

# Compilation of Literature References on Pitting Corrosion<sup>1</sup>

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## Aluminum

- [1] Aziz, P. M. and Godard, H. P., "Pitting Corrosion Characteristics of Aluminum: Influence of Magnesium and Manganese," *Industrial and Engineering Chemistry*, Vol. 44, No. 8, Aug. 1956, pp. 1791-1795.
- [2] Porter, F. C. and Hadden, S. E., "Corrosion of Aluminum Alloys in Supply Waters," *Journal of Applied Chemistry*, Vol. 3, Sept. 1953, p. 385.
- [3] Aziz, P. M., "Views on the Mechanism of Pitting Corrosion of Aluminum," *Corrosion*, Vol. 9, No. 3, March 1953, pp. 85-90.
- [4] Aziz, P. M., "Radioactive Tracers in the Study of Pitting Corrosion on Aluminum," *Journal of the Electrochemical Society*, Vol. 101, No. 3, March 1954, pp. 120-127.
- [5] Aziz, P. M. and Godard, H. P., "Pitting Corrosion Characteristics of Aluminum: Influence of Iron and Silicon," *Corrosion*, Vol. 10, No. 9, Sept. 1954, pp. 269-272.
- [6] Aziz, P. M. and Godard, H. P., "Influence of Specimen Area on the Pitting Probability of Aluminum," *Journal of the Electrochemical Society*, Vol. 102, No. 10, Oct. 1955, pp. 577-579.
- [7] Aziz, P. M., "Application of the Statistical Theory of Extreme Values to the Analysis of Maximum Pit Depth Data for Aluminum," *Corrosion*, Vol. 12, Oct. 1956, p. 495t.
- [8] Hagyard, T. and Santhiapillai, J. R., "Pitting Corrosion of Aluminum in Sodium Chloride Solutions," *Journal of Applied Chemistry*, Vol. 9, Part 6, June 1959, pp. 323-330.
- [9] Bassett, G. A. and Edeleanu, C., "Pitting of Aluminum at Grain Boundaries After Aging," *Philosophical Magazine*, Vol. 5, No. 60, Dec. 1960, pp. 1217-1220.
- [10] Godard, H. P., "The Corrosion Behavior of Aluminum in Natural Waters," *Canadian Journal of Chemical Engineering*, Vol. 38, Oct. 1960, p. 167.
- [11] Porter, F. C., "Aluminum and Corrosion: A Review of Progress in 1960," *Corrosion Prevention and Control*, Vol. 8, Jan. 1961, pp. 37-43.
- [12] Videm, K., "Pitting Corrosion of Aluminum in Contact with Stainless Steel," *Teknsk Ukeblad*, Vol. 108, No. 33, 1961, pp. 775-784 (Norwegian).
- [13] Booth, F. F. and Latimer, K. G., "Aluminum Alloys—Corrosion Behavior in an Industrial Environment," *Corrosion Technology*, Vol. 9, No. 11, Nov. 1962, pp. 315-320.
- [14] Ailor, W. H., Jr. and Reinhart, F. M., "Ten-Year Weathering Data on Aluminum Alloys," *Materials Protection*, Vol. 2, No. 6, June 1963, pp. 30-31, 33, 36.
- [15] Kaesche, H., "Investigations on the Corrosion of Aluminum," *Werkstoffe und Korrosion*, Vol. 14, No. 7, July 1963, pp. 557-565.
- [16] Fujiwari, T. and Shingai, T., "On Micro-Pits Produced by Formation of FeAl<sub>3</sub> in Rolled Plate of Extra Super-Duralumin (7075-T6)," *Nippon Kinzoku Gekkai-Si*, Vol. 28, No. 9, 1964, pp. 502-507 (Japanese).

<sup>1</sup> Compiled by L. C. Rowe, Chairman of a Task Group on Pitting Corrosion under ASTM Subcommittee G01.05 on Laboratory Corrosion Tests. Many of the references were contributed by members of the task group; others were obtained from surveys, indexes, and a search of particular journals. No compilation is ever complete, but these references provide a good review of the activity in pitting corrosion during the last 15 years.

- [17] Koehler, E. L. and Evans, S., "Pitting and Uniform Corrosion of Aluminum by pH 3.5 Citrate Buffer Solution," *Journal of the Electrochemical Society*, Vol. 111, No. 1, Jan. 1964, pp. 17-21.
- [18] Murray, G. A. W., "Artificial Pits for Quantitative Studies of Corrosion of Aluminum Alloys in Natural Waters," *Corrosion*, Vol. 20, Oct. 1964, pp. 329t-334t.
- [19] Kaesche, H., "On Uniform Dissolution and Pitting of Aluminum Electrodes," *Korrosion*, Vol. 16, 1964, pp. 17-19.
- [20] Campbell, H. S., "Corrosion and Protection of Aluminum Alloys Underground," *Journal of the Institute of Metals*, Vol. 93, 1964-65, p. 97.
- [21] Storchai, E. I. and Turkovskaya, A. V., "Investigation of Susceptibility to Spot and Pitting Corrosion in Some Aluminum Alloys," *Khim Neftyanoe Mashinost*, No. 3, 1965, pp. 32-34 (Russian).
- [22] Storchai, E. I. and Turkovskaya, A. V., "Pitting Corrosion of Aluminum Alloys," *Protection of Metals*, Vol. 1, No. 3, May-June 1965, p. 256.
- [23] Hüber, W. and Wranglén, G., "Studies on the Mechanism of the Pitting Corrosion of Aluminum," *Current Corrosion Research in Scandinavia*, Kemian Keskusliito, r. y., Helsinki, Finland, 1965.
- [24] Bond, A. P., Bolling, G. F., Domian, H. A., and Biloni, H., "Microsegregation and the Tendency for Pitting Corrosion in High-Purity Aluminum," *Journal of the Electrochemical Society*, Vol. 113, Aug. 1966, p. 773.
- [25] Freiman, L. I. and Kolotyrkin, Ya. M., "Pitting Corrosion of Aluminum in Solutions of Sodium Perchlorate and Chloric Acid," *Zaschita Metallov*, Vol. 2, No. 4, 1966, pp. 488-490 (Russian).
- [26] Elze, J., "Causes and Forms of Pitting of Aluminum Anodized by the GX Process," *Mitteilungen der Forschungsgesellschaft Blechverarbeitung*, Vol. 17, 1966 (German).
- [27] Sugimoto, K., Sawada, Y., and Morioka, S., "Pitting Dissolution Behaviors of Pure Aluminum and SAP (Sintered Aluminum Powders) in Weak Alkaline Aqueous Solutions of NaCl," *Journal of the Japan Institute of Metals*, Vol. 30, No. 10, Oct. 1966, pp. 977-984 (Japanese).
- [28] Kasen, M. B., Taggart, R., and Polonis, D. H., "The Effects of Environment on Surface Pit Formation in Aluminum," *Philosophical Magazine*, Vol. 13, 1966.
- [29] Ailor, W. H., "Five-Year Corrosion of Aluminum Alloys at Several Marine Sites," *British Corrosion Journal*, Vol. 1, May 1966, p. 237.
- [30] Izaki, T. and Arai, K., "Studies on Pitting Corrosion of Aluminum and Its Alloys in Neutral Solutions," *Journal of the Japan Institute of Metals*, Vol. 31, No. 9, Sept. 1967, pp. 1023-1028 (Japanese).
- [31] Murray, G. A. W., Lamb, H. J., and Godard, H. P., "Role of Iron in Aluminum on the Initiation of Pitting in Water," *British Corrosion Journal*, Vol. 2, No. 6, Nov. 1967, pp. 216-218.
- [32] Penn, J. H. and Murray, G. A. W., "Effect of Acidic Gelatinous Materials on Pitting Corrosion of Aluminum Hollow-Ware," *British Corrosion Journal*, Vol. 2, No. 5, 1967, pp. 193-194.
- [33] Johnson, W. K. and Wright, T. E., "The Effect of Small Additions of Copper on the Corrosion Resistance of Aluminum and Aluminum Alloys," *Aluminum*, Vol. 43, No. 8, Aug. 1967, pp. 490-496 (German).
- [34] Horibe, K., "Studies on Pit Formation on Aluminum Immersed in Artificial Waters," *Journal of the Japan Institute of Light Metals*, Vol. 18, No. 11, Nov. 1968, pp. 579-585 (Japanese).
- [35] Kassayura, V. P. and Zaretskii, E. M., "Anodic Behavior of Aluminum in Solutions of Sodium Nitrate in the Presence of Chloride Ions," *Protection of Metals*, Vol. 4, No. 4, July-Aug. 1968, p. 343.
- [36] Tapper, R. W., "Corrosion of Aluminum—Literature Review," *British Corrosion Journal*, Vol. 3, Nov. 1968, pp. 285-287.
- [37] Tegun, O., "Pitting in Aluminum and its Alloys in Pure Water," *Journal of the Japan Institute of Metals*, Vol. 18, March, pp. 127-138.
- [38] Sugimoto, K., Sawada, Y., and Morioka, S., "Effects of Matrix Purity and Environmental Factors on the Anodic Pitting Dissolution Behaviors of Aluminum," *Nippon Kinzoku Gakkai-Si*, Vol. 32, No. 9, 1968, pp. 842-848 (Japanese).

- [39] Ailor, W. H., Jr., "Performance of Aluminum Alloys at Other Test Sites," *Metal Corrosion in the Atmosphere, ASTM STP 435*, American Society for Testing and Materials, 1968, p. 285.
- [40] McGeary, F. L., Summerson, T. J., and Ailor, W. H., Jr., "Atmospheric Exposure of Non-Ferrous Metals and Alloys—Aluminum: Seven-Year Data," *Metal Corrosion in the Atmosphere, ASTM STP 435*, American Society of Testing and Materials, 1968, p. 141.
- [41] Ailor, W. H., Jr., Evaluation of Aluminum After One-Year Deep Sea Exposure," *Journal of Hydronautics*, Vol. 2, No. 1, Jan. 1968, p. 26.
- [42] Böhni, H. and Uhlig, H. H., "Environmental Factors Affecting the Critical Pitting Potential of Aluminum," *Journal of the Electrochemical Society*, Vol. 116, 1969, p. 906.
- [43] Di Russo, E., Prati, A., and Sacchi, F., "Investigation on the Mechanism of Pitting Corrosion of Anodized Alloy Al-Mg-Si for Architectural Purposes," *Alluminio*, Vol. 38, No. 1, Jan. 1969, pp. 3–13 (Italian).
- [44] Ailor, W. H., Jr., "A Review of Aluminum Corrosion in Tap Water," *Journal of Hydronautics*, Vol. 3, No. 3, July 1969, p. 105.
- [45] Ailor, W. H., Jr., "Aluminum Corrosion at Urban and Industrial Locations," *Journal of the Structural Division*, Vol. 95, No. ST10, Oct. 1969, pp. 2141–2160.
- [46] Ailor, W. H., Jr., "Aluminum Alloys After Five Years in Seawater," *Materials Performance and the Deep Sea, ASTM STP 445*, American Society for Testing and Materials, 1969, p. 115.
- [47] Storchai, E. I. and Turkovskaya, A. V., "Use of Charge Curves for Determining the Potential of Pitting Formation on Aluminum Alloys," *Industrial Laboratory*, Vol. 35, No. 6, June 1969, pp. 851–852.
- [48] Arora, O. P., Isasi, J. A., and Metzger, M., "Protective Films and Structure-Dependent Corrosion in Aluminum," *Corrosion*, Vol. 25, No. 11, Nov. 1969, pp. 445–454.
- [49] Horibe, K., "Studies on Pit Formation on Aluminum Immersed in Artificial Waters," *Journal of the Japan Institute of Light Metals*, Vol. 19, No. 3, March 1968, pp. 105–111, 184–188 (Japanese).
- [50] Ishida, S., "Some Studies on Pit Formation on Aluminum Immersed in Waters," *Proceedings of the Third International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Vol. 1, Houston, Tex., 1969, pp. 179–185.
- [51] Richardson, J. A. and Wood, G. C., "A Study of the Pitting Corrosion of Al by Scanning Electron Microscopy," *Corrosion Science*, Vol. 10, 1970, p. 313.
- [52] Lorking, K. F. and Mayne, J. E. O., "The Corrosion of Aluminum," *Journal of Applied Chemistry*, Vol. 11, May 1961, p. 170.
- [53] Goto, K., Ito, G., and Shimizu, Y., "Effect of Some Oxidizing Agents on Pitting Corrosion of Aluminum in Neutral Water," *Journal of Japan Institute of Light Metals*, Vol. 20, Feb. 1970, pp. 88–94 (Japanese).
- [54] Paydya, B. A., Sampat, S. S., Vora, J. C., and Trivedi, A. M., "Corrosion of Aluminum in Salt Mixtures and the Influence of Copper Ions on Corrosion," *Werkstoffe und Korrosion*, Vol. 21, No. 10, 1970, pp. 801–803 (German).
- [55] Pourbaix, M., "Some Aluminum Corrosion Problems and Their Practical Repercussions," *Revue de l'Aluminium*, Vol. 386, June 1970, pp. 639–647 (French).
- [56] Storchai, E. I. and Turkovskaya, A. V., "Pitting of Aluminum Alloys in Solutions of NaCl Without Oxidizing Agent," *Zashita Metallov*, Vol. 6, No. 6, 1970 (Russian).
- [57] Johnson, W. K., "Recent Developments in Pitting Corrosion of Aluminum," *British Corrosion Journal*, Vol. 6, 1971, p. 200.
- [58] deDeMichele, S. M. and Galvele, J. R., "Morphology of Pitting Corrosion of Aluminum in Different Electrolytes," *Metalurgia A.B.M.*, Vol. 27 (165), Aug. 1971, pp. 589–596 (Portuguese).
- [59] Inoue, T., Kato, M., Goto, K., Ito, G., and Shimizu, Y., "Effects of pH and Dissolved Oxidizing Agents on Pitting Corrosion of Aluminum," *Journal of the Japan Institute of Light Metals*, Vol. 21, No. 1, Jan. 1971, pp. 27–35 (Japanese).
- [60] Ronzhin, M. N., Pedanova, V. G., and Rozenfeld, I. L., "Method of Studying the Electrochemical Heterogeneity of Welds in Aluminum Alloys," *Zavodskaya Laboratoriya*, Vol. 37, No. 7, 1971, pp. 792–795 (Russian).
- [61] Bogar, F. D. and Foley, R. T., "The Influence of Chloride Ion on the Pitting of

- Aluminum," *Journal of the Electrochemical Society*, Vol. 119, No. 4, April 1972, pp. 462-464.
- [62] Dunn, C. G. and Witter, D. R., "h-Pits Produced by Hydrating and Annealing Aluminum Foil," *Journal of the Electrochemical Society*, Vol. 119, No. 9, 1972.
- [63] Rosenfeld, I. L., Ronzhin, M. N., and Pedanova, V. G., "Effect of Temperature on the Pitting Formation Potential of Aluminum and Its Alloys," *Zashita Metallov*, Vol. 8, No. 5, 1972.
- [64] Flasks, V. Ya., "Statistical Model of Size Distribution of Pitting During Atmospheric Corrosion of Aluminum Alloys," *Zashita Metallov*, Vol. 9, No. 4, 1973.
- [65] Inoue, T. and Kato, M., "Studies on Pitting Corrosion of Aluminum Using Macro and Micro-Autoradiography," *Journal of the Japan Institute of Light Metals*, Vol. 23, No. 2, Feb. 1973, pp. 78-86 (Japanese).
- [66] de Wexler, S. B. and Galvele, J. R., "Anodic Behavior of Aluminum Straining and a Mechanism for Pitting," *Journal of the Electrochemical Society*, Vol. 121, No. 10, 1974.
- [67] Bonewitz, R. A., "An Electrochemical Evaluation of 3003, 3004, and 5050 Aluminum Alloys for Desalination," *Corrosion*, Vol. 30, No. 2, 1974, pp. 53-59.
- [68] Ishida, S. and Nakamura, H., "Study on Pitting Aluminum Corroded by the Natural Waters," *Proceedings of the Fifth International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 257-259.
- [69] Kato, M. and Inoue, T., "Effects of Dissolved Oxidizing Agents and Inhibitors and Pitting Corrosion of Aluminum in Water," *Proceedings of the Fifth International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 260-263.
- [70] Foroulis, Z. A., "On the Significance of the Critical Potential of Pitting of Aluminum in Chloride Solutions," *Proceedings of the Fifth International Congress of Metallic Corrosions*, National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 326-331.
- [71] Videm, K., "Chloride Absorption and Pitting Corrosion of Aluminum: Influence of Electrical Field in the Oxide Film," *Proceedings of the Fifth International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 264-269.
- [72] Franz, F. and Novak, P., "Effect of Rotation on the Pitting Corrosion of Aluminum Electrodes," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 576-579.
- [73] Craig, H. L., Jr., "Kinetic Studies of Aluminum Pitting Reactions," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 600-607.
- [74] Kaesche, H., "Pitting Corrosion of Aluminum and Intergranular Corrosion of Aluminum Alloys," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 516-525.
- [75] Zahavi, J. and Metzger, M., "Breakdown of Films and Initiation of Pits on Aluminum," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 547-555.
- [76] Pryor, M. J., "The Influence of the Defect Structure of Aluminum Oxide Films on the Pitting of Aluminum in Chloride Solutions," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 2-11.
- [77] Galvele, J. R., de Micheli, S. M., Muller, I. L., de Wexler, S. B., and Alanis, I. L., "Critical Potentials for Localized Corrosion of Aluminum Alloys," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 580-599.
- [78] Wood, G. C., Sutton, W. H., Richardson, J. A., Riley, T. N. K., and Malherbe, A. G., "The Mechanism of Pitting of Aluminum and Its Alloys," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 526-546.

## Copper

- [79] Tracy, A. W., "Copper and Its Alloys, Classes and Types, Corrosion Characteristics and Applications," *Proceedings*, Short Course on Process Industry Corrosion, National Association of Corrosion Engineers, 1960, pp. 83-97.
- [80] Hatch, G. B., "Unusual Cases of Copper Corrosion," *Journal of American Water Works Association*, Vol. 53, No. 11, 1961, pp. 1417-1428.
- [81] Young, F. W., Jr., "Etch Pits at Dislocations in Copper," *Journal of Applied Physics*, Vol. 32, Feb. 1961, pp. 192-201.
- [82] Tracy, A. W., "Corrosion of Copper Alloys," *Chemical Engineering*, Vol. 69, No. 1, 8 Jan. 1962, pp. 130, 132-133.
- [83] Subramanyan, N., Venugopalan, K., and Dandapani, B., "A Note on the Corrosion of Heat Exchanger Tubes of Transformer Rectifier Coolers," *Current Engineering Practice*, Vol. 5, No. 7, Jan. 1963, pp. 8-10.
- [84] Bertocci, V., Hulett, L. D., and Jenkins, L. H., "On the Formation of Electrochemical Etch Pits on the (III) Face of Copper," *Journal of the Electrochemical Society*, Vol. 110, No. 12, Dec. 1963.
- [85] Tracy, A. W., "Where and When to Use Copper Alloys," *Chemical Engineering Progress*, Vol. 59, No. 9, Sept. 1963, pp. 78-83.
- [86] Van Muylder, J., Pourbaix, M., Van Laer, P., de Zoubov, N., and Pourbaix, A., "Relationship Between Electrode Voltage and Mechanism of Copper Corrosion in Presence of Brussels Water," Report No. 126, Centre Belge d'Etude de la Corrosion, Brussels, Belgium, May 1965 (French).
- [87] Van Muylder, J., Pourbaix, M., and Van Laer, P., "Electrochemical Characteristics of Corrosion Pitting of Copper in Presence of Water and Aqueous Chloride Solutions," Report No. 127, Centre Belge D'Etude de la Corrosion, Brussels, Belgium, May 1965 (French).
- [88] Campbell, H. S., "Pitting Corrosion of Copper Water Pipes," *Proceedings of Second International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1966, pp. 237-242.
- [89] von Franque, O., "Pitting Corrosion on Copper Pipes," *Werkstoffe und Korrosion*, Vol. 19, 1968, pp. 377-384.
- [90] Lucey, V.F., "Developments Leading to the Present Understanding of the Mechanisms of Pitting Corrosion of Copper," *British Corrosion Journal*, Vol. 7, 1972, pp. 36-41.
- [91] Campbell, H. S., "A Review: Pitting Corrosion of Copper and Its Alloys," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 625-638.

## Electroplated Coatings

- [92] Flint, D. N., "Pitting Corrosion Causes Electroplate Breakdown," *Industrial Finishing*, Vol. 12, No. 143, 1960, pp. 48-51.
- [93] Hospadaruk, V. and Petrocelli, J. V., "The Relative Reactivity of Various Nickel Electrodeposits," *Plating*, Vol. 48, No. 5, May 1961, pp. 479-487.
- [94] Flint, G. N. and Melbourne, S. H., "The Corrosion of Decorative Ni + Cr Coatings: A Metallographic and Potential Study," *Transactions*, Institute of Metal Finishing, Vol. 38, Part 2, pp. 35-44, Part 3, pp. 89-94, May 1961; or *Journal of Metal Finishing*, Vol. 7, June 1961, pp. 218-221, 233.
- [95] Wesley, W. A., "Pitting of Decorative Nickel-Chromium Coatings," *Technical Proceedings of American Electroplaters Society*, Vol. 50, 1963, pp. 9-16.
- [96] Maloof, S. R., "The Electrochemical Behavior of Decorative Nickel-Chromium Coatings in 3% NaCl under Potentiostatic Conditions," *Journal of the Electrochemical Society*, Vol. 116, Sept. 1969, p. 1293.

## Environmental Effects

- [97] Haarmann, R. and Rädiker, W., "Pitting Corrosion Caused by Molten Metals," *Metalloberfläche*, Vol. 14, No. 2, 1960, pp. 36-40.

- [98] Gilbert, P. T., "Corrosion Problems Arising in Tubular Heat-Exchange Equipment," *Society Chemical Industry Monograph No. 10* (Corrosion Problems of the Petroleum Industry), 1960, pp. 111-120.
- [99] Chen, N. G., "Pitting Corrosion Inhibitor," *Journal of Applied Chemistry*, Vol. 33, Oct. 1960, pp. 2300-2305 (Russian).
- [100] Rowe, L. C. and Walker, M. S., "Effect of Mineral Impurities in Water on the Corrosion of Aluminum and Steel," *Corrosion*, Vol. 17, No. 7, July 1961, pp. 353t-356t.
- [101] Kolotyrkin, Ya. M., "Effects of Anions on the Dissolution Kinetics of Metals," *Journal of the Electrochemical Society*, Vol. 108, No. 3, March 1961, pp. 209-216.
- [102] Otsu, T. and Okawa, M., "Corrosion Testing on Condenser Tubes by Model Condenser at Shin-Tokyo Power Plant," *Sumitomo Light Metal Tech Reports*, Vol. 2, No. 1, Jan. 1961, pp. 11-38 (Japanese).
- [103] Raifsnider, P. J. and Wachter, A., "Pitting Corrosion by Water Flood Brines," *Corrosion*, Vol. 17, No. 7, July 1961, pp. 326t-328t.
- [104] Sakiyama, K. and Fujimoto, M., "Effects of Free Chlorine on the Pitting Corrosion of Gas Cooler Tubes," *Corrosion Engineering*, Vol. 11, No. 7, July 1962, pp. 299-303 (Japanese).
- [105] Kiwaki, J. and Inai, T., "On Corrosion by Gland Packing," *Review of Kobe University Mercantile Marine*, Part 2, No. 11, March 1964, pp. 21-29 (Japanese).
- [106] Varga, J. and Sebestyen, G., "Observations on Pitting Velocity Exponent in Flow System," *Periodica Polytechnica*, Mechanical Engineering, Vol. 8, No. 3, 1964, pp. 343-352.
- [107] Ervin, G., Jr. and MacKay, T. L., "Catastrophic Oxidation of Beryllium Metal," *Journal of Nuclear Materials*, Vol. 12, May 1964, pp. 30-39.
- [108] Voogel, P., "Pit Corrosion in Internally Painted Cargo and Cargo/Ballast Tanks of Ocean-Going Crude Oil Tankers," *Journal of Oil Color Chemicals Association*, Vol. 48, No. 7, July 1965, pp. 597-602.
- [109] Dega, R. L., "Corrosion at the Seal," *Mechanical Engineering*, Vol. 88, No. 11, 1966, pp. 48-52.
- [110] Kolotyrkin, Ya. M., "Effect of the Nature of the Anions on the Kinetics and Mechanism of the Dissolution (Corrosion) of Metals in Electrolyte Solutions," *Protection of Metals*, Vol. 3, No. 2, March-April 1967, p. 101.
- [111] Rossum, J. R., "Prediction of Pitting Rates in Ferrous Metals from Soil Parameters," *Journal of the American Water Works Association*, Vol. 61, No. 6, 1969.
- [112] France, W. D., Jr. and Greene, N. D., "Comparison of Chemically and Electrolytically Induced Pitting Corrosion," *Corrosion*, Vol. 26, No. 1, Jan. 1970, pp. 1-4.
- [113] Brigham, R. J., "Discussion: Chemically and Electrolytically Induced Pitting," *Corrosion*, Vol. 26, No. 5, 1970, p. 200.
- [114] Azim, A. A. A., "Pitting Corrosion of Pb in  $\text{H}_2\text{SO}_4 + \text{HClO}_4$ ," *Corrosion Science*, Vol. 10, No. 6, June 1970, pp. 421-433.
- [115] TrabANELLI, G. and Zucchi, F., "Measuring the Corrosion Resistance of Four Alloys in Cl Solutions," *Materials Protection and Performance*, Vol. 9, July 1970, p. 16.
- [116] Beck, T. R., Mahaffey, D. W., and Olsen, J. H., "Pitting and Deposits with an Organic Fluid by Electrolysis and by Fluid Flow," *Journal of the Electrochemical Society*, Vol. 119, No. 2, 1972, pp. 155-160.
- [117] Barkow, A. G., "Don't Bet on a Pit," *Materials Protection and Performance*, Vol. 11, No. 10, 1972.
- [118] Mansfeld, F., "Passivity and Pitting of Al, Ni, Ti, and Stainless Steel in  $\text{CH}_3\text{OH} + \text{H}_2\text{SO}_4$ ," *Journal of the Electrochemical Society*, Vol. 120, No. 2, 1973.
- [119] Brigham, R. J. and Tozer, E. W., "Temperature as a Pitting Criterion," *Corrosion*, Vol. 29, No. 1, 1973, pp. 33-36.
- [120] Postelthwaite, R., Brierley, A., and Walmsley, M. J., "Pitting and Elevated Temperatures," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 415-426.

## Graphite

- [121] Henning, G. R., "Influence of Lattice Defects and Catalysts on the Surface Reactions of Graphite Single Crystals," *Zeitschrift für Elektrochemie*, Vol. 66, 1962, pp. 629–635 (German).
- [122] Blackman, L. C. F., "Oxidation Pitting of Pyrolytic Graphite and Vitreous Carbon," *Carbon*, British Coal Utilisation Research Association, Vol. 5, April 1967, pp. 96–97.
- [123] McCarroll, B. and McKee, D. W., "Interaction of Atomic Hydrogen and Nitrogen with Graphite Surface," *Nature*, Vol. 225, Feb. 1970, pp. 722–723.

## Iron and Steel

- [124] Freiman, L. I. and Kolotyркиn, Ya. M., "Pitting Corrosion of Iron by Perchlorate Ions," *Doklady Akademii Nauk S.S.S.R., Seriya Fizicheskoy Khimii*, Vol. 153, No. 4, 1963, pp. 886–888, and *Corrosion Science*, Vol. 5, No. 3, 1965, pp. 199–202.
- [125] Becker, K. E., "Investigation of Pitting Failure of Surfaces Under Normal Stressing," *Proceedings*, Institute of Mechanical Engineers, Vol. 178, No. 3N, 1964, pp. 56–70.
- [126] Herbsleb, G. and Engell, H. J., "Investigation into Pitting Corrosion of Passive Iron in Sulphuric Acid Containing Chloride Ions," *Werkstoffe und Korrosion*, Vol. 17, 1966, pp. 365–376.
- [127] Herbsleb, G., "Pitting Corrosion on Metals with Electron-Conductive Passive Layers," *Werkstoffe und Korrosion*, Vol. 17, 1966.
- [128] Razim, C., "The Influence of Case Structure of Case-Hardened Gears on Susceptibility to Pitting," *Härterei Technische Mitteilungen*, Vol. 22, No. 4, 1967, pp. 317–325.
- [129] Andreeva, Y. A., Shiganova, L. N., and Krasil'shchikov, A. I., "Pitting Corrosion of Iron," *Protection of Metals*, Vol. 4, No. 3, 1968, p. 231, translated from *Zashchita Metallov*, Vol. 4, No. 3, May 1968, pp. 255–259 (Russian).
- [130] Ashworth, V., Boden, P. J., Leach, J. S., and Nehru, A. Y., "On the Cl<sup>-</sup> Breakdown of Passive Films on Mild Steel," *Corrosion Science*, Vol. 10, 1970, p. 481.
- [131] Vetter, Von K. J. and Strehblow, H. H., "Lochfrabpotentiale und Lochfrabinhibitionspotentiale an Reinem Eisen," *Berichte Bunsen-Gesellschaft*, Vol. 74, 1970, p. 449.
- [132] Jones, R. L., Strattan, L. W., and Osgood, E. D., "The Potentiostatic Passivation of Mild Steel in 300°C NaOH Solutions," *Corrosion*, Vol. 26, No. 10, Oct. 1970, pp. 399–406.
- [133] Mueller, W. A., "Electrochemical Study of Crevice Corrosion of Steels in Solutions of Sodium Chloride and Chlorine Dioxide," *Proceedings*, National Association of Corrosive Engineers, 26th Conference, 1970, pp. 468–476.
- [134] Janik-Czachor, M., Szummer, A., and Szklarska-Smialowska, Z., "Effect of Sulphur and Manganese on Nucleation of Corrosion Pits in Iron," *British Corrosion Journal*, Vol. 7, March 1972, pp. 90–93.
- [135] Pourbaix, A., "Characteristics of Localized Corrosion of Steel in Chloride Solutions," *Corrosions*, Vol. 27, No. 11, Nov. 1971, pp. 449–454.
- [136] Schwerdtfeger, W. J., "Polarization Measurements as Related to Corrosion of Underground Steel Piling," *Journal of Research*, National Bureau of Standards, Vol. 75, No. 2, April-June 1971, pp. 107–121.
- [137] Janik-Czachor, M., "Electrochemical and Microscopic Study of Pitting Corrosion of Ultra-Pure Iron," *British Corrosion Journal*, Vol. 6, No. 2, March 1971, pp. 57–60.
- [138] Janik-Czachor, M., Wagner, G. H., and Desestret, A., "Evaluation Tests on the Pitting Resistance of Iron-Chromium Alloys," *Corrosion, Traitements, Protection, Finition*, Vol. 19, No. 5, Aug.-Sept. 1971, pp. 249–255 (French).
- [139] Bardal, E., "pH and Potential Measurements on Mild Steel and Cast Iron During Periodic Cathodic Polarization at 20 and 90°C," *Corrosion Science*, Vol. 11, No. 6, June 1971, pp. 371–382.
- [140] Spink, G. M. and Ives, M. B., "The Influence of an Air-Formed Film on the Nucleation and Morphology of Etch Pits in Pure Iron," *Journal of the Electrochemical Society*, Vol. 118, No. 6, 1971.

- [141] Prause, W. and Engell, H. J., "Electrochemical Behavior and Scaling of High-Alloy Manganese Steel," *Werstoffe und Korrosion*, Vol. 22, No. 5, May 1971, pp. 409-420 (German).
- [142] Butler, G., Stretton, P., and Beynon, J. G., "Initiation and Growth of Pits on High-Purity Iron and Its Alloys and Chromium and Copper in Neutral Chloride Solutions," *British Corrosion Journal*, Vol. 7, July 1972, pp. 168-173.
- [143] Tousek, J., "Die Kinetik der Lochfrasskorrosion von Metallen," *Corrosion Science*, Vol. 12, 1972, pp. 1-13.
- [144] Szklarska-Smialowska, Z., "Influence of Sulfide Inclusions on the Pitting Corrosion of Steels," *Corrosion*, Vol. 28, No. 10, 1972, pp. 388-396.
- [145] Freiman, L. I., Lap, Le Min, and Raskin, G. S., "Role of Local Changes in the Composition of the Solution on the Development of Pitting in Iron," *Zashchita Metallov*, Vol. 9, No. 6, 1973.
- [146] Peterson, C. W., Soltz, G. C., and Mairs, K., "A Study of an Iron Macro-Pit Induced by Seawater," *Corrosion*, Vol. 30, No. 10, 1974, pp. 366-370.
- [147] Vetter, K. J. and Strehblow, H. H., "Pitting Corrosion in an Early Stage and Its Theoretical Implications," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 240-251.
- [148] McBee, C. L. and Kruger, J., "Events Leading to the Initiation of the Pitting of Iron," *Localized Corrosion*, R. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 252-260.
- [149] Davolio, G. and Soragni, E., "Pitting and Crevice Corrosion of Carbon Steel in Inhibited Acid Solutions," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 270-277.

## Iron-Chromium-Nickel Alloys

- [150] Firestone, J. T., "Rapid Pitting Corrosion on Gas Scrubber: Salt Accumulations Cause Attack Noticeable in Only Three Weeks," *Corrosion*, Vol. 16, No. 12, Dec., 1960, pp. 9-10.
- [151] Menascé, S. and Montuelle, J., "Electrochemical Study of Pit Corrosion of Stainless Steel in Acid Media," *Comptes Rendus*, Vol. 251, 11 July 1960, pp. 235-236 (French).
- [152] Graver, D. L., "Pitting Corrosion of Stainless Steel," *Steel Horizons*, Vol. 23, 1961.
- [153] Schmeling, E. and Röschenbleck, B., "Pit Corrosion and Surface Film Formation on Lead," *Werkstoffe und Korrosion*, Vol. 12, April 1961, pp. 215-223 (German).
- [154] Brauns, E. and Schwenk, W., "The Kinetics of Pit Corrosion on Passive Chrome-Nickel Steels," *Werkstoffe und Korrosion*, Vol. 12, No. 2, Feb. 1961, pp. 73-80 (German).
- [155] Brauns, E. and Schwenk, W., "Investigation of Pitting on Chemically Resistant Austenitic Steels," *Archive Fur Das Eisenhüttenwesen*, Vol. 32, June 1961, pp. 387-396 (German).
- [156] Tagaya, M. and Inaba, T., "Local Corrosion of Stainless Steels in the Atmosphere," *Technology Reports*, Vol. 11, March 1971, pp. 129-135.
- [157] Prazak, M. and Cibál, V., "The Potentiostatic Investigation of the Effects of Some Alloying Elements on the Electrochemical and Corrosion Properties of Stainless Steels," *Corrosion Science*, Vol. 2, Jan.-March 1962, pp. 71-84.
- [158] Pourbaix, M., Klimzack-Mathieu, L., Mertens, Ch., Meunier, J., Vanleugen-Haghe, Cl., de Munck, L., Laureys, J., Neelemans, L., and Warzee, M., "Potentiokinetic and Corrosimetric Investigations of the Corrosion Behavior of Alloy Steels," *Corrosion Science*, Vol. 3, 1963, p. 239.
- [159] Defranoux, J. M., "Methodes Electrochimiques D'Etude du Comportement des Aciers Inoxydables en Milieu Chlorure," *Corrosion Science*, Vol. 3, 1963, pp. 75-78.
- [160] Uhlig, H. H. and Gilman, J. R., "Pitting of 18-8 Stainless Steel in Ferric Chloride Inhibited by Nitrates," *Corrosion*, Vol. 20, Sept. 1964, p. 289t.
- [161] Tomashov, N. D., Chernova, G. P., and Marcova, O. N., "Effect of Supplementary



- Alloying Elements on Pitting Corrosion Susceptibility of 18 Cr-14 Ni Stainless Steel," *Corrosion*, Vol. 20, May, 1964, p. 166t.
- [162] Adachi, Y., "Study of Pitting Corrosion in Stainless Steel: Part I. Effect of Surface Condition of Steel on Pitting Corrosion," *Tetsu-to-Hagane*, Vol. 50, No. 4, 1964, pp. 565-567.
- [163] Rosenfeld, I. L. and Danilow, I. S., "Pitting of Passive Stainless Steels," *Zeitschrift Fur Physikalische Chemie*, Vol. 220, No. 3/4, 1964, pp. 257-282 (German).
- [164] Herbsleb, G., "The Inhibition of Chloride Corrosion (Pitting Corrosion) of Stainless Steels by Nitrate, Sulphate, and Chromate Ions, and Methods of Determining the Pitting-Corrosion Potential," *Werkstoffe und Korrosion*, Vol. 16, Nov. 1965, pp. 929-939 (German).
- [165] Adachi, H. Y., "Effect of Heat Treatment on Stainless Steel: Study on Pitting Corrosion for Stainless Steel," *Journal of the Iron and Steel Institute of Japan*, Vol. 5, No. 2, 1965.
- [166] Steigerwald, R. F., "Effect of Cr Content on Pitting Behavior of Fe-Cr Alloys," *Corrosion*, Vol. 22, No. 4, April 1966, pp. 107-112.
- [167] Hospadoruk, V. and Petrocelli, J. V., "The Pitting Potential of Stainless Steels in Chloride Media," *Journal of the Electrochemical Society*, Vol. 113, Sept. 1966, p. 878.
- [168] Leckie, H. P. and Uhlig, H. H., "Environmental Factors Affecting the Critical Potential for Pitting in 18:8 Stainless Steel," *Journal of the Electrochemical Society*, Vol. 113, No. 12, 1966, pp. 1262-1267.
- [169] Lebet, R. and Piotrowski, A., "Resistance to Pitting of Types 202 and 321 Steels to Sulfuric Acid and Sodium Chloride Solutions," *Corrosion*, Vol. 22, Sept. 1966, p. 257.
- [170] Novakovski, V. M. and Sorokina, A. N., "Model Study of Chloride Pitting in 18:8 Stainless Steel," *Corrosion Science*, Vol. 6, 1966, pp. 227-233.
- [171] Riskin, I. V., Ionakh, B., and Turkovskaya, A. V., "Electrochemical Study of Pitting Corrosion in Chromium-Nickel Steel Kh18N10T Under Heat-Transfer Conditions," *Zashchita Metallov*, Vol. 2, No. 6, 1966, pp. 657-663 (Russian).
- [172] Schwenk, W., "Theory of Stainless Steel Pitting," *Proceedings of the Second International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1966, pp. 256-265.
- [173] Szklarska-Smialowska, Z. and Janik-Czachor, M., "Pitting Corrosion of 13 Cr-Fe Alloy in  $\text{Na}_2\text{SO}_4$  Solutions Containing Chloride Ions," *Corrosion Science*, Vol. 7, No. 2, Feb. 1967, pp. 65-72.
- [174] Strunkin, V. A., Korobkina, V. P., and Tseitlin, Kh. L., "Comparative Sensitivity to Pitting Corrosion of Austenitic and Austenitic-Ferritic Stainless Steels," *Protection of Metals*, Vol. 3, July 1967, p. 335.
- [175] Banks, W. P. and Hutchison, M., "Preventing Pitting and General Corrosion of Stainless Steel in Phosphoric Acid," *Materials Protection*, Vol. 7, No. 9, Sept. 1968, p. 37.
- [176] Horvath, J. and Uhlig, H. H., "Critical Potentials for Pitting Corrosion of Ni, Cr-Ni, Cr-Fe, and Related Steels," *Journal of the Electrochemical Society*, Vol. 115, No. 8 1968, p. 791.
- [177] Ijzermans, A. B. and Vander Krogt, A. J., "Pitting Corrosion of an Austenitic Cr-Ni Stainless Steel in  $\text{H}_2\text{SO}_4$  Containing  $\text{H}_2\text{S}$ ," *Corrosion Science*, Vol. 8, 1968, p. 679.
- [178] Janik-Czachor, M. and Szklarska-Smialowska, Z., "Pitting Corrosion of Single Crystals of the Fe-16 Cr Alloy in Solutions Containing  $\text{Cl}^-$  Ions," *Corrosion Science*, Vol. 8, 1968, pp. 215-220.
- [179] Mears, D. C. and Rothwell, G. P., "Effects of Probe Position on Potentiostatic Control During the Breakdown of Passivity," *Journal of the Electrochemical Society*, Vol. 115, Jan. 1968, pp. 36-38.
- [180] Novokshchenova, S. M., Babakov, A. A., and Knyazheva, V. M., "Effect of Silicon on the Tendency of Steel Type Kh20N20 Toward Pitting Corrosion," *Protection of Metals*, Vol. 4, No. 6, Nov.-Dec. 1968, p. 585.
- [181] Steensland, O., "Pitting Corrosion of Stainless Steels," *Corrosion Prevention and Control*, Vol. 15, No. 3, May-June, 1968, p. 25.
- [182] Defranoux, J. M., "Sur le Comportement des Aciers Inoxydables en Presence D'Eau de Mer Froide et Chaude," *Corrosion Science*, Vol. 8, 1968, pp. 245-258.

- [183] Bond, A. P. and Lizlovs, E. A., "Anodic Polarization of Austenitic Stainless Steels in Chloride Media," *Journal of the Electrochemical Society*, Vol. 115, No. 11, 1968.
- [184] Suzuki, T. and Kitamura, Y., "A Study on the Pitting Growth of Stainless Steels by an Artificial Pit Method," *Corrosion Engineering*, Vol. 17, No. 12, 1968.
- [185] Suzuki, T. and Kitamura, Y., "A Study on Prevention of Pitting Corrosion of Stainless Steel by Cathodic Current," *Corrosion Engineering*, Vol. 17, No. 4, 1968.
- [186] Wiegand, H., Speckhardt, H., and Spahn, H., "Corrosion by Pitting and Fatigue Cracking of Austenitic Chromium-Nickel Steel," *Stahl und Eisen Heft*, Vol. 14, July 1968.
- [187] Steensland, O., "Contribution to the Discussion on Pitting Corrosion of Stainless Steels," *Anti-Corrosion Methods Material*, Vol. 15, May 1968, pp. 8-11, 19.
- [188] Pouillard, E. and Chiota, J. P., "Influence of Sulfite Ions in Pitting Corrosion of Stainless Steels in Sodium Chloride Solution," *Revue de Metallurgie*, Vol. 65, No. 9, 1968, pp. 599-607 (French).
- [189] Szklarska-Smialowska, Z. and Janik-Czachor, M., "Electrochemical Investigation of the Nucleation and Propagation of Pits in Iron-Chromium Alloys," *British Corrosion Journal*, Vol. 1, May 1969, p. 138.
- [190] Wilde, B. E. and Williams, E., "On the Breakdown of Passivity on Stainless Steels in Halide Media," *Journal of the Electrochemical Society*, Vol. 116, Nov. 1969, p. 1539.
- [191] Lizlovs, E. A. and Bond, A. P., "Anodic Polarization of Some Ferritic Stainless Steels," *Journal of the Electrochemical Society*, Vol. 116, 1969, p. 574.
- [192] McCollough, I. S. and Scully, J. C., "Pitting Attack on an Austenitic Stainless Steel in  $H_2SO_4$ ," *Corrosion Science*, Vol. 9, 1969, pp. 707-709.
- [193] Böhni, H. and Uhlig, H. H., "Effect of Alloyed Re on the Critical Pitting Potentials, of 18% Cr/10% Ni Stainless Steels," *Corrosion Science*, Vol. 9, 1969, p. 353.
- [194] Stolica, N., "Pitting Corrosion on Fe-Cr and Fe-Cr-Ni Alloys," *Corrosion Science*, Vol. 9, 1969, pp. 205-216, 455.
- [195] Smialowski, M., Szklarska-Smialowska, Z., Rychcik, M., and Szummer, A., "Effect of Sulphide Inclusions in a Commercial Stainless Steel on the Nucleation of Corrosion Pits," *Corrosion Science*, Vol. 9, 1969, p. 123.
- [196] Forchhammer, P. and Engell, H. J., "Investigation into the Pitting Corrosion of Passive Austenitic Cr-Ni Steels in Neutral Chloride Solutions," *Werkstoffe und Korrosion*, Vol. 20, No. 1, 1969, p. 214.
- [197] Suzuki, T. and Kitamura, Y., "Pit Growth of Austenitic Stainless Steel and Its Prevention," *Corrosion Engineering*, Vol. 18, No. 3, 1969.
- [198] Ohtani, N., Aihara, K., and Takamoto, S., "Observation on Etch Pits on a 18:8 Stainless Steel by Motion Pictures," *Journal of the Japan Institute of Metals*, Vol. 33, No. 4, April 1969, pp. 432-436 (Japanese).
- [199] Novokovsky, V. M. and Sorokina, A. N., "Electrochemistry of Pitting and Corrosion Cracking of Stainless Steel," *Proceedings of the Third International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Vol. 1, Houston, Tex., 1969, pp. 159-166.
- [200] Tomashov, N. D., Markova, O. N., and Chernova, G. P., "The Effect of Grain Size in Austenitic Steel 1Kh18N9T on Its Susceptibility to Pitting Corrosion," *Protection of Melts*, Vol. 6, 1970, p. 16.
- [201] Ijzermans, A. B., "Pitting Corrosion and Intergranular Attack of Austenitic Cr-Ni Stainless Steels in NaSCN," *Corrosion Science*, Vol. 10, 1970, p. 607.
- [202] Szklarska-Smialowska, Z., Szummer, A., and Janik-Czachor, M., "Electron Microprobe Study of the Effect of Sulphide Inclusions on the Nucleation of Corrosion Pits in Stainless Steels," *British Corrosion Journal*, Vol. 5, 1970, p. 159.
- [203] Bianchi, G., Cerquetti, A., Mazza, F., and Torchio, S., "Chemical Etching and Pitting of Stainless Steel," *Corrosion Science*, Vol. 10, 1970, p. 19.
- [204] Hisamatsu, Y. and Yoshii, T., "Effect of Passivation Pretreatments on the Pitting Corrosion of Austenitic Stainless Steels," *Journal of the Japan Institute of Metals*, Vol. 34, No. 12, Dec. 1970, pp. 1207-1213 (Japanese).
- [205] Fujii, M. and Kumada, M., "Pitting Dissolution Behavior in the Cold Worked 18 Cr-8 Ni Stainless Steel," *Journal of the Japan Institute of Metals*, Vol. 34, No. 10, Oct. 1970, pp. 1001-1004 (Japanese).

- [206] Fujii, M. and Kumada, M., "Effects of the Oxide Film on the Pitting Corrosion in 18 Cr-8 Ni Stainless Steel," *Journal of the Japan Institute of Metals*, Vol. 34, No. 10, Oct. 1970, pp. 1005-1011 (Japanese).
- [207] Fujii, M. and Kumada, M., "Studies on a Few Environmental Factors Affecting Pitting in Stainless Steels," *Journal of the Japan Institute of Metals*, Vol. 34, No. 6, June 1970, pp. 666-671 (Japanese).
- [208] Monnier, A., Coriou, H., Pinard-Legry, G., and Plante, G., "Selective Growth of Pits on a Stainless Steel in a Chlorinated Oxidizing Medium," *Comptes Rendus, Series C*, Vol. 271, Oct. 1970, pp. 981-984 (French).
- [209] Rice, La Vern, "Behavior of Metals in Desalination Environments: Third Progress Report," *Proceedings, National Association of Corrosion Engineers*, 26th Conference, Houston, Tex., 1970, pp. 589-596.
- [210] Defranoux, J. M., "The Resistance of Stainless Steels to Localized Corrosion in Sea Water," *Corrosion Traitements, Protection, Finition*, Vol. 18, No. 6, Oct. 1970, pp. 359-367 (French).
- [211] Vrahely, E., "A Simple Method for Measuring the Pitting Tendency of Stainless Steels," *Banyaszati es Kohaszati Lopok Kohaszat*, Vol. 103, No. 1, Jan. 1970, pp. 25-27 (Hungarian).
- [212] Hisamatsu, Y. and Yoshii, T., "Effect of Passivation Pre-Corrosion Treatments on the Pitting Corrosion of Austenitic Stainless Steels," *Journal of the Japan Institute of Metals*, Vol. 34, No. 12, Dec. 1970, pp. 1207-1213 (Japanese).
- [213] Forchhammer, P. and Engell, H. J., "Investigations of the Corrosion of Stainless Steel by Potentiokinetic Measurements," *Corrosion Science*, Vol. 11, 1971, p. 49.
- [214] Jackson, R. P. and Van Rooyen, D., "Electrochemical Evaluation of Resistance of Stainless Alloys to Chloride Media," *Corrosion*, Vol. 27, No. 5, 1971, pp. 203-210.
- [215] Dockal, C. and Weber, J., "Contributions to the Methodology of Pitting Corrosion Potential Measurement on Austenitic Chromium Nickel Steels," *Werkstoffe und Korrosion*, Vol. 22, 1971, pp. 686-690.
- [216] Lizlovs, E. A. and Bond, A. P., "Anodic Polarization Behavior of 25% Chromium Ferritic Stainless Steels," *Journal of the Electrochemical Society*, Vol. 118, No. 1, 1971.
- [217] Tomashov, N. D., Chernova, G. P., and Markova, O. N., "The Mechanism of Pit Formation in Steels," *Protection of Metals*, Vol. 7, March-April 1971, p. 85.
- [218] Wilde, B. E. and Williams, E., "The Relevance of Accelerated Electrochemical Pitting Tests to the Long-Term Pitting and Crevice Corrosion Behavior of Stainless Steels in Marine Environments," *Journal of Electrochemical Society*, Vol. 118, July 1971, p. 1057.
- [219] Pessall, N. and Liu, C., "Determination of Critical Pitting Potentials of Stainless Steels in Aqueous Chloride Environments," *Electrochimica Acta*, Vol. 16, No. 11, Nov. 1971, pp. 1987-2003.
- [220] Wilde, B. E. and Williams, E., "The Use of Current/Voltage Curves for the Study of Localized Corrosion and Passivity Breakdown on Stainless Steels in Chloride Media," *Electrochimica Acta*, Vol. 16, No. 1, Nov. 1971, pp. 1971-1985.
- [221] Sato, N., Kudo, K., Sato, T., and Okamoto, G., "Initiation of Chloride-Pitting Corrosion of Austenitic Stainless Steel in Sulfate Solution," *Corrosion Engineering*, Vol. 20, No. 1, 1971.
- [222] Suzuki, T. and Kitamura, Y., "Influence of Oxidizing Agents on the Pitting Dissolution of Austenitic Stainless Steel," *Corrosion Engineering*, Vol. 20, No. 4, April 1971, pp. 165-169.
- [223] Yoshii, T. and Hisamatsu, Y., "Pit Growth in Pitting Corrosion of Austenitic Stainless Steels," *Journal of the Japan Institute of Metals*, Vol. 35, No. 2, Feb. 1971, pp. 151-155 (Japanese).
- [224] Yashii, T., Hisamatsu, Y., and Matsumura, Y., "On the Shape of Pits Developed Potentiostatically in the Surface of Austenitic Stainless Steel," *Journal of the Japan Institute of Metals*, Vol. 35, No. 6, June 1971, pp. 633-637 (Japanese).
- [225] Matsumura, Y., Hisamatsu, Y., and Yoshii, T., "Application of the Microelectrode System to a Study of Pitting Corrosion of Austenitic Stainless Steel," *Journal of the Japan Institute of Metals*, Vol. 35, No. 8, Aug. 1971, pp. 820-825 (Japanese).

- [226] Fujii, M. and Kumada, M., "Surface Film on 18 Cr-8 Ni Stainless Steel and Pitting Corrosion," *Journal of the Japan Institute of Metals*, Vol. 35, No. 7, July 1971, pp. 653-657 (Japanese).
- [227] Monnier, A., Coriou, H., Pinard-Legry, G., and Plante, G., "Electrochemical Study of the Evolution of Pits on a Stainless Steel in an Oxidizing Chloride-Containing Medium," *Cebelcor Technical Report No. RT. 190*, Centre Belge D'Etude de la Corrosion, Brussels, Belgium, Jan. 1971 (French).
- [228] Desestret, A., "Stress-Corrosion and Pitting of Stainless Steels in Chloride Solutions," *Formage Traitements Metaux*, Vol. 22, Feb. 1971, pp. 45-51 (French).
- [229] Tomashov, N. D., Chernova, G. P., and Markova, O. N., "Mechanism of the Development of Pitting in Chromium 18%-Nickel 14% and Chromium 18%-Nickel 14% Molybdenum 2.5% Steels," *Zashchita Metallov*, Vol. 7, No. 2, March-April 1971, pp. 104-111 (Russian).
- [230] Konstantinova, E. V. and Kurasanova, B. I., "Breakdown Potential of Stainless Steels in Sea Water of Various Compositions," *Zashchita Metallov*, Vol. 7, No. 4, July-Aug. 1971, pp. 446-448 (Russian).
- [231] Johnson, M. J., "Relative Critical Potentials for Pitting Corrosion of Some Stainless Steels," *Localized Corrosion, ASTM STP 516*, American Society for Testing and Materials, 1972, pp. 262-272.
- [232] Bianchi, G., Cerquetti, A., Mazza, F., and Torchio, S., "Susceptibility to Pitting of Stainless Steel Oxidized in Dry Air," *Proceedings of the 4th International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1972, pp. 614-619.
- [233] Rarey, C. R. and Aronson, A. H., "Pitting Corrosion of Sensitized Stainless Steel," *Corrosion*, Vol. 28, No. 7, 1972, pp. 255-258.
- [234] Brigham, R. J., "Pitting of Molybdenum Bearing Austenitic Stainless Steel," *Corrosion*, Vol. 28, No. 5, 1972, pp. 177-179.
- [235] Suzuki, T. and Kitamura, Y., "Critical Potential for Growth of Localized Corrosion of Stainless Steel in Chloride Media," *Corrosion*, Vol. 28, No. 1, 1972, pp. 1-6.
- [236] Yoshii, T. and Hisamatsu, Y., "On Chemical Pitting of Austenitic Stainless Steel," *Journal of the Japan Institute of Metals*, Vol. 36, No. 8, 1972 (Japanese).
- [237] Sato, N., Nakagawa, T., Judo K., and Sakashita, M., "Generation and Propagation of Chloride Pits on Rotating Stainless Steel Electrode in Acid Solutions," *Transactions*, Japan Institute of Metals, Vol. 13, No. 2, 1972 (Japanese).
- [238] Chigal, V., Koshova, I., and Kubelka, Yu., "Revealing the Role of Sulfides in the Initiation of Pitting Corrosion of Kh18N9T Type Steels," *Zashchita Metallov*, Vol. 8, No. 1, 1972 (Russian).
- [239] Freiman, L. I. and Kharitonova, L. Ya., "Potentiodynamic Determination of Pitting and Repassivation Potentials in Stainless Steel," *Zashchita Metallov*, Vol. 8, No. 6, 1972 (Russian).
- [240] Bond, A. P., "Effects of Molybdenum on the Pitting Potentials of Ferritic Stainless Steels at Various Temperatures," *Journal of the Electrochemical Society*, Vol. 120, No. 5, 1973.
- [241] Shvabe, K. and Le Dang, Ankh, "Inhibition of Pitting in Chrome-Nickel Steels," *Zashchita Metallov*, Vol. 9, No. 5, 1973 (Russian).
- [242] Shams El Din, A. M., Badran, M. M., and Khalil, S. E., "Corrosion Behavior of Manganese Containing Stainless Steels: III. Their Susceptibility Towards Pitting Corrosion," *Werkstoffe und Korrosion*, Vol. 24, 1973, pp. 290-295.
- [243] Brigham, R. J. and Tozer, E. W., "Effect of Alloying Additions on the Pitting Resistance of 18% Cr Austenitic Stainless Steel," *Corrosion*, Vol. 30, No. 5, 1974, pp. 161-166.
- [244] Eklund, G. S., "Initiation of Pitting at Sulfide Inclusions in Stainless Steels," *Journal of the Electrochemical Society*, Vol. 121, No. 4, 1974.
- [245] Seys, A. A., Brabers, M. J., and Van Haute, A. A., "Analysis of the Influence of Hydrogen Pitting Corrosion and Stress Corrosion of Austenitic Stainless Steel in Chloride Environment," *Corrosion*, Vol. 30, No. 2, 1974, pp. 47-52.
- [246] Fujii, M. and Kumada, M., "Effect of Oxide Film on the Pitting Corrosion in Austenitic Stainless Steels," *Proceedings of the Fifth International Congress of Metallic*

- Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 307–312.
- [247] Isaacs, H. S., "Surface Potential Scanning of Stainless Steel During Pitting Corrosion," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 158–167.
  - [248] Wilde, B. E., "On Pitting and Protection Potentials: Their Uses and Possible Misuse for Predicting Localized Corrosion Resistance of Stainless Alloys in Halide Media," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 342–352.
  - [249] Pickering H. W. and Frankenthal, R. P., "Mechanism of Pit and Crevice Propagation on Iron and Stainless Steels," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 261–269.
  - [250] Tomashov, N. D., Chernova, G. P., and Marcova, O. N., "Investigation of Pitting Repassivation in 18 Cr-14 Ni Steels Additionally Alloyed with V, Si, Mo, or Re," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 363–367.
  - [251] Coriou, H., Monnier, A., Legry, G. P., and Plante, G., "Electrochemical Study of Pit Growth on Stainless Steel in an Oxidizing Chloride Media," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 399–409.
  - [252] Bianchi, G., Cerquetti, A., Mazza, F., and Torchio, S., "Pitting Corrosion of Austenitic Stainless Steel and Properties of Surface Oxide Films," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 399–409.
  - [253] Szklarska-Smialowska, S., "The Pitting of Iron-Chromium-Nickel Alloys," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 312–341.
  - [254] Smialowska, S. and Czachor, M., "The Analysis of Electrochemical Methods for the Determination of Characteristic Potentials of Pitting Corrosion," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 353–362.

## Nickel

- [255] Tousek, J., "Pitting Corrosion of Nickel in the Presence of Inorganic Inhibitors," *Collection of Czechoslovak Chemical Communications*, Vol. 33 (9), 1968, pp. 2792–2798 (German).
- [256] Garz, I., Worch, H., and Schatt, W., "Untersuchungen Über Die Anodische Auflösung und Die Lochfrasskorrosion Von Nickel-Einkristall-Elektroden," *Corrosion Science*, Vol. 9, 1969, p. 71.
- [257] Schatt, W. and Worch, H., "Die Anodische Auflösung Von Nickeleinkristallen-Lochfrasskorrosion und Versetzungsatzung," *Corrosion Science*, Vol. 9, 1969, p. 869.
- [258] Hodge, F. G. and Wilde, B. E., "Effect of Chloride Ion in the Anodic Dissolution Kinetics of Chromium-Nickel Binary Alloys in Dilute Sulfuric Acid," *Corrosion*, Vol. 26, 1970, p. 146.
- [259] Garz, I. and Worch, H., "Pitting Corrosion in Nickel Single-Crystal Electrodes of Differing Purity," *Wissenschaftliche Zeitschrift der Technischen Hochschule Otto Von Guericke*, Vol. 14, No. 1, 1970, pp. 77–79 (German).
- [260] Tousek, J., "The Pitting of Nickel," NLL trans.-647-714 (9022.401); NLL-LTI-734-5581 (9022.401) (N71-35607), 1971, available from the National Lending Library, Boston, Mass. (Spanish and English).
- [261] Tokuda, T. and Ives, M. B., "Pitting Corrosion of Ni," *Corrosion Science*, Vol. 11, 1971, p. 297.
- [262] Tokuda, T. and Ives, M. B., "Aggressive Ion Accessibility and the Morphology of Corrosion Pits," *Journal of the Electrochemical Society*, Vol. 118, No. 9, 1971.

- [263] Schatt, W. and Worch, H., "Nähere Charakterisierung der bei Nischeleinkristallen zum Lochfrab Führenden Versetzungen," *Corrosion Science*, Vol. 11, 1971, p. 623.
- [264] Zamin, M. and Ives, M. B., "Effect of Chloride Ion Concentration on the Anodic Dissolution Behavior of Nickel," *Corrosion*, Vol. 29, No. 8, 1973, pp. 319-324.
- [265] Zamin, M. and Ives, M. B., "The Anodic Polarization Behavior of Nickel in Acidic Chloride Solution," *Journal of the Electrochemical Society*, Vol. 121, No. 9, 1974.

## Test Methods

- [266] Greene, N. D. and Fontana, M. G., "An Electrochemical Study of Pitting Corrosion in Stainless Steels: Part 1. Pit Growth; Part 2. Polarization Measurements," *Corrosion*, Vol. 15, Jan. 1959, pp. 48-60.
- [267] Franck, V. F., "Electrochemical Studies of Pitting Corrosion of Passive Metals," *First International Congress on Metallic Corrosion*, Butterworth, London, 1962, pp. 120-126.
- [268] Vjiive, N. and Matsumoto, K., "Study of the Pitting Mechanism by Means of Radioactive Isotopes," *Genshiryoku Kogyo*, Vol. 9, No. 7, July 1963, pp. 17-21 (Japanese).
- [269] Herman, R. S., "Radiographic-Photographic Method for Measuring Depth and Distribution of Pitting," *Corrosion*, Vol. 20, No. 11, Nov. 1964, pp. 361t-366t.
- [270] de Sterke, A., "Determination of Size of Cavities in Pitting Corrosion by Radiographic Contrast Measurement," *Materialprüfung*, Vol. 6, No. 10, Oct. 1964, pp. 343-346.
- [271] Peters, B. F., "Radiography for Corrosion Evaluation," *Materials Evaluation*, Vol. 23, No. 3, March 1965, pp. 129-135.
- [272] de Waard, C., Nicholson, J. W., and Posch, W., "Simple Method for the Potentiostatic Determination of Pitting Potential in One Single Experiment," *Werkstoffe und Korrosion*, Vol. 19, 1968, pp. 782-785.
- [273] Jones, D. A. and Greene, N. D., "Electrochemical Detection of Localized Corrosion," *Corrosion*, Vol. 25, No. 9, 1959.
- [274] Wilde, B. and Williams, E., "On the Correspondence Between Electrochemical and Chemical Accelerated Pitting Corrosion Tests," *Journal of the Electrochemical Society*, Vol. 117, No. 6, 1970, p. 775.
- [275] Bohni, H., "Pitting Corrosion of Metals and Methods for Its Investigation," *Schweizer Archive*, Vol. 36, No. 2, Feb. 1970, pp. 41-45 (German).
- [276] Board, P. W., Holland, R. V., and Steele, R. J., "Prediction of Pitting Corrosion in Tinplate from Capacitance Measurements," *British Corrosion Journal*, Vol. 7, March 1972, pp. 87-89.
- [277] Szklarska-Smialowska, Z. and Janik-Czachor, M., "The Analysis of Electrochemical Methods for the Determination of Characteristic Potentials of Pitting Corrosion," *Corrosion Science*, Vol. 11, 1971, p. 901.
- [278] Verink, E. D., Jr. and Pourbaix, M., "Use of Electrochemical Hysteresis Technique in Developing Alloys for Saline Exposures," *Corrosion*, Vol. 27, Dec. 1971, p. 495.
- [279] Verink, E. D., Jr. and Pourbaix, M., "Use of Potentiokinetic Methods at Successively Increasing and Decreasing Electrode-Potentials in Developing Alloys for Saline Exposures," Cebelcor Technical Report No. RT. 191, Centre Belge d'Etude de la Corrosion, Bruxelles, Belgium, June 1971.
- [280] Freiman, L. I., Kharitonova, L. Ya, and Kolotyarkin, Ya. M., "Stimulation of Pitting Corrosion by Ultra-Violet Light," *Zashchita Metallov*, Vol. 7, No. 5, Sept.-Oct. 1971, pp. 594-597 (Russian).
- [281] Bond, A. P., "Pitting Corrosion: A Review of Recent Advances in Testing Methods and Interpretation," *Localized Corrosion—Cause of Metal Failure*, ASTM STP 516, American Society for Testing and Materials, 1972, pp. 250-261.
- [282] Seys, A. A. and Van Haute, A. A., "Pitting Potential Measurements by Means of the Static Potential Band Method," *Proceedings of Fifth International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1975.

- [283] Suzuki, T. and Kitamura, Y., "Testing Method for Localized Corrosion of Stainless Steel Considering the Corrosion Potential in Its Environment," *Proceedings of Fifth International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1975.
- [284] Seys, A. A. and Van Haute, A. A., "Pitting Potential Measurements by Means of the Static Potential Band Method," *Corrosion*, Vol. 29, No. 8, 1973, pp. 329-334.
- [285] Smialowska, S. and Czanchor, M., "The Analysis of Electrochemical Methods for the Determination of Characteristic Potentials of Pitting Corrosion," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 353-363.
- [286] Franz, F. and Novak, P., "Effect of Rotation on the Pitting Corrosion of Aluminum Electrodes," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 576-579.

## Theoretical

- [287] Stern, M., "The Relation Between Pitting Corrosion and the Ferrous-Ferric Oxidation-Reduction Kinetics on Passive Surfaces," *Journal of the Electrochemical Society*, Vol. 104, Oct. 1957, p. 600.
- [288] Eldredge, G. G., "Analysis of Corrosion Pitting by Extreme-Value Statistics and Its Application to Oil Well Tubing Caliper Surveys," *Corrosion*, Vol. 13, No. 1, Jan. 1957, pp. 51t-60t.
- [289] Greene, N. D. and Fotana, M. G., "A Critical Analysis of Pitting Corrosion," *Corrosion*, Vol. 15, 1959, p. 41.
- [290] Edeleanu, C., "The Propagation of Corrosion Pits in Metals," *Journal of the Institute of Metals*, Vol. 89, No. 3, Nov. 1960, pp. 90-94.
- [291] Robinson, F. P. A., "Pitting Corrosion: Cause, Effect, Detection, and Prevention," *Corrosion Technology*, Vol. 7, No. 8, Aug. 1960, pp. 237-239, 266.
- [292] Schafer, G. J., Gabriel, J. R., and Foster, P. K., "On the Role of the Oxygen Concentration Cell in Crevice Corrosion and Pitting," *Journal of the Electrochemical Society*, Vol. 107, No. 12, Dec. 1960, pp. 1002-1004.
- [293] Tarasova, L. N., Romanov, V. V., and Kudinova, N. I., "Study of the Pitting Corrosion of Metals by Means of Models," *Journal of Applied Chemistry*, Vol. 33, Oct. 1960, pp. 2285-2290.
- [294] Kohle, H., "The Fundamentals of Corrosion," *Technische Überwachung*, Vol. 4, No. 5, May 1963, pp. 161-165 (German).
- [295] La Que, F. L., "What We Do and Don't Know About Corrosion," *Materials in Design Engineering*, Vol. 57, No. 1, Jan. 1963, p. 99.
- [296] Schenk, W., "Discussion of the Cause and Stability of Pitting Corrosion in Relation to the 'All or Nothing' Principle of Passivity and a Kinetic Model," *Corrosion Science*, Vol. 3, No. 2, June 1963, pp. 107-121.
- [297] Kolotyarkin, Ya. M., "Pitting Corrosion of Metals," *Proceedings of the Second International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1966, pp. 23-32, and *Corrosion*, Vol. 19, No. 8, Aug. 1963, pp. 261t-268t.
- [298] Schwenk, W., "Theory of Stainless Steel Pitting," *Corrosion*, Vol. 12, No. 4, April 1964, pp. 129t-137t.
- [299] Hoar, T. P., Mears, D. C., and Rothwell, G. P., "The Relationship Between Anodic Passivity, Brightening, and Pitting," *Corrosion Science*, Vol. 5, 1965, pp. 279-289.
- [300] Greene, N. D. and Judd, G., "Relation Between Anodic Dissolution and Resistance to Pitting Corrosion," *Corrosion*, Vol. 21, 1965, p. 15.
- [301] Vetter, K. J., "A Thermodynamic Theory of Pitting Corrosion," *Berichte der Bunsengesellschaft für Physikalische Chemie*, Vol. 8, 1965, pp. 683-688.
- [302] France, W. D., Jr., "Controlled Potential Investigations of Localized Corrosion Phenomena," Ph.D. thesis, University Microfilms, No. 67-4167.
- [303] Hubner, W., "Pitting Corrosion of Passivated Metals," *Svensk Kemisk Tidskrift*, Vol. 78, No. 6/7, 1966, pp. 321-355 (Swedish).

- [304] Finley, H. F., "An Extreme-Value Statistical Analysis of Maximum Pit Depths and Time to First Perforation," *Corrosion*, Vol. 23, No. 4, 1967.
- [305] Kaesche, H., "Mechanism of Pitting Corrosion," *Corrosion Traitements Protection Finition*, Vol. 17, No. 8, 1969.
- [306] Prazhak, M., Toushek, Ya., and Spanilyi, V., "Role of Anion Absorption in Pitting Corrosion and Stress Corrosion Cracking of Metals," *Protection of Metals*, Vol. 5, 1969, p. 329.
- [307] Rosenfeld, I. L. and Danilov, I. S., "Electrochemical Aspects of Pitting Corrosion," *Proceedings of the Third International Congress on Metallic Corrosion*, Vol. 1, National Association of Corrosion Engineers, Houston, Tex., 1966, pp. 139-151.
- [308] Swann, P. R., "Mechanism of Corrosion Tunneling with Special Reference to  $\text{Cu}_3\text{Au}$ ," *Corrosion*, Vol. 25, No. 4, 1969, pp. 147-150.
- [309] Brown, B. F., "Concept of the Occluded Corrosion Cell," *Corrosion*, Vol. 26, 1970, p. 249.
- [310] Leckie, H. P., "A Contribution to the Applicability of Critical Pitting Potentials," *Journal of the Electrochemical Society*, Vol. 117, 1970, pp. 1152.
- [311] Pourbaix, M., "Significance of Protection Potential in Pitting and Intergranular Corrosion," *Corrosion*, Vol. 26, No. 10, Oct. 1970, p. 431-438.
- [312] Pourbaix, M., "Metallic Corrosion," Technical Report No. RT-175, Belge D'Etude de la Corrosion, Brussels, Belgium, June 1970.
- [313] Vermilyea, J., "Concerning the Critical Pitting Potential," *Journal of the Electrochemical Society*, Vol. 118, No. 4, 1971, p. 529.
- [314] Szklarska-Smialowska, Z., "Review of Literature on Pitting Corrosion Published Since 1960," *Corrosion*, Vol. 27, No. 6, 1971, pp. 223-233.
- [315] Bosch, R. M. and Defranco, J., "The Problem of Initiation and Growth in Pitting Corrosion," Cebelcor Technical Report No. RT-196, Centre Belge D'Etude de la Corrosion, Brussels, Belgium, June 1971.
- [316] Tousek, J., "The Question of the Pitting Corrosion Mechanism," *Werkstoffe und Korrosion*, Vol. 23, 1972, pp. 109-112.
- [317] Pourbaix, M., "Significance of Protection Potential in Pitting, Intergranular Corrosion, and Stress-Corrosion Cracking," *Journal of Less-Common Metals*, Vol. 28, 1972, p. 51.
- [318] Frankenthal, R. P. and Pickering, H. W., "On the Mechanism of Localized Corrosion of Iron and Stainless Steel: Part I. Electrochemical Studies; Part II. Morphological Studies," *Journal of the Electrochemical Society*, Vol. 119, No. 10, Oct. 1972, p. 1297 and 1304.
- [319] Ciolac, S., "Corrosion Pitting in Metals: Part I. Interdependence Pitting-Passivity, Theory and Development Stages of the Pitting Process; Part II. Methods of Investigation and Protection," *Studii Si Cercetari De Chimie*, Vol. 21, 1973, No. 5, pp. 597-610, No. 6, pp. 669-684.
- [320] Uhlig, H. H., "Distinguishing Characteristics of Pitting and Crevice Corrosion," *Materials Protection and Performance*, Vol. 12, Feb. 1973, pp. 42-44.
- [321] Hisamatsu, Y. and Ichikawa, K., "Etch-Pitting as a Faceting Dissolution Process," *Corrosion Engineering*, Vol. 23, No. 3, 1974, and *Proceedings of the Fifth International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 275-280.
- [322] Rosenfeld, I. L., "Local Corrosion Process," *Proceedings of the Fifth International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 53-73.
- [323] Ives, M. B., "Etch Pitting—Theory and Observation," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 78-103.
- [324] Vetter, K. J. and Strehblow, H. H., "Pitting Corrosion in an Early Stage and Its Theoretical Implications," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 240-251.
- [325] Hoar, T. P., "Bright Pitting," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 112-116.



## Titanium

- [326] Pigott, R. A. and Schreir, L. L., "Micropitting of Titanium During Anodic Oxidation in Formic Acid," *Nature*, Vol. 189, 21 Jan. 1961, pp. 216-217.
- [327] Fischer, W. R., "Study of Pitting Corrosion, Especially on Titanium: Part I. Corrosion Investigations; Part II. Electrochemical Studies," *Technische Mitteilungen Krupp, Ausgabe A. Forschungsberichte*, Vol. 22, No. 3 and 4, 1964, pp. 65-82, 125-142.
- [328] Dugdale, I. and Cotton, J. B., "The Anodic Polarization of Titanium in Halide Solutions," *Corrosion Science*, Vol. 4, 1964, p. 397.
- [329] Posey, F. A. and Bohlmann, E. G., "Pitting of Titanium Alloys in Saline Waters," *Desalination*, Vol. 3, 1967, p. 269.
- [330] Kolotyркин, Ya. N. and Strunkin, V. A., "Pitting of Titanium on Application of an Alternating Current," *Zashchita Metallov*, Vol. 6, No. 5, 1970.
- [331] Mansfeld, F., "The Effect of Water on Passivity and Pitting of Titanium in Solutions of Methanol and Hydrogen Chloride," *Journal of the Electrochemical Society*, Vol. 118, Sept. 1971, p. 1412.
- [332] Cotton, J. B., "Pitting Corrosion of Titanium," *British Corrosion Journal*, Vol. 7, March 1972, pp. 59-69.
- [333] Beck, T. R., "Pitting of Titanium: Part I. Titanium-Foil Experiments; Part II. One-Dimensional Pit Experiments," *Journal of the Electrochemical Society*, Vol. 120, No. 10, 1973.
- [334] Beck, T. R., "A Review: Pitting Attack of Titanium Alloys," *Localized Corrosion*, R. W. Staehle, B. F. Brown, J. Kruger, and A. Agrawal, Eds., National Association of Corrosion Engineers, Houston, Tex., 1974, pp. 644-650.

## Tungsten

- [335] Maloof, S. R., "Dislocation Etch Pitting Studies on Tungsten Single Crystals Under Potentiostatic Conditions," *Corrosion*, Vol. 24, No. 9, Sept. 1968, pp. 283-290.
- [336] Stolica, N. D., "Pitting of Tungsten in LiCl-Methanol-H<sub>2</sub>O Solutions," *Proceedings of the Fifth International Congress on Metallic Corrosion*, National Association of Corrosion Engineers, Houston, Tex., 1975.

## Zinc

- [337] Kaesche, H., "Investigation of Pitting of Galvanized Steel Tubes and the Effect of Element Formation on Copper Precipitation," *VDI-Berichte*, No. 72, 1963, pp. 64-71 (German).
- [338] Kamel, R., "Natural Pitting on Cleaved Surfaces of Zinc Crystals," *Acta Metallurgica*, Vol. 11, No. 6, June 1963, pp. 629-630.
- [339] Davies, D. E. and Lotlikar, M. M., "Passivation and Pitting Characteristics of Zinc," *British Corrosion Journal*, Vol. 1, Jan. 1966, p. 149.
- [340] Lotlikar, M. M. and Davies, D. E., "The Potentiostatic Investigation of the Passivity and Pitting Characteristics of High-Purity Zinc," *Proceedings of the Third International Congress on Metallic Corrosion*, Vol. 1, National Association of Corrosion Engineers, Houston, Tex., 1969, pp. 167-177.
- [341] Krug, H. and Borchers, H., "Pitting Corrosion Under Hydrogen Bubbles Adherent to the Surface of Zinc," *Werkstoffe und Korrosion*, Vol. 22, No. 4, 1971, pp. 309-311 (German).

## Zirconium

- [342] Tomiki, T. and Ogawa, S., "Electro-Microscopic Observation on Chemically Etched Surfaces of Polycrystalline Zirconium," *Journal of Japan Institute of Metals*, Vol. 24, 1960, pp. 522-526.

- [343] Kolotyrtkin, Ya. M. and Gil'man, V. A., "Effect of Chloride Ions on the Electrochemical and Corrosion Behavior of Zirconium," *Doklady Akademii Nauk S.S.S.R.*, Vol. 137, 21 March 1961, pp. 642-645 (Russian).
- [344] Gil'man, V. A. and Kolotyrtkin, Ya. M., "The Mechanism of the Corrosion Pitting of Zirconium in Halide Solutions," *Doklady Akademii Nauk S.S.S.R.*, Vol. 143, 21 March 1962, pp. 640-642 (Russian).
- [345] Stoops, D. J., Carver, M. D., and Kato, H., "Corrosion of Zirconium in Cupric and Ferric Chlorides," Non-Atomic Energy Commission Publication 5945, 1962, available from U.S. Department of the Interior, Bureau of Mines, Washington, D.C.