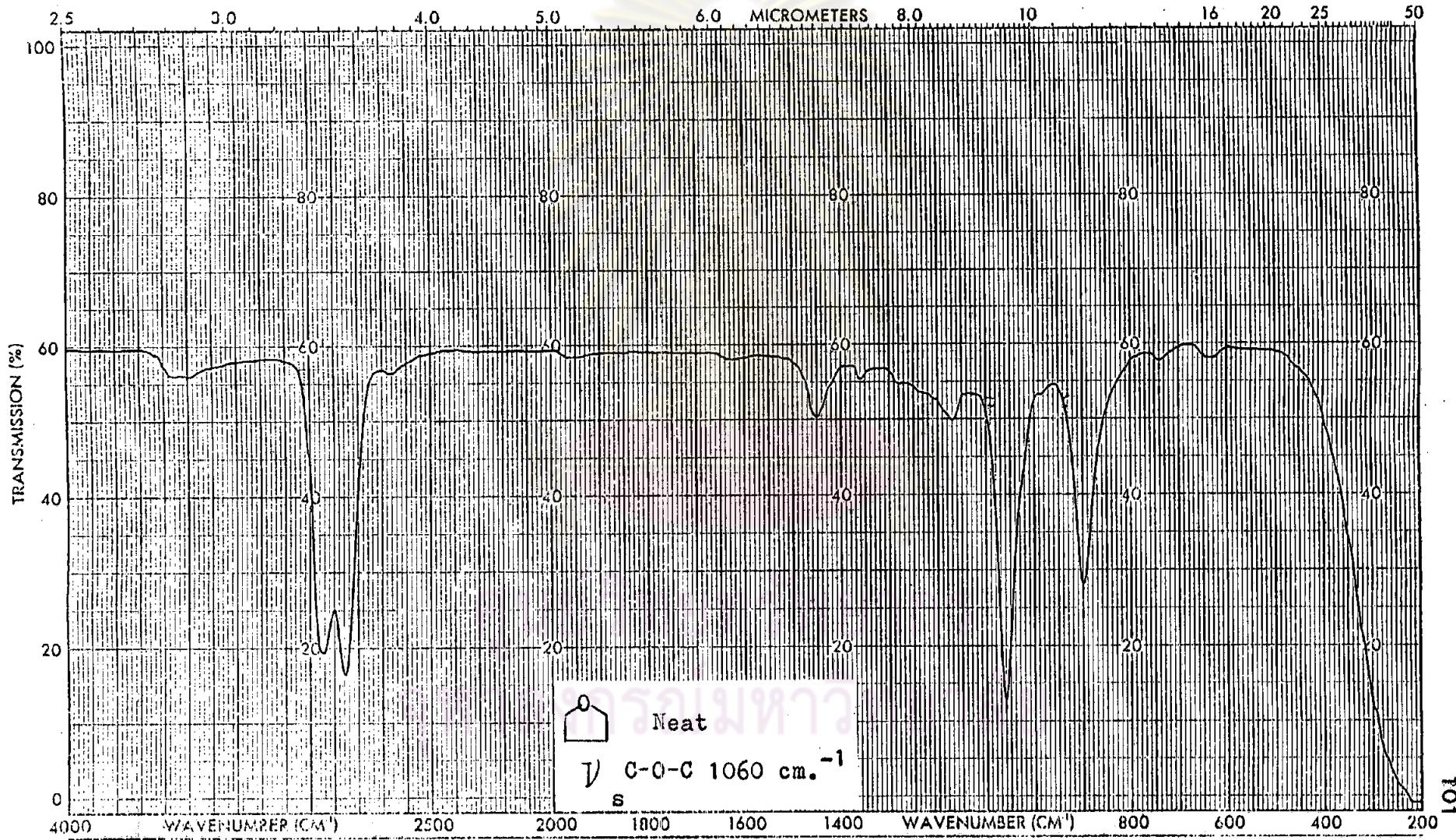
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ภาพที่ 13 อินฟราเรด สเปกตรัมของเทอกกระไอไกรพิวแรนท์สังเคราะห์

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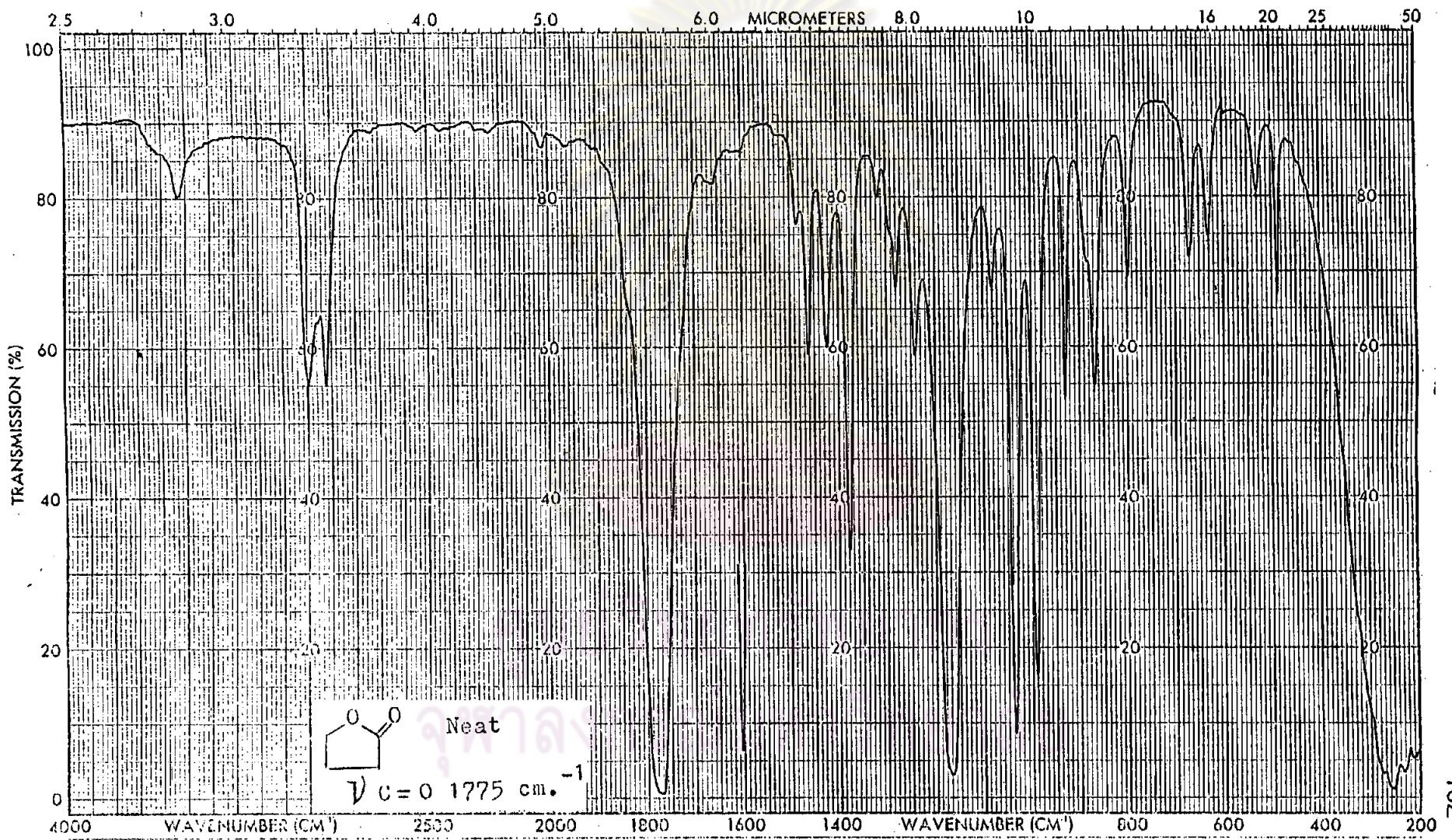
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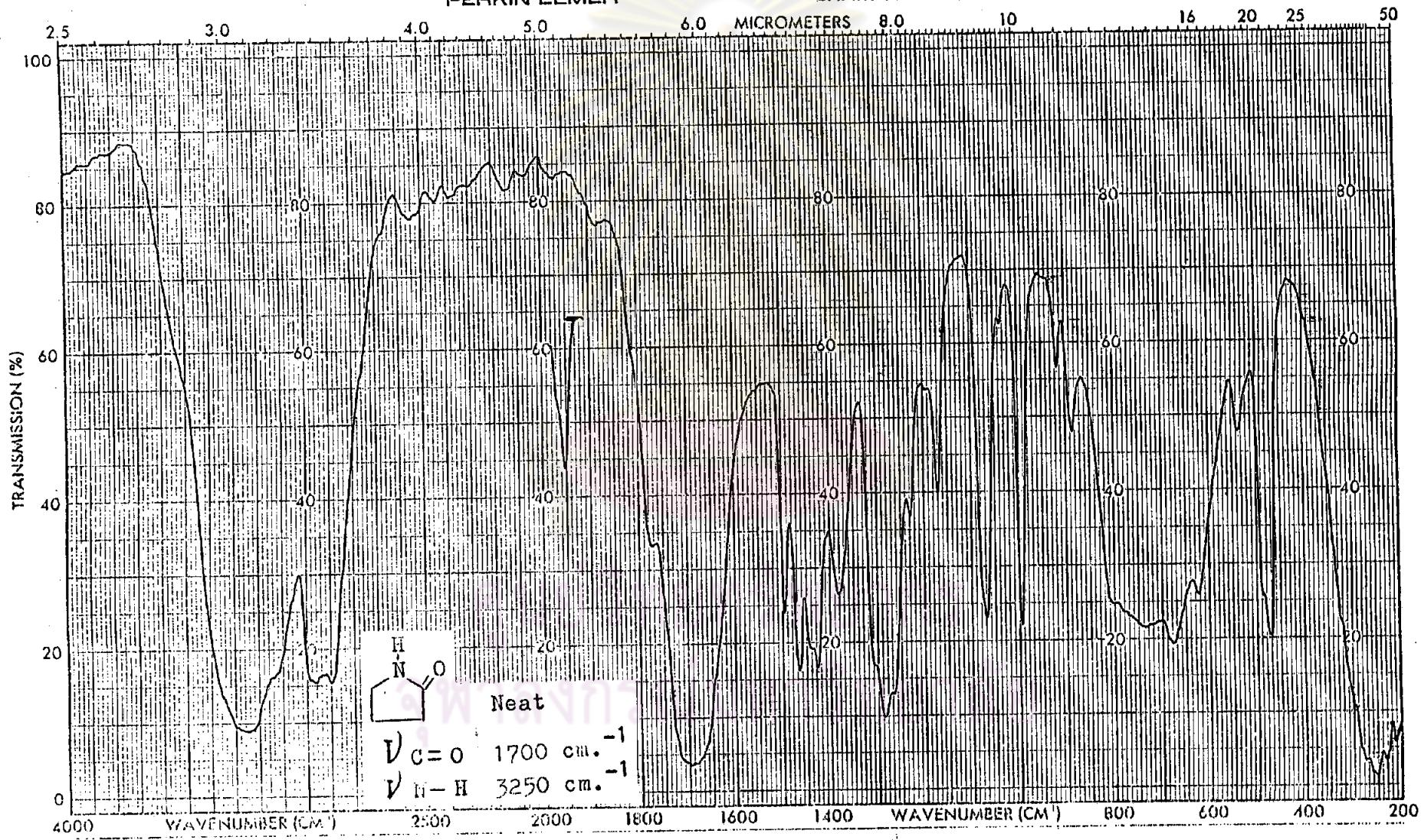
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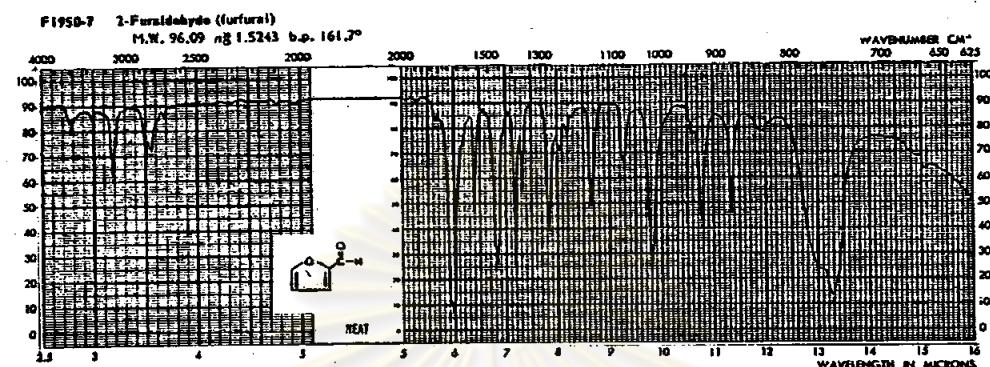
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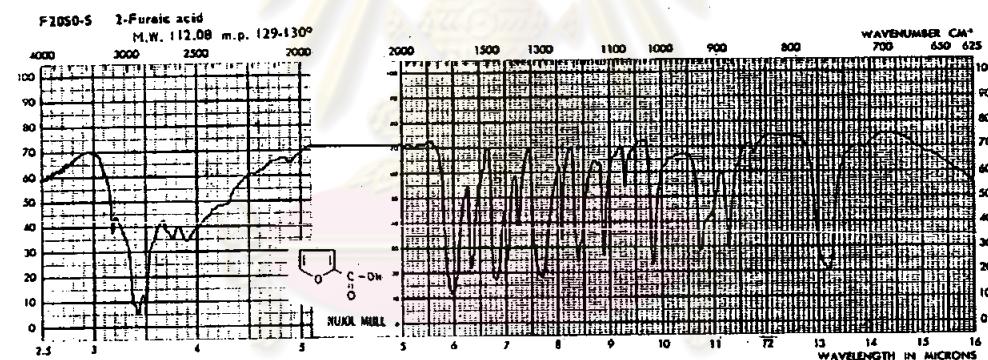
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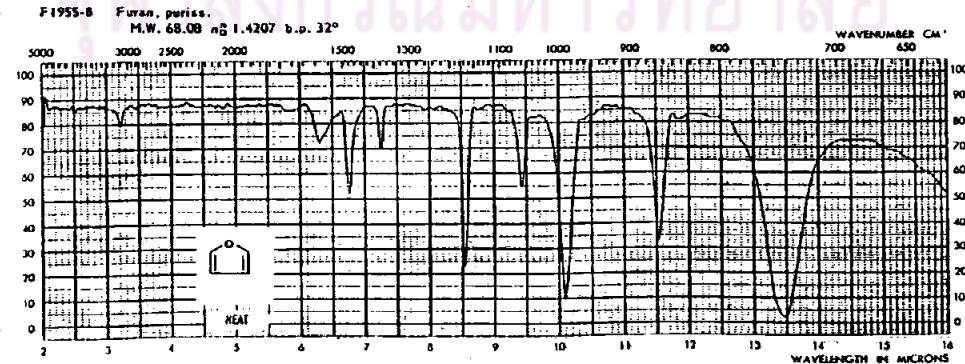
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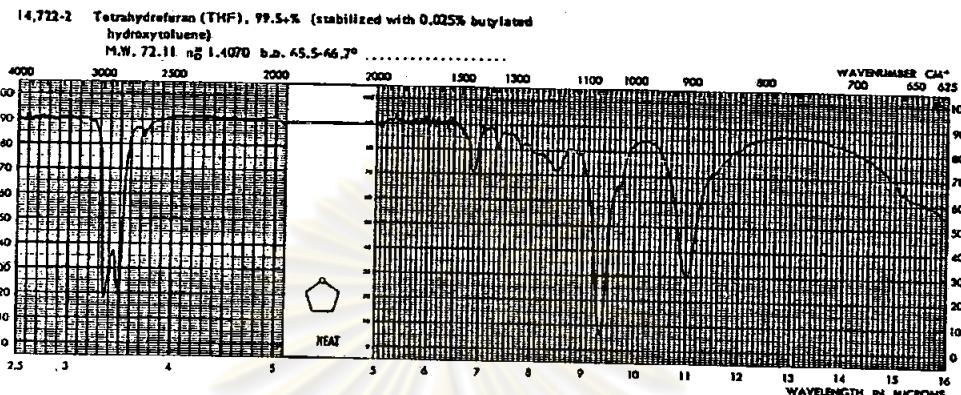
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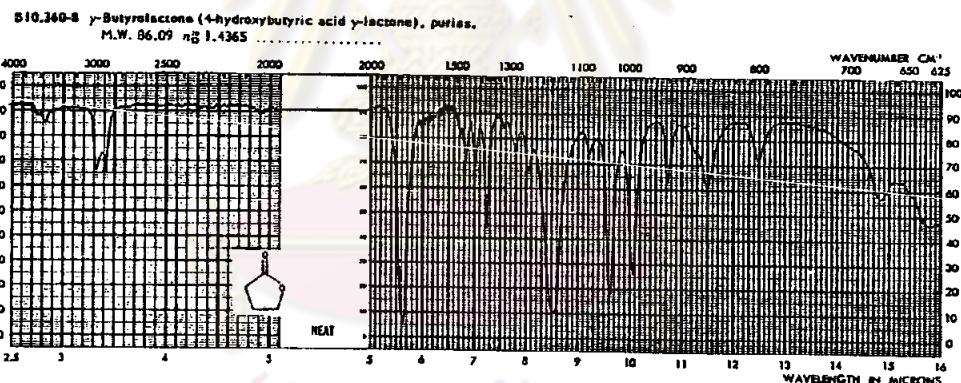
ภาพที่ 18 อินฟราเรด สเปกตรัม (มัคกรูนานของอัลกิซ) ของพิวน



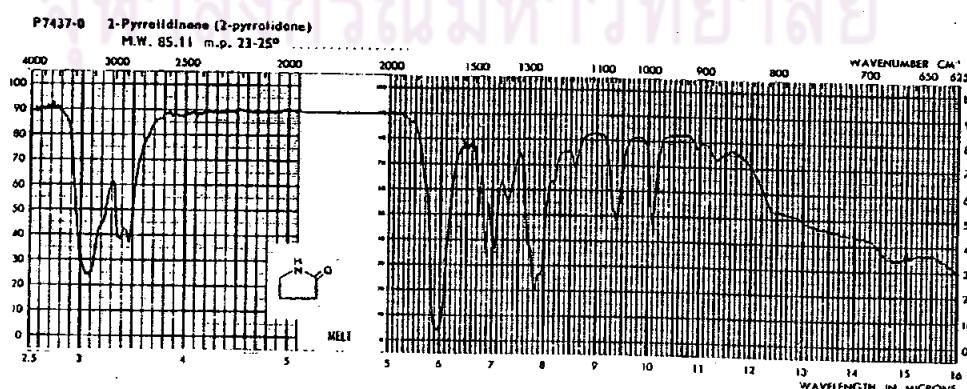
ภาพที่ 19 อินฟราเรด สเปกตรัม (มักรูปของอัลกิช) ของเทอร์ไอโกริฟเวน



ภาพที่ 20 อินฟราเรด สเปกตรัม (มักรูปของอัลกิช) ของบิวไทรอล酇โคน



ภาพที่ 21 อินฟราเรด สเปกตรัม (มักรูปของอัลกิช) ของ 2 - พีร์โรลิดโคน



ประวัติการศึกษา

ชื่อ

นายสมเกียรติ รุจิรวัณ

วุฒิการศึกษา

เภสัชศาสตร์บัณฑิต ปีการศึกษา 2513

คณบดี เภสัชศาสตร์ มหาวิทยาลัยมหิดล

ที่ตำแหน่งและสถานที่ทำงาน

อาจารย์ระดับ 4 ภาควิชาเภสัชเคมี

คณบดี เภสัชศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย



ศูนย์วิทยทรัพยากร
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