

## REFERENCES

1. Boor, J. Ziegler-Natta Catalyst and Polymerization. U.S.A.: Academic Press (1979).
2. Ziegler, K. Belg. Pat. 533362 (1953).
3. Zielger, K. Holzka p, E. Briel, H. and Martin H. Angew. Chem. 67 (1955):541.
4. Motecatini-Edison Co. Br. Pat. 1286807 (1968).
5. Mitsui Petrochemical Ind. Ger. Pat. 904510 (1960).
6. Chien, J.W. Hu, Y. J. Polym. Sci. Part A. 25(1987):2847.
7. Sacchi, M.C. Tritto, I. and Locatelli P. Eur. Polym. J. 24(1988):137.
8. Kashiwa, N. Yoshitake J. and Toyota A. Polym. Bull. 19(1988):333.
9. Sugamo, T. Yamoto Y. and Fujita T. Studies in Surface Science and Catalysis. 56(1989):201-209.
10. Terano, M. Kataoka K.M. and Keii T. Makromol. Chem. 188(1989):1477.
11. Sepalla, J.V. Harkonen, M. Makromol. Chem. 190(1989):2535.
12. Kokta, B.V. and Raj, R.G. Polym. Bull. 22(1989):103.
13. Miyatake, T. Mizunuma, K. and Kakugo, M. Studies in Surface Science and Catalysis. 56(1989)L210-215.
14. Natta, G. J. Polym. Sci. 16(1955):145.
15. Natta, G. Pino, P. and Mazzanti G. Ital. Pat. 526101 (1954).
16. Vandenburg, E.J. US. Pat. 3051590 (1962).
17. Ettore, B. and Lucino L. Ital. Pat. 557013 (1975).
18. Natta, G. J. Polym. Sci. 34(1959):21.
19. Tepenitsyna, Y.P. Faberou, M.I. Kutin, A.M. and Leuskaia, G.S. J. Polym. Sci. 1(1960):432.
20. Bier, G. Gumboldt, A. and Lehmann, G. Plastics Inst. 28(1960):98.
21. Bier, G. Gumboldt, A. and Schleitzer G. Makromol. Chem. 58(1962)1.
22. Natta, G. Chem. Ind. 41(1959):519.
23. Davis, T.E. and Tobias, R.L. J. Polym. Sci. 50(1961):227.
24. Hirooka, M. Kanda, H. and Nakaguchi K. J. Polym. Sci. Part B(1963):701.
25. Wesslau, H. Makromol. Chem. 26(1958):102.

26. Arlman, E.J. de Jung, J.R. Beintema, J. and Van Reijen, L.L. Rec. Trav. Chim. 80(1961):1129.
27. Boor, Jr. J. J. Polym. Sci. Part C(1963):237.
28. Schnecko, H. Reinmoller, M. Weiranch, K. Bednjagin, V. and Kern, K. Makromol. Chem. 73(1964):154.
29. Orzechowski, A. and Mc. Kenzic, J.C. Fr. Pat. 1349864 (1964).
30. Luft, N.W. Hulme, C. and Wadden, D.Y. US. Pat. 2981725 (1967).
31. May, A.P. Galli, E. Susa, G. Drusco, D. and Giachetti, E. Br. Pat. 1286867 (1969).
32. Haward, R.W. Roper, A.N. and Fletcher, K.L. Polymer. 14(1973):15.
33. Gardner, K. Parsons, I.W. and Harward, R.N. J. Polym. Sci. 16(1978):1683.
34. Giannini, U. Cassata, A. Longi, P. and Mazzochi, R. Belg. Pat. 785334 (1972).
35. Floyd, S. Mann, G.E. and Ray, W.H. Catalytic Polymerization of Olefins. Tokyo, pp.339-367(1986).
36. Hogan, J.P. and Banks, R.L. US. Pat. 2825721 (1954).
37. Bryce-Smith, D. Ger. Pat. 955807 (1959).
38. Kaminski, C.W. Synthesis and Properties of Diorganomagnesium Compound. Ph.D. Thesis, University of Tennessee (1967).
39. Doi, Y. Soga, K. Murata, M. Suzuki, E. Ono, Y. and Keii, T. Polym. Comm. 24(1983):244.
40. Yoon, J.S. Jeung, Y.T. Park, J.W. Kim, J.Y. and Lee, D.H. Polym. Bull. 22(1989):233-238.
41. Soya, K. Chen, S.I. and Ohnishi R. Polym. Bull. 8(1982):473-478.
42. Kokta, B.V. and Raj, R.G. Polym. Bull. 23(1990):513.
43. Kokta, B.V. and Raj, R.G. Polym. Bull. 23(1990):519.
44. Sacchi, M.C. Shan, C. Locatelli, P. and Tritto, J. Macromolecules 23(1990):383.
45. Coutinho, F.M. and Santo Maria, L.C. Polym. Bull. 23(1991):535.
46. Yang, C.B. and Hsu, C.C. Polym. Bull. 30(1993):529.
47. Lim, S.Y. Choung, S.J. and Kyung, H. Korean J. of Chem. Eng. 13(1996):21.
48. Guyot, A. Spitz, R. Bobichon, C. Makromol. Chem. 190(1989):707-716.

49. Kokta et al. US. Pat. 4952649 (1990).
50. Patat, P. and Sinn, H. Angew. Chem. 70(1958):496.
51. Helden, R.V. Braendlin, H.P. Bickel, A.F. and Kooyman, E.C. Tetrahedron. Lett. 12(1959):24.
52. Erich, F. and Mark, H. J. Colloid. Sci. 32(1958):457.
53. Cossee, P. Tetrahedron. Lett. 17(1960):12.
54. De Brujin, P.H. Chem. Weekbl. 56(1960):161.
55. Rodriguez, L.A. and Van Looy, H.M. J. Polym. Sci. 4(1996):1971.
56. Cossee, P. Proc. Int. Congr. Coord. Chem. 6(1961):241.
57. Cossee, P. J. Cat. 3(1964):80.
58. Cossee, P. Ros, P. and Schachtschneider, J.H. Proc. Int. Congr. Catal. 4(1971):14.
59. Natta, G. and Mazzanti, G. Tetrahedron. 8(1960):86.
60. Patat, P. and Sinn, H. Angew. Chem. 70(1958):496.
61. Nenitzescu, C.D. Huch, C. and Huch, A. Angew. Chem. 68(1956):438.
62. Duck, E.W. J. Polym. Sci. 34(1959):86.
63. Van Helden, R. Braendlin, H.P. Bickel, A.F. and Kooyman, E.C. Tetrahedron Lett. 12(1959):24.
64. Gilchrist, A. J. Polym. Sci. 34(1959):86.
65. Danusso, F. and Sianesi, D. Chem. Ind. 44(1962):611.
66. Henrici, G. and Olive, S. J. Organomet. Chem. 16(1962):339.
67. Miyazawa, T. and Ideguchi, T. J. Polym. Sci. 1(1963):359.
68. Zambelli, A. Pasquon, I. Marinangeli, A. Lanzi, G. and Mognaschi, E.R. Chem. Ind. 46(1964):1464.
69. Coover, H.W. J. Polym. Sci. 4(1963):1511.
70. Luisi, P.L. and Mazo, R.M. J. Polym. Sci. 7(1969):775.
71. Jeffery, E.A. Organoaluminum Compounds. Amsterdam (1972).
72. Barney, A.L. and Morgan, B.L. US. Pat. 3410303 (1968).
73. Mathews, D.N. and Kelly, R.J. US. Pat 3405107 (1968).
74. Dost, N. Wedden, D.Y. and Strauss, H.E. Br. Pat. 851113 (1960).
75. Caunt, A.D. J. Polym. Sci. 4(1963):49.

76. Vinogradov, P.A. Dolgoplosk, B.A. Zgonnik, V.N. Parengo, O.P. Tinyakova, E.J. and Torov, B.S. Dokl. Akad. Nauk. 163(1965):1147.
77. Coates, G.E. Organometallic Compounds. Wiley, New York, pp.126-143(1960).
78. Christman, D.L. J. Polym. Sci. 10(1972):471.
79. Minsker, K.S. and Bykhavskii, V.K. Vysokomol. Soedin. 2(1960):535.
80. Razuvaev, G.A. Minsker, K.S. and Chernovskaya, R.P. Dokl. Akad. Nauk. 147(1962):636.
81. Chernovskaya, R.P. Minsker, K.S. and Razuvaev, S.A. Vysokomol. Soedin. 6(1964):1656.
82. Razuvaev, G.A. Minsker, K.S. Fedoseeva, G.T. and Bykrovskii, V.K. Polym. Sci. USSR (Engl. Transl.). 2(1961):299.
83. Weissermel, K. Cherdon, H. Berthod, J. Diedrich, B. Keil, K.D. Rust, K. Strametz, H. and Toth, T. J. Polym. Sci. 51(1975):187.
84. Chien, J.C.W. and Hsieh, J.T.T. J. Polym. Sci. 14(1976):1915.
85. Zakharov, V.A. and Yermakov, Y.J. Catal. Rev. Sci. Eng. 19(1979):63.
86. Sharp, M.J. and Hockery, J.A. J. Catal. 18(1970):52.
87. Eley, D.D. Keir, D.A. and Rudham, R. J. Chem. Soc. 1(1976):1685.
88. Simon, A. and Grobler, R. J. Polym. Sci. 18(1980):1311.
89. Soga, K. Ohnishi, R. and Doi, Y. Polym. Bull. 9(1983):299.
90. Karol, F.J. International Symposium on Transition Metal Catalyzed Polymerization. Akron (1986).
91. Bohm, L.L. Polymer. 19(1978):533.
92. Br. Pat. 1299862 (1970).
93. Belg. Pat. 776301 (1970).
94. Radenkov, P. Petrova, T. Petrov, L. and Jelyazkova D. Eur. Polym. J. 11(1976):313.
95. Radenkov, P. Petrov, L. Karaenev, S. and Kyrcheva, R. Eur. Polym. J. 12(1976):427.
96. Petrov, L. Kyrcheva, R. Radenkov, P. and Dobрева, D. Polymer. 19(1978):567.
97. Petrov, L. Radenkov, P. and Kyrcheva, R. Polymer. 19(1978):570.

98. Kinkelin, E. Fink, G. and Bogdanov, B. Makromol. Chem. 7(1986):85.
99. Brunj, G. and Ferrari, A. Naz. Lincei. Cl. Sci. Fis. Mat. Nat. Rend. 2(1975):457.
100. Giannini, U. Makromol. Chem. Suppl. 5(1981):216.
101. Allegra, G. and Bassi, J.W. Gazz. Chim. Ital. 110(1980):437.
102. Gerbasi, R. Marigo, A. Martorana, A. Zannetti, R. Guidetti, G.P. and Baruzzi, G. Eur. Polym. J. 20(1984):967.
103. Goodal, B.L. MMI Press Symp. Ser. 4(1983):355.
104. Keszler, B. Bodor, G. and Simon, A. Polymer. 21(1980):1037.
105. Chien, J.C.W. Wu, J.C. and Kuo, C.J. J. Polym. Sci. 21(1983):725.
106. Kashiwa, N. MMI Press Symp. Ser. 4(1983):335.
107. Chien, J.C.W. Wu, J.C. and Kuo, C.J. J. Polym. Sci. 20(1982):2019.
108. Barbe, P.C. Noristi, L. Baruzzi, G. and Marchetti, E. Makromol. Chem. 4(1983):249.
109. Baulin, A.A. Novikova, Y.I. Mal'kova, G.Y. Maksinov, V.L. Vyshinskaya, L.I. and Ivanchev, S.S. Polym. Sci. USSR (Engl. Transl.). 22(1980):205.
110. Chien, J.C.W. Wu, J.C. and Kuo, C.J. J. Polym. Sci. 20(1982):2461.
111. Tait, P.J.T. History of Polyolefins. 6(1986):213.
112. Lenz, R.W. Organic Chemistry of Synthetic High Polymer. John Wiley & Sons, New York (1967).
113. Shell. Eur. Pat. 29623 (1979).
114. Sakdejyont, Y. Effect of External Electron Donor in Supported Ziegler-Natta Catalyst on Isotacticity of Polypropylene. M. Eng. Thesis, Chulalongkorn University (1995).
115. Iiskola, E. Sormnem, P. Garoff, T. Vahasarja, E. Pakkanen, T.T. Dakkanen, T.A. Transition Metals and Organometallic as Catalyst for Olefin Polymerization. Springer Verlag, Berlin (1988).
116. Harkonen, M. Seppala, J.V. Chuja, R. and Kogure, Y. Polymer. 36(1995):1499-1505.
117. Kaisersberger, E. Knappe, S. and Mohler, H. NETZSCH Annual for Science and Industry. Vol.2(1993).

118. Tait, P.J. Corradini, P. Busico, V. and Guerra, G. Comprehensive Polymer science Vol 4, Pergamon Press(1989).
119. Natta, G. Makromol. Chem. 16(1955) :213.
120. Russel, C.A. J. Appl. Polym. Sci. 4(1960): 219-224.
121. Hu, Y.L. Chien, J. C.W. J. Polym. Sci 26(1988):2003-2018.
122. Nicolet FT-IR Impact 400 OMNIC, Vol. 1.2a Library(1992).
123. Morrison, R.T. Boyd, N.R. Organic Chemistry 6<sup>th</sup> edition, Prentice Hall International, Inc.(1992).
124. Park, H.M. and Lee, W.Y. Eur. Polym. J. 28(1992):1417-1422.
125. Sacchi, M.C. Forlini, F. Tritto, I. Locatelli, P. Morini, G. Noristi, L. and Albizzati, E. Macromolecules. 29(1996):3341-3345.



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