

## 10 Literaturverzeichnis

1. 3M. Filtek™ Z250 Produkt-Profil. Herstellerinformation, 3M Medica GmbH, 1998.
2. 3M. Filtek™ Supreme XT Produkt-Profil. Herstellerinformation, 3M Medica GmbH, 2005.
3. Adams SH, Zander HA. Functional tooth contacts in lateral and in centric occlusion. *J Am Dent Assoc* 1964;69:465-73.
4. Agostini FG, Kaaden C, Powers JM. Bond strength of self-etching primers to enamel and dentin of primary teeth. *Pediatr Dent* 2001;23:481-486.
5. Anderson DJ. Measurement of stress in mastication. I. *J Dent Res* 1956a;35:664-70.
6. Anderson DJ. Measurement of stress in mastication. II. *J Dent Res* 1956b;35:671-73.
7. Asmussen E. Composite restorative resins. Composition versus wall-to-wall polymerisation contraction. *Acta Odontol Scand* 1975;33:337-44.
8. Asmussen E. Marginal adaptation of restorative resins in acid etched cavities. *Acta Odontol Scand* 1976;35:125-34.
9. Asmussen E. Restorative resins: Hardness and strength vs. quantity of remaining double bonds. *Scand J Dent Res* 1982;90:484-9.
10. Asmussen E, Munksgaard EC. Adhesion of restorative resins to dentinal tissues. In: Vanherle G, Smith DC (Eds), *Posterior composite resin dental restorative materials*, St.Paul, Minnesota: Peter Szulc Publication Co., 1985:217-29.
11. Asmussen E, Uno S. Adhesion of restorative resins to dentin: chemical and physicochemical aspects. *Oper Dent* 1992;17(Suppl 5):68-74.
12. Asmussen E, Peutzfeldt A. Short- and long-term bonding efficacy of a self-etching, one-step adhesive. *J Adhes Dent* 2003;5:41-5.
13. Baier RE. Principles of adhesion. *Oper Dent* 1992;17:1-9.
14. Barkmeier WW, Shaffer SE, Gwinnett AJ. Effects of 15 vs 60 second enamel acid conditioning on adhesion and morphology. *Oper Dent* 1986;11:111-6.
15. Barkmeier WW, Cooley RL. Resin adhesive systems: in vitro evaluation of dentin bond strengths and marginal microleakage. *J Esthet Dent* 1989;1:67-72.
16. Barnes DM, Blank LW, Thompson VP, Holston AM, Gingell JC. A 5- and 8-year clinical evaluation of a posterior composite resin. *Quintessence Int* 1991;22:143-51.
17. Bassiouny MA, Grant AA. A visible light-cured composite restorative. Clinical open assessment. *Br Dent J* 1978;145:327-30.
18. Bates JF, Stafford GD, Harrison A. Masticatory function - a review of the literature. II. Speed of movement of the mandible, rate of chewing and forces developed in chewing. *J Oral Rehabil* 1975;3:349-61.

19. Bausch JR, Lange K, Davidson CL, Peters A, De Gee AJ. Clinical significance of polymerization shrinkage of composite resins. *J Prosthet Dent* 1982;48:59-67.
20. Beech DR, Jalaly T. Bonding of polymers to enamel: influence of deposits formed during etching, etching time and period of water immersion. *J Dent Res* 1980;59:1156-62.
21. Bergenholtz G, Cox CF, Loesche WJ, Syed SA. Bacterial leakage around dental restorations: its effect on the dental pulp. *J Oral Pathol* 1982;11:439-50.
22. Beznos C. Microleakage at the cervical margin of composite Class II cavities with different restorative techniques. *Oper Dent* 2001;26:60-9.
23. Bichacho N. The centripetal build-up for composite resin posterior restorations. *Pract Periodontics Aesthet Dent* 1994;3:17-23.
24. Blunck U. Der Einfluss von Dentinhaftmitteln auf die marginale Adaptation von Kompositfüllungsrändern im Dentin in vitro. Berlin, FU: Zahnmed Diss 1987.
25. Blunck U. Rasterelektronenmikroskopische Beurteilung von Kompositfüllungsrändern im Dentin in vitro. *Dtsch Zahnärztl Z* 1988;43:939-43.
26. Blunck U, Roulet J-F. Einfluss der Wasserlagerung auf die Wirksamkeit von Dentinadhäsiven. *Dtsch Zahnärztl Z* 1997;52:806-8.
27. Blunck U, Haller B. Klassifikation von Bondingsystemen. *Quintessence* 1999;50:1021-33.
28. Blunck U, Roulet JF. Effect of one-year water-storage on the effectiveness of dentin adhesives in Class V composite resin restorations. *J Dent Res* 2002;81(Spec Iss B):139(Abstr no 0946).
29. Blunck U. Adhäsivsysteme-Übersicht und Hinweise zur Anwendung. *Niedersächs Zahnärztebl* 2006;6:15-19.
30. Bouillaguet S, Gysi P, Wataha JC, Ciucchi B, Cattani M, Godin C, Meyer JM. Bond strength of composite to dentin using conventional, one-step, and self-etching adhesive systems. *J Dent* 2001;29:55-61.
31. Bouschlicher MJ, Vargas MA, Boyer DB. Effect of composite type, light intensity, configuration factor and laser polymerization on polymerization contraction forces. *Am J Dent* 1997;10:88-96.
32. Bowen RL. Dental filling material comprising vinyl silane treated fused silica and a binder consisting of the reaction product of bisphenol and glycidyl acrylate. 1962;US Patent Off No 3 (066):112.
33. Bowen RL. Properties of a silica-reinforced polymer for dental restorations. *J Am Dent Assoc* 1963;66:57-64.
34. Bowen RL, Rapson JE, Dickson G. Hardening shrinkage and hygroscopic expansion of composite resins. *J Dent Res* 1982;61:654-8.
35. Bowen RL, Nemoto K, Rapson JE. Adhesive bonding of various materials to hard tissues: forces developing in composite materials during hardening. *J Am Dent Assoc* 1983;106:475-7.
36. Boyde A. Enamel structure and cavity margins. *Oper Dent* 1976;1:13-28.

37. Brackett MG, Brackett WW, Haisch LD. Microleakage of Class V resin composites placed using self-etching resins: effect of prior enamel etching. *Quintessence Int* 2006a;37:109-13.
38. Brackett WW, Ito S, Nishitani Y, Haisch LD, Pashley DH. The microtensile bond strength of self-etching adhesives to ground enamel. *Oper Dent* 2006b;31:332-7.
39. Braem M, Finger W, Van Doren VE, Lambrechts P, Vanherle M. Mechanical properties and filler fraction of dental composites. *Dent Mater* 1989;5:346-9.
40. Brännström M, Nordenvall KJ. The effect of acid etching on enamel, dentin, and the inner surface of the resin restoration: a scanning electron microscopic investigation. *J Dent Res* 1977;56:917-23.
41. Brännström M, Nordenvall KJ. Bacterial penetration, pulpal reaction and the inner surface of Concise enamel bond. Composite fillings in etched and unetched cavities. *J Dent Res* 1978;57:3-10.
42. Brännström M. Smear layer: pathological and treatment considerations. *Oper Dent* 1984;9:35-42.
43. Bullard RH, Leinfelder KF, Russell CM. Effect of coefficient of thermal expansion on microleakage. *J Am Dent Assoc* 1988;116:871-4.
44. Buonocore MG. A simple method of increasing the adhesion of acrylic filling materials to enamel surfaces. *J Dent Res* 1955;34:849-53.
45. Buonocore MG, Wileman W, Brudevold FA. A report on a resin composite capable of bonding to human dentin surfaces. *J Dent Res* 1956;35:846-51.
46. Buonocore MG. Principles of adhesiv retention and adhesiv restorative materials. *J Am Dent Assoc* 1963;67:382-91.
47. Buonocore MG, Matsui A, Gwinnett AJ. Penetration of dental resin materials into enamel surfaces with reference to bonding. *Arch Oral Biol* 1968;13:61-70.
48. Burrow MF, Satoh M, Tagami J. Dentin bond durability after three years using a dentin bonding agent with and without priming. *Dent Mater* 1996;12:302-7.
49. Carvalho RM, Yoshiyama M, Pashley EL, Pashley DH. In vitro study on the dimensional changes of human dentine after demineralization. *Arch Oral Biol* 1996;41:369-77.
50. Carvalho RM, Santiago SL, Fernandes CAO, Suh BI, Pashley DH. Effects of prism orientation on tensile strength of enamel. *J Adhes Dent* 2000;2:251-7.
51. Castagnola L, Wirz J, Garberoglio R. Die Schmelzätzung für die konservierende Zahnbehandlung. *Schweiz Monatsschr Zahnmed* 1975;85:975-1011.
52. Chappell RP, Eick JD, Mixson JM, Theisen FC. Shear bond strength and scanning electron microscopic observation of four dentinal adhesives. *Quintessence Int* 1990;21:303-10.
53. Chappell RP, Cobb CM, Spencer P, Eick JD. Dentinal tubule anastomosis: a potential factor in adhesive bonding? *J Prosthet Dent* 1994;72:183-8.
54. Charlton DG, Moore BK. In vitro evaluation of two microleakage detection tests. *J Dent* 1992;20:55-8.
55. Cheung GS. A scanning electron microscopic investigation on the acid-etched cervical margin of Class II cavities. *Quintessence Int* 1990;21:299-302.

56. Chow LC, Brown WE. Phosphoric acid conditioning of teeth for pit and fissure sealants. *J Dent Res* 1973;52:1158.
57. Christen AG, Mitchell DF. A fluorescent dye method for demonstrating leakage around dental restorations. *J Dent Res* 1966;45:1485-92.
58. Christensen GJ. Clinical factors affecting adhesion. *Oper Dent* 1992;(Suppl 5):24-31.
59. Christensen GJ. Using rubber dams to boost quality, quantity of restorative services. *J Am Dent Assoc* 1994;125:81-2.
60. Chung KH, Greener EH. Correlation between degree of conversion, filler concentration and mechanical properties of posterior composite resins. *J Oral Rehabil* 1990;17:487-94.
61. Ciucchi B, Bouillaguet S, Holz J. Proximal adaptation and marginal seal of posterior composite resin restorations placed with direct and indirect techniques. *Quintessence Int* 1990;21:663-9.
62. Ciucchi B, Bouillaguet S, Delaloye M, Holz J. Volume of the internal gap formed under composite restorations in vitro. *J Dent* 1997;25:305-12.
63. Coli P, Brännström M. The marginal adaptation of four different bonding agents in Class II composite resin restorations applied in bulk or in two increments. *Quintessence Int* 1993;24:583-91.
64. Cox CF. Effects of adhesive resins and various dental cements on the pulp. *Oper Dent* 1992;17(Suppl 5):165-76.
65. Cox CF. Evaluation and treatment of bacterial microleakage. *Am J Dent* 1994;7:293-5.
66. Craig RG. Chemistry, composition and properties of composit resins. *Dent Clin North Am* 1981;25:219-39.
67. Crawford PJ, Whittaker DK, Owen GM. The influence of enamel prism orientation on leakage of resin-bonded restorations. *J Oral Rehabil* 1987;14:283-9.
68. Crim GA, Swartz ML, Phillips RW. Comparison of four thermocycling techniques. *J Prosthet Dent* 1985;53:50-3.
69. Crim GA. Microleakage of three resin placement techniques. *Am J Dent* 1991;4:69-72.
70. Crim GA, Chapman KW. Reducing microleakage in Class II restorations: an in vitro study. *Quintessence Int* 1994;25:781-5.
71. Da Cunha Mello FS, Feilzer AJ, De Gee AJ, Davidson CL. Sealing ability of eight resin bonding systems in a Class II restoration after mechanical fatiguing. *Dent Mater* 1997;13:372-6.
72. Davidson CL, De Gee AJ. Relaxation of polymerization contraction stresses by flow in dental composites. *J Dent Res* 1984;63:146-8.
73. Davidson CL, De Gee AJ, Feilzer AJ. The competition between the composite-dentin bond strength and the polymerization contraction stress. *J Dent Res* 1984;63:1396-9.
74. Davidson CL. Resisting the curing contraction with adhesive composites. *J Prosthet Dent* 1986;55:446-7.

75. Davidson CL, Abdalla AI. Effect of thermal and mechanical load cycling on the marginal integrity of Class II resin composite restorations. *Am J Dent* 1993;6:39-42.
76. De Munck J, Van Meerbeek B, Satoshi I, Vargas M, Yoshida Y, Armstrong S, Lambrechts P, Vanherle G. Microtensile bond strengths of one- and two-step self-etch adhesives to bur-cut enamel and dentin. *Am J Dent* 2003;16:414-20.
77. De Munck J, Vargas M, Iracki J, Van Landuyt K, Poitevin A, Lambrechts P, Van Meerbeek B. One-day bonding effectiveness of new self-etch adhesives to bur-cut enamel and dentin. *Oper Dent* 2005a;30:39-49.
78. De Munck J, Van Landuyt K, Peumans M, Poitevin A, Lambrechts P, Braem M, Van Meerbeek B. A critical review of the durability of adhesion to tooth tissue: methods and results. *J Dent Res* 2005b;84:118-32.
79. De Munck J, Shirai K, Yoshida Y, Inoue S, Van Landuyt K, Lambrechts P, Suzuki K, Shintani H, Van Meerbeek B. Effect of water storage on the bonding effectiveness of 6 adhesives to Class I cavity dentin. *Oper Dent* 2006;31:456-65.
80. Denehy GE, Cobb DS, Bouschlicher MR, Vargas MA. Clinical evaluation of a self-etching primer/adhesive in posterior composites. *J Dent Res* 2000;79:186(Abstr no 340).
81. Dennison JB, Craig RG. Characterization of enamel surfaces prepared with commercial and experimental etchants. *J Am Dent Assoc* 1978;97:799-805.
82. Dermann K, Gorschboth L, Viohl J. Wärmeausdehnung in Wasser gelagerter Füllungskunststoffe. *Dtsch Zahnärztl Z* 1979;34:684-6.
83. Dietrich T, Lösche AC, Lösche GM, Roulet JF. Marginal adaptation of direct composite and sandwich restorations in Class II cavities with cervical margins in dentin. *J Dent* 1999;27:119-28.
84. Dietschi D, Scampa U, Campanile G, Holz J. Marginal adaptation and seal of direct and indirect Class II composite resin restorations: an in vitro evaluation. *Quintessence Int* 1995a;26:127-38.
85. Dietschi D, De Siebenthal G, Neveu-Rosenstand L, Holz J. Influence of the restorative technique and new adhesives on the dentin marginal seal and adaptation of resin composite Class II restorations: an in vitro evaluation. *Quintessence Int* 1995b;26:717-27.
86. Dietschi D, Spreafico R. Adhesive metall-free restorations. Current concepts for the esthetic treatment of posterior teeth. Berlin: Quintessenz, 1997.
87. Dietschi D, Olsburgh S, Krejci I, Davidson CL. In vitro evaluation of marginal and internal adaptation after occlusal stressing of indirect class II composite restorations with different resinous bases. *Eur J Oral Sci* 2003;111:73-80.
88. Donly KJ, Jensen ME. Posterior composite polymerization shrinkage in primary teeth: an in vitro comparison of three techniques. *Pediatr Dent* 1986;8:209-12.
89. Donly KJ, Jensen ME, Reinhardt J, Walker JD. Posterior composite polymerization shrinkage in primary teeth: an in vivo comparison of three restorative techniques. *Pediatr Dent* 1987;9:22-5.
90. Eames WB, Strain JD, Weitman RT, Williams AK. Clinical comparison of composite, amalgam and silicate restorations. *J Am Dent Assoc* 1974;89:1111-7.
91. Eichner K. Messung der Kräfte bei Kauvorgängen. *Dtsch Zahnärztl Z* 1963;18:915-24.

92. Eick JD, Wilko RA, Anderson C, Sorensen SE. Scanning electron microscopy of cut tooth surfaces and identification of debris by use of the electron microprobe. *J Dent Res* 1970;49:1359-68.
93. Eick JD, Welch FH. Polymerization shrinkage of posterior composite resins and its possible influence on postoperative sensitivity. *Quintessence Int* 1986;17:103-11.
94. Eick JD, Cobb CM, Chappell RP, Spencer P, Robinson SJ. The dentinal surface: its influence on dentinal adhesion. Part I. *Quintessence Int* 1991;22:967-77.
95. Eick JD, Robinson SJ, Byerly TJ, Chappelow CC. Adhesives and nonshrinking dental resins of the future. *Quintessence Int* 1993;24:632-40.
96. Eick JD, Gwinnett AJ, Pashley DH, Robinson SJ. Current concepts on adhesion to dentin. *Crit Rev Oral Biol Med* 1997;8:306-35.
97. Erickson RL. Surface interactions of dentin adhesive materials. *Oper Dent* 1992;17(Suppl 5):81-94.
98. Erickson RL, De Gee AJ, Feilzer AJ. Fatigue testing of enamel bonds with self-etch and total-etch adhesive systems. *Dent Mater* 2006;22:981-7.
99. Ernst CP, Schauer F, Willershausen B, Hickel R. Leistungsvergleich von Lichtpolymerisationsgeräten. (I) *Acta Med Dent Helv* 1996;1:58-62.
100. Ernst CP, Willershausen B. Eine aktuelle Standortbestimmung zahnärztlicher Füllungskomposite. *Zahnärztl Mitt* 2003;7:30-40.
101. Ernst CP, Kötter T, Victor A, Canbek K, Brandenbusch M, Willershausen B. Marginal integrity of self- and total-etching adhesives in two different application protocols. *J Adhes Dent* 2004;6:25-32.
102. Ernst CP, Brandenbusch M, Meyer G, Canbek K, Gottschalk F, Willershausen B. Two-year clinical performance of a nanofiller vs a fine-particle hybrid resin composite. *Clin Oral Investig* 2006;10:119-25.
103. Fan PL, Edahl A, Leung RL, Stanford JW. Alternative interpretations of water sorption values of composite resins. *J Dent Res* 1985;64:78-80.
104. Feher A, Mörmann WH. Die Ausarbeitung von Keramikrestorationen mit superfeinen Diamantinstrumenten. *Schweiz Monatsschr Zahnmed* 1995;105:474-9.
105. Feilzer AJ, De Gee AJ, Davidson CL. Setting stress in composite resin in relation to configuration of the restoration. *J Dent Res* 1987;66:1636-9.
106. Feilzer AJ, De Gee AJ, Davidson CL. Curing contraction of composites and glass-ionomer cements. *J Prosthet Dent* 1988;59:297-300.
107. Feilzer AJ, De Gee AJ, Davidson CL. Relaxation of polymerization contraction shear stress by hygroscopic expansion. *J Dent Res* 1990a;69:36-9.
108. Feilzer AJ, De Gee AJ, Davidson CL. Quantitative determination of stress reduction by flow in composite restorations. *Dent Mater* 1990b;6:167-71.
109. Feilzer AJ, Dooren LH, De Gee AJ, Davidson CL. Influence of light intensity on polymerization shrinkage and integrity of restoration-cavity interface. *Eur J Oral Sci* 1995;103:322-6.

110. Ferracane JL, Greener EH. The effect of resin formulation on the degree of conversion and mechanical properties of dental restorative resins. *J Biomed Mater Res* 1986;20:121-31.
111. Ferrari M, Tay FR. Technique sensitivity in bonding to vital, acid-etched dentin. *Oper Dent* 2003;28:3-8.
112. Finger WJ, Uno S. Bond strength of Gluma CPS using the moist dentin bonding technique. *Am J Dent* 1996;9:27-30.
113. Frankenberger R, Krämer N, Sindel J. Haftfestigkeit und Zuverlässigkeit der Verbindung Dentin-Komposit und Dentin-Kompomer. *Dtsch Zahnärztl Z* 1996;51:556-60.
114. Frankenberger R, Sindel J, Krämer N. Beeinflussen Dentinadhäsive und ihre Applikation die Schmelzhaftung? *Dtsch Zahnärztl Z* 1997;52:202-5.
115. Frankenberger R, Sindel J, Krämer N, Oberschachtsiek H, Petschelt A. Die Langzeitstabilität des Komposit-Dentinverbunds nach Total Etching. *Dtsch Zahnärztl Z* 1998;53:697-700.
116. Frankenberger R, Kramer N, Petschelt A. Fatigue behaviour of different dentin adhesives. *Clin Oral Investig* 1999a;3:11-7.
117. Frankenberger R, Krämer N, Pelka M, Petschelt A. Internal adaptation and overhang formation of direct Class II resin composite restorations. *Clin Oral Investig* 1999b;3:208-15.
118. Frankenberger R, Perdigao J, Rosa BT, Lopes M. "No-bottle" vs "multi-bottle" dentin adhesives - a microtensile bond strength and morphological study. *Dent Mater* 2001;17:373-80.
119. Frankenberger R. Zur Dauerhaftigkeit des Dentinverbunds. *Dtsch Zahnärztl Z* 2002;57:154-71.
120. Frankenberger R, Strobel WO, Krämer N, Lohbauer U, Winterscheidt J, Winterscheidt B, Petschelt A. Evaluation of the fatigue behavior of the resin-dentin bond with the use of different methods. *J Biomed Mater Res B Appl Biomater* 2003;67:712-21.
121. Frankenberger R, Tay FR. Self-etch vs etch-and-rinse adhesives: effect of thermo-mechanical fatigue loading on marginal quality of bonded resin composite restorations. *Dent Mater* 2005;21:397-412.
122. FRIATEC. Degussit AL 23. Herstellerinformation, FRIATEC Aktiengesellschaft, 2006.
123. Fröhlich M, Schneider H, Merte K. Oberflächeninteraktionen von Dentin und Adhäsiv. *Dtsch Zahnärztl Z* 1996;51:173-6.
124. Fukushima T, Horibe T. A scanning electron microscopic investigation of bonding of methacryloyloxyalkyl hydrogen maleate to etched dentin. *J Dent Res* 1990;69:46-50.
125. Füllemann J, Lutz F. Direktes Kompositinlay. *Schweiz Monatsschr Zahnmed* 1988;98:759-64.
126. Fusayama T. Posterior adhesive composite resin: a historic review. *J Prosthet Dent* 1990;64:534-8.
127. Garberoglio R, Brännström M. Scanning electron microscopic investigation of human dentinal tubules. *Arch Oral Biol* 1976;21:355-62.
128. Germain HS, Swartz RW, Phillips RW, Moore BK, Roberts TK. Properties of Microfilled Composite Resins as Influenced by Filler Content. *J Dent Res* 1984;64:155-160.

129. Gernhardt CR, Kielbassa AM, Hahn P, Schaller HG. Tensile bond strengths of four different dentin adhesives on irradiated and non-irradiated human dentin in vitro. *J Oral Rehabil* 2001;28:814-20.
130. Gilpatrick RO, Johnson W, Moore D, Turner J. Pulpal response to dentin etched with 10% phosphoric acid. *Am J Dent* 1996;9:125-9.
131. Going RE. Microleakage around dental restorations: a summarizing review. *J Am Dent Assoc* 1972;84:1349-57.
132. Goodis HE, Marshall GW, Jr., White JM, Gee L, Hornberger B, Marshall SJ. Storage effects on dentin permeability and shear bond strengths. *Dent Mater* 1993;9:79-84.
133. Gordan VV, Vargas MA, Cobb DS, Denehy GE. Evaluation of adhesive systems using acidic primers. *Am J Dent* 1997;10:219-23.
134. Gottlieb EW, Retief DH, Jamison HC. An optimal concentration of phosphoric acid as an etching agent. Part I: Tensile bond strength studies. *J Prosthet Dent* 1982;48:48-51.
135. Gwinnett AJ. The ultrastructure of the "prismless" enamel of deciduous teeth. *Arch Oral Biol* 1966;11:1109-15.
136. Gwinnett AJ. The ultrastructure of the "prismless" enamel of permanent human teeth. *Arch Oral Biol* 1967;12:381-7.
137. Gwinnett AJ. Smear layer: morphological considerations. *Oper Dent* 1984;3:2-12.
138. Gwinnett AJ. Bonding of restorative resins to enamel. *Int Dent J* 1988;38:91-6.
139. Gwinnett AJ. Structure and composition of enamel. *Oper Dent* 1992a;17:10-7.
140. Gwinnett AJ, Kanca J, 3rd. Micromorphological relationship between resin and dentin in vivo and in vitro. *Am J Dent* 1992;5:19-23.
141. Gwinnett AJ. Moist versus dry dentin: its effect on shear bond strength. *Am J Dent* 1992b;5:127-9.
142. Gwinnett AJ. Dentin bond strength after air drying and rewetting. *Am J Dent* 1994;7:144-8.
143. Gwinnett AJ, Yu S. Effect of long-term water storage on dentin bonding. *Am J Dent* 1995;8:109-11.
144. Gwinnett AJ, Tay FR, Pang KM, Wei SH. Quantitative contribution of the collagen network in dentin hybridization. *Am J Dent* 1996;9:140-4.
145. Haller B, Klaiber B, Betz T, Dobersch S. Shear bond strength to dentin by simulation of three-dimensional Class V cavity configuration. *Dent Mater* 1991;7:206-10.
146. Haller B, Klaiber B, Dürner U, Hofmann N. Dentinpermeabilität nach Behandlung mit Cleanern und Primern. *Dtsch Zahnärztl Z* 1992;47:171-5.
147. Haller B. Mechanismus und Wirksamkeit von Dentinhaftvermittlern. *Dtsch Zahnärztl Z* 1994;49:750-9.
148. Haller B, Fritzenschaft A. Dentinhaftung von Ein- und Mehrkomponenten-Haftvermittlern bei Dry und Moist Bonding in vitro. *Dtsch Zahnärztl Z* 1999;54:225-30.



149. Haller B. Recent developments in dentin bonding. *Am J Dent* 2000;13:44-50.
150. Haller B, Blunck U. Übersicht und Wertung der aktuellen Bondingsysteme. *Zahnärztl Mitt* 2003;93:48-58.
151. Hannig M, Reinhardt KJ, Bott B. Self-etching primer vs phosphoric acid: an alternative concept for composite-to-enamel bonding. *Oper Dent* 1999;24:172-80.
152. Hannig M, Bott B. Randschlussverhalten von plastischen zahnfarbenen Füllungen in dentinbegrenzten Klasse-II-Kavitäten. *Dtsch Zahnärztl Z* 2000;55:134-8.
153. Hansen EK, Asmussen E. Comparative study of dentin adhesives. *Scand J Dent Res* 1985;93:280-7.
154. Hansen EK. Effect of cavity depth and application technique on marginal adaptation of resins in dentin cavities. *J Dent Res* 1986;65:1319-21.
155. Hansen EK, Asmussen E. Marginal adaptation of posterior resins: effect of dentin-bonding agent and hygroscopic expansion. *Dent Mater* 1989;5:122-6.
156. Hassan K, Mante F, List G, Dhuru V. A modified incremental filling technique for Class II composite restorations. *J Prosthet Dent* 1987;58:153-6.
157. Hegdahl T, Gjerdet NR. Contraction stresses of composite resin filling materials. *Acta Odontol Scand* 1977;35:191-5.
158. Hellwig E, Klimek J, Achenbach K. Auswirkung der Schichttechnik auf die Polymerisation von zwei lichthärtenden Komposit-Füllungsmaterialien. *Dtsch Zahnärztl Z* 1991;46:270-3.
159. Hensten-Pettersen A. Skin and mucosal reactions associated with dental materials. *Eur J Oral Sci* 1998;106:707-12.
160. Hickel R. Die zervikale Füllung. *Dtsch Zahnärztl Z* 1994;49:13-9.
161. Hilton TJ, Schwartz RS, Ferracane JL. Microleakage of four Class II resin composite insertion techniques at intraoral temperature. *Quintessence Int* 1997;28:135-44.
162. Hilton TJ, Ferracane JL. Cavity preparation factors and microleakage of Class II composite restorations filled at intraoral temperatures. *Am J Dent* 1999;12:123-30.
163. Hinoura K, Setcos JC, Phillips RW. Cavity design and placement techniques for Class 2 composites. *Oper Dent* 1988;13:12-9.
164. Holzmeier M, Ernst CP, Willershausen B, Hirschfelder U. In-vitro shear bond strength of self-etching versus traditional adhesives for orthodontic luting. *J Orofac Orthop* 2006;67:244-59.
165. Hosoya Y. The effect of acid etching times on ground primary enamel. *J Clin Pediatr Dent* 1991;15:188-94.
166. Huang C, Tay FR, Cheung GS, Kei LH, Wei SH, Pashley DH. Hygroscopic expansion of a compomer and a composite on artificial gap reduction. *J Dent* 2002a;30:11-9.
167. Huang C, Kei LH, Wei SH, Cheung GS, Tay FR, Pashley DH. The influence of hygroscopic expansion of resin-based restorative materials on artificial gap reduction. *J Adhes Dent* 2002b;4:61-71.

168. Ikeda T, Uno S, Tanaka T, Kawakami S, Komatsu H, Sano H. Relation of enamel prism orientation to microtensile bond strength. *Am J Dent* 2002;15:109-13.
169. Inokoshi S, Hosoda H, Harnirattisai C, Shimada Y. Interfacial structure between dentin and seven dentin bonding systems revealed using argon ion beam etching. *Oper Dent* 1993;18:8-16.
170. Inoue S, Vargas MA, Abe Y, Yoshida Y, Lambrechts P, Vanherle G, Sano H, Van Meerbeek B. Microtensile bond strength of eleven contemporary adhesives to dentin. *J Adhes Dent* 2001;3:237-45.
171. Jacobsen T, Ma R, Söderholm K-JM. Dentin bonding through interpenetrating network formation. *Trans Acad Dent Mater* 1994;7:45-52.
172. Jacobsen T, Söderholm KJ. Some effects of water on dentin bonding. *Dent Mater* 1995;11:132-6.
173. Jacobsen T, Söderholm KJ. Effect of primer solvent, primer agitation, and dentin dryness on shear bond strength to dentin. *Am J Dent* 1998;11:225-8.
174. Janda R. Der Stand der Entwicklung auf dem Gebiet der Zahnfüllungskunststoffe (I). *Quintessence* 1988a;39:1067-73.
175. Janda R. Der Stand der Entwicklung auf dem Gebiet der Zahnfüllungskunststoffe (II). *Quintessence* 1988b;39:1243-53.
176. Janda R. Der Stand der Entwicklung auf dem Gebiet der Zahnfüllungskunststoffe (III). *Quintessence* 1988c;39:1393-8.
177. Jendresen MD, Glantz PO. Clinical adhesiveness of selected dental materials. An in-vivo study. *Acta Odontol Scand* 1981;39:39-45.
178. Johnson GH, Powell LV, Gordon GE. Dentin bonding systems: a review of current products and techniques. *J Am Dent Assoc* 1991;122:34-41.
179. Kaaden C, Powers JM, Friedl KH, Schmalz G. Bond strength of self-etching adhesives to dental hard tissues. *Clin Oral Investig* 2002;6:155-60.
180. Kanca J, 3rd. Maximizing the cure of posterior light-activated resins. *Quintessence Int* 1986;17:25-7.
181. Kanca J, 3rd. An alternative hypothesis to the cause of pulpal inflammation in teeth treated with phosphoric acid on the dentin. *Quintessence Int* 1990;21:83-6.
182. Kanca J, 3rd. Improving bond strength through acid etching of dentin and bonding to wet dentin surfaces. *J Am Dent Assoc* 1992a;123:35-43.
183. Kanca J, 3rd. Resin bonding to wet substrate. I. Bonding to dentin. *Quintessence Int* 1992b;23:39-41.
184. Kanca J, 3rd. Effect of resin primer solvents and surface wetness on resin composite bond strength to dentin. *Am J Dent* 1992c;5:213-5.
185. Kato G, Nakabayashi N. Effect of phosphoric acid concentration on wet-bonding to etched dentin. *Dent Mater* 1996;12:250-5.
186. Kemp-Scholte CM, Davidson CL. Marginal integrity related to bond strength and strain capacity of composite resin restorative systems. *J Prosthet Dent* 1990a;64:658-64.

187. Kemp-Scholte CM, Davidson CL. Complete marginal seal of Class V resin composite restorations effected by increased flexibility. *J Dent Res* 1990b;69:1240-3.
188. Kerr. OptiBond FL® Produkt-Profil. Herstellerinformation, Kerr GmbH, 2006.
189. Kim S, Edwall L, Trowbridge H, Chien S. Effects of local anesthetics on pulpal blood flow in dogs. *J Dent Res* 1984;63:650-2.
190. Koenigsberg S, Fuks A, Grajower R. The effect of three filling techniques on marginal leakage around Class II composite resin restorations in vitro. *Quintessence Int* 1989;20:117-21.
191. Koibuchi H, Yasuda N, Nakabayashi N. Bonding to dentin with a self-etching primer: the effect of smear layers. *Dent Mater* 2001;17:122-6.
192. Koike T, Hasegawa T, Manabe A, Itoh K, Wakumoto S. Effect of water sorption and thermal stress on cavity adaptation of dental composites. *Dent Mater* 1990;6:178-80.
193. Körber KH, Ludwig K. Maximale Kaukraft als Berechnungsfaktor zahntechnischer Konstruktionen. *Dent Labor* 1983;31:55-60.
194. Kostka EC. Zusammenhang von Farbstoffpenetration und rasterelektronenmikroskopischer Randanalyse adhäsiv befestigter keramischer Inlays. Berlin, FU: Zahnmed Diss 1997.
195. Krejci I, Lutz F, Lüscher B, Maffioli E. Optimierung der marginalen Adaptation von Seitenzahnkompositfüllungen durch seitlich reflektierende Leuchtkeile. *Swiss Dent* 1986;7:47-52.
196. Krejci I, Sparr D, Lutz F. Dreischichtiges Lichthärteverfahren mit herkömmlichen Komposit-Kunststoffen für Black-Klasse-II-Restaurationen. *Quintessenz* 1987;38:1217-29.
197. Krejci I, Lutz F. Marginal adaptation of Class V restorations using different restorative techniques. *J Dent* 1991;19:24-32.
198. Krejci I, Lohrer C, Lutz F. Modifizierte Kavitätenformen und Techniken für mittelgrosse und große adhäsive Kompositfüllungen der Klasse II. *Acta Med Dent Helv* 1996;1:91-6.
199. Kullmann W, Pötters G. Vergleichende Untersuchungen zum thermischen Expansionskoeffizienten an 50 verschiedenen Kunststofffüllungsmaterialien. *Dtsch Zahnärztl Z* 1984;39:96-100.
200. Kullmann W. Die Oberflächenbeschaffenheit sog. Hybrid-Komposite. *Dtsch Zahnärztl Z* 1985;40:915-21.
201. Lambrechts P, Braem M, Vanherle M. Evaluation of clinical performance for posterior composite resins and dentin adhesives. *Oper Dent* 1987;12:53-78.
202. Legler LR, Retief DH, Bradley EL. Effects of phosphoric acid concentration and etch duration on enamel depth of etch: an in vitro study. *Am J Orthod Dentofacial Orthop* 1990;98:154-60.
203. Leinfelder KF. Composite resins. *Dent Clin North Am* 1985;29:359-71.
204. Leinfelder KF. Evaluation of criteria used for assessing the clinical performance of composite resins in posterior teeth. *Quintessence Int* 1987;18:531-6.

205. Li Q, Jepsen S, Albers HK, Eberhard J. Flowable materials as an intermediate layer could improve the marginal and internal adaptation of composite restorations in Class-V-cavities. *Dent Mater* 2006;22:250-7.
206. Lim BS, Ferracane JL, Condon JR, Adey JD. Effect of filler fraction and filler surface treatment on wear of microfilled composites. *Dent Mater* 2002;18:1-11.
207. Lopes G, Baratieri LN, Monteiro S, Vieira LCC. Effect of posterior resin composite placement technique on the resin-dentin interface formed in vivo. *Quintessence Int* 2004;35:156-61.
208. Lösche GM, Neuerburg CM, Roulet J-F. Die adhäsive Versorgung konservativer Klasse II Kavitäten. *Dtsch Zahnärztl Z* 1993;48:26-30.
209. Lösche GM. Marginal adaptation of Class II composite fillings: guided polymerisation vs reduced light intensity. *J Adhes Dent* 1999;1:31-39.
210. Lutz F, Setcos JC, Phillips RW. New finishing instruments for composite resins. *J Am Dent Assoc* 1983a;107:575-80.
211. Lutz F, Phillips RW, Roulet J-F, Imfeld T. Komposit - Klassifikation und Wertung. *Schweiz Monatsschr Zahnmed* 1983b;93:914-29.
212. Lutz F, Cochran MA, Mörmann W. Adhäsive Restauration - Flop oder Hit? *Schweiz Monatsschr Zahnmed* 1984;94:1124-31.
213. Lutz F, Krejci I, Luescher B, Oldenburg TR. Improved proximal margin adaptation of Class II composite resin restorations by use of light-reflecting wedges. *Quintessence Int* 1986a;17:659-64.
214. Lutz F, Krejci I, Oldenburg TR. Elimination of polymerization stresses at the margins of posterior composite resin restorations: a new restorative technique. *Quintessence Int* 1986b;17:777-84.
215. Lutz F, Krejci I, Schubach P. Adhäsivsysteme für zahnfarbene Restaurationen. *Schweiz Monatsschr Zahnmed* 1993;103:537-49.
216. Manson-Rahemtulla B, Retief DH, Jamison HC. Effect of concentrations of phosphoric acid on enamel dissolution. *J Prosthet Dent* 1984;51:495-498.
217. Marshall GW, Jr. Dentin: microstructure and characterization. *Quintessence Int* 1993;24:606-17.
218. Marshall GW, Jr., Marshall SJ, Kinney JH, Balooch M. The dentin substrate: structure and properties related to bonding. *J Dent* 1997;25:441-58.
219. Mayer R, Gruetzner A. Die Röntgenopazität von Komposit-Füllungswerkstoffen für den Seitenzahnbereich. *Zahnärztl Prax* 1985;36:482-4.
220. Mazer RB, Leinfelder KF. Evaluating a microfill posterior composite resin. A five-year study. *J Am Dent Assoc* 1992;123:32-8.
221. McCabe JF, Wassell RW. Hardness of model dental composites - the effect of filler volume fraction and silanation. *J Mater Sci Mater Med* 1999;10:291-4.
222. Mehl A, Hickel R, Kunzelmann KH. Physical properties and gap formation of light-cured composites with and without 'softstart-polymerization'. *J Dent* 1997;25:321-30.

223. Mitchem JC, Gronas DG. Effects of time after extraction and depth of dentin on resin dentin adhesives. *J Am Dent Assoc* 1986;113:285-7.
224. Mitchem JC, Terkla LG, Gronas DG. Bonding of resin dentin adhesives under simulated physiological conditions. *Dent Mater* 1988;4:351-3.
225. Mitchem JC, Gronas DG. Adhesion to dentin with and without smear layer under varying degrees of wetness. *J Prosthet Dent* 1991;66:619-22.
226. Mitra SB, Wu D, Holmes BN. An application of nanotechnology in advanced dental materials. *J Am Dent Assoc* 2003;134:1382-90.
227. Mixson JM, Richards ND, Mitchell RJ. Effects of dentin age and bonding on microgap formation. *Am J Dent* 1993;6:72-6.
228. Miyazaki M, Hinoura K, Onose H, Moore BK. Effect of filler content of light-cured composites on bond strength to bovine dentine. *J Dent* 1991;19:301-3.
229. Miyazaki M, Platt JA, Onose H, Moore BK. Influence of dentin primer application methods on dentin bond strength. *Oper Dent* 1996;21:167-72.
230. Miyazaki M, Sato M, Onose H, Moore BK. Influence of thermal cycling on dentin bond strength of two-step bonding systems. *Am J Dent* 1998;11:118-22.
231. Molla K, Park HJ, Haller B. Bond strength of adhesive/composite combinations to dentin involving total- and self-etch adhesives. *J Adhes Dent* 2002;4:171-80.
232. Momoi Y, Iwase H, Nakano Y, Kohno A, Asanuma A, Yanagisawa K. Gradual increases in marginal leakage of resin composite restorations with thermal stress. *J Dent Res* 1990;69:1659-63.
233. Momoi Y, McCabe JF. Hygroscopic expansion of resin based composites during 6 months of water storage. *Br Dent J* 1994;176:91-6.
234. Munksgaard EC, Itoh K, Jorgensen KD. Dentin-polymer bond in resin fillings tested in vitro by thermo- and load-cycling. *J Dent Res* 1985;64:144-6.
235. Nakabayashi N, Kojima K, Masuhara E. The promotion of adhesion by the infiltration of monomers into tooth substrates. *J Biomed Mater Res* 1982;16:265-73.
236. Nakabayashi N, Takarada K. Effect of HEMA on bonding to dentin. *Dent Mater* 1992;8:125-30.
237. Nakabayashi N, Ashizawa M, Nakamura M. Identification of a resin-dentin hybrid layer in vital human dentin created in vivo: durable bonding to vital dentin. *Quintessence Int* 1992;23:135-41.
238. Nakajima M, Kanemura N, Pereira PN, Tagami J, Pashley DH. Comparative microtensile bond strength and SEM analysis of bonding to wet and dry dentin. *Am J Dent* 2000;13:324-8.
239. Neiva IF, De Andrada MAC, Baratieri LN, Monteiro S, Ritter AV. An in vitro study of the effect of restorative technique on marginal leakage in posterior composites. *Oper Dent* 1998;23:282-9.
240. Nikaido T, Burrow MF, Tagami J, Takatsu T. Effect of pulpal pressure on adhesion of resin composite to dentin: bovine serum versus saline. *Quintessence Int* 1995;26:221-6.

241. Nikaido T, Kunzelmann KH, Ogata M, Harada N, Yamaguchi S, Cox CF, Hickel R, Tagami J. The in vitro dentin bond strengths of two adhesive systems in class I cavities of human molars. *J Adhes Dent* 2002a;4:31-9.
242. Nikaido T, Kunzelmann KH, Chen H, Ogata M, Harada N, Yamaguchi S, Cox CF, Hickel R, Tagami J. Evaluation of thermal cycling and mechanical loading on bond strength of a self-etching primer system to dentin. *Dent Mater* 2002b;18:269-75.
243. Nikolaenko SA, Lohbauer U, Roggendorf M, Petschelt A, Dasch W, Frankenberger R. Influence of c-factor and layering technique on microtensile bond strength to dentin. *Dent Mater* 2004;20:579-85.
244. Noack MJ, Roulet JF. Rasterelektronenmikroskopische Beurteilung der Ätzwirkung verschiedener Ätzgele auf Schmelz. *Dtsch Zahnärztl Z* 1987;42:953-9.
245. Noack MJ. Quantitative Füllungsrandanalyse von Frontzahnkompositen im Rasterelektronenmikroskop nach thermischer Wechselbelastung. *Dtsch Zahnärztl Z* 1988;43:295-9.
246. Nuckles DB, Fingar WW. Six-month and one-year clinical evaluation of a composite resin for Class II restorations. *J Am Dent Assoc* 1975;91:1017-22.
247. Oberholzer TG, Grobler SR, Rossouw RJ. Polymerization shrinkage by 4 different types of dental materials. *SADJ* 2001;56:513-6.
248. Ogata M, Harada N, Yamaguchi S, Nakajima M, Pereira PN, Tagami J. Effects of different burs on dentin bond strengths of self-etching primer bonding systems. *Oper Dent* 2001;26:375-82.
249. Ogata M, Harada N, Yamaguchi S, Nakajima M, Tagami J. Effect of self-etching primer vs phosphoric acid etchant on bonding to bur-prepared dentin. *Oper Dent* 2002;27:447-54.
250. Opdam NJ, Feilzer AJ, Roeters JJ, Smale I. Class I occlusal composite resin restorations: in vivo post-operative sensitivity, wall adaptation and microleakage. *Am J Dent* 1998a;11:229-34.
251. Opdam NJM, Roeters FJM, Kuys R, Burgersdijk RCW. Necessity of bevels for box only Class II composite restorations. *J Prosthet Dent* 1998b;80:274-9.
252. Opdam NJM, Roeters FJM, Feilzer AJ, Verdonschot N. Marginal integrity and post-operative sensitivity in Class 2 composite restorations in vivo. *J Dent* 1998c;26:555-62.
253. Örtengren U, Andreasson H, Karlsson S, Meding B, Barregard L. Prevalence of self-reported hand eczema and skin symptoms associated with dental materials among Swedish dentists. *Eur J Oral Sci* 1999;107:496-505.
254. Özok AR, Wu MK, De Gee AJ, Wesselink PR. Effect of dentin perfusion on the sealing ability and microtensile bond strengths of a total-etch versus an all-in-one adhesive. *Dent Mater* 2004;20:479-86.
255. Pashley DH, Michelich V, Kehl T. Dentin permeability: effects of smear layer removal. *J Prosthet Dent* 1981;46:531-7.
256. Pashley DH. Smear layer: physiological considerations. *Oper Dent* 1984;3:13-29.
257. Pashley DH. Clinical considerations of microleakage. *J Endod* 1990;16:70-7.
258. Pashley DH. Clinical correlations of dentin structure and function. *J Prosthet Dent* 1991;66:777-81.

259. Pashley DH. Dentin bonding agents. *Curr Opin Dent* 1992a;2:46-51.
260. Pashley DH. The effects of acid etching on the pulpodentin complex. *Oper Dent* 1992b;17:229-42.
261. Pashley DH, Ciucchi B, Sano H, Horner JA. Permeability of dentin to adhesive agents. *Quintessence Int* 1993;24:618-31.
262. Pashley DH, Ciucchi B, Sano H. Dentin as a bonding substrate. *Dtsch Zahnärztl Z* 1994;49:760-3.
263. Pashley DH, Agee KA, Nakajima M, Tay FR, Carvalho RM, Terada RS, Harmon FJ, Lee WK, Rueggeberg FA. Solvent-induced dimensional changes in EDTA-demineralized dentin matrix. *J Biomed Mater Res* 2001;56:273-81.
264. Pashley DH, Tay FR. Aggressiveness of contemporary self-etching adhesives. Part II: etching effects on unground enamel. *Dent Mater* 2001;17:430-44.
265. Pashley EL, Zhang Y, Lockwood PE, Rueggeberg FA, Pashley DH. Effects of HEMA on water evaporation from water-HEMA mixtures. *Dent Mater* 1998;14:6-10.
266. Pearson GJ, Longman CM. Water sorption and solubility of resin-based materials following inadequate polymerization by a visible-light curing system. *J Oral Rehabil* 1989;16:57-61.
267. Perdigao J, Swift EJ, Jr., Denehy GE, Wefel JS, Donly KJ. In vitro bond strengths and SEM evaluation of dentin bonding systems to different dentin substrates. *J Dent Res* 1994;73:44-55.
268. Perdigao J, Swift EJ. Analysis of dental adhesive systems using scanning electron microscopy. *Int Dent J* 1994;44:349-59.
269. Perdigao J, Lambrechts P, Van Meerbeek B, Braem M, Yildiz E, Yucel T, Vanherle G. The interaction of adhesive systems with human dentin. *Am J Dent* 1996a;9:167-73.
270. Perdigao J, Lambrechts P, van Meerbeek B, Tome AR, Vanherle G, Lopes AB. Morphological field emission-SEM study of the effect of six phosphoric acid etching agents on human dentin. *Dent Mater* 1996b;12:262-71.
271. Perdigao J, Lopes L, Lambrechts P, Leitao J, Van Meerbeek B, Vanherle G. Effects of a self-etching primer on enamel shear bond strengths and SEM morphology. *Am J Dent* 1997;10:141-6.
272. Perdigao J, Swift EJ, Jr., Heymann HO, Malek MA. Effect of a re-wetting agent on the performance of acetone-based dentin adhesives. *Am J Dent* 1998;11:207-13.
273. Perdigao J, Van Meerbeek B, Lopes MM, Ambrose WW. The effect of a re-wetting agent on dentin bonding. *Dent Mater* 1999;15:282-95.
274. Perdigao J, Frankenberger R, Rosa BT, Breschi L. New trends in dentin/enamel adhesion. *Am J Dent* 2000;13:25-30.
275. Perdigao J, Frankenberger R. Effect of solvent and rewetting time on dentin adhesion. *Quintessence Int* 2001;32:385-90.
276. Perdigao J, Geraldeli S. Bonding characteristics of self-etching adhesives to intact versus prepared enamel. *J Esthet Restor Dent* 2003;15:32-41.

277. Perdigao J, Geraldeli S, Hodges JS. Total-etch versus self-etch adhesive: effect on postoperative sensitivity. *J Am Dent Assoc* 2003;134:1621-9.
278. Pereira GD, Paulillo LA, De Goes MF, Dias CT. How wet should dentin be? Comparison of methods to remove excess water during moist bonding. *J Adhes Dent* 2001;3:257-64.
279. Peter A, Paul SJ, Luthy H, Scharer P. Film thickness of various dentine bonding agents. *J Oral Rehabil* 1997;24:568-73.
280. Peumans M, Kanumilli P, De Munck J, Van Landuyt K, Lambrechts P, Van Meerbeek B. Clinical effectiveness of contemporary adhesives: a systematic review of current clinical trials. *Dent Mater* 2005;21:864-81.
281. Peutzfeldt A. Composite resins in dentistry: the monomer systems. *Eur J Oral Sci* 1997;105:97-116.
282. Phillips RW. Past, present, and future composite resin systems. *Dent Clin North Am* 1981;25:209-13.
283. Pioch T, Staehle HJ, Wurst M, Duschner H, Dorfer C. The nanoleakage phenomenon: influence of moist vs dry bonding. *J Adhes Dent* 2002;4:23-30.
284. Pitt Ford TR, Seare MA, McDonald F. Action of adrenaline on the effect of dental local anaesthetic solutions. *Endod Dent Traumatol* 1993;9:31-5.
285. Porte A, Lutz F, Lund MR, Swartz ML, Cochran MA. Cavity designs for composite resins. *Oper Dent* 1984;9:50-6.
286. Pradelle-Plasse N, Nechad S, Tavernier B, Colon P. Effect of dentin adhesives on the enamel-dentin/composite interfacial microleakage. *Am J Dent* 2001;14:344-8.
287. Prati C, Biagini G, Rizzoli C, Nucci C, Zucchini C, Montanari G. Shear bond strength and SEM evaluation of dentinal bonding systems. *Am J Dent* 1990;3:283-8.
288. Prati C, Erickson R, Tao L, Simpson M, Pashley DH. Measurement of dentin permeability and wetness by use of the Periotron device. *Dent Mater* 1991;7:268-73.
289. Radlanski RJ, Jäger A, Seidl W, Steding G. Durchmesser und Anordnung der Prismen im Zahnschmelz - Eine morphologische Untersuchung. *Dtsch Zahnärztl Z* 1988;43:1182-92.
290. Raskin A, D'Hoore W, Gonthier S, Degrange M, Dejou J. Reliability of in vitro microleakage tests: a literature review. *J Adhes Dent* 2001;3:295-308.
291. Reinhardt JW, Chan DC, Boyer DB. Shear strengths of ten commercial dentin bonding agents. *Dent Mater* 1987;3:43-5.
292. Reinhardt JW. Der Einfluß der Lichtquelle auf die Randbeständigkeit von Kompositfüllungen. *Dtsch Zahnärztl Z* 1991a;46:132-4.
293. Reinhardt KJ. Restdoppelbindungen und Grenzflächeneffekt von Kunststoffmaterialien. *Dtsch Zahnärztl Z* 1991b;46:204-8.
294. Retief DH. Effect of conditioning the enamel surface with phosphoric acid. *J Dent Res* 1973;52:333-41.
295. Retief DH, Austin JC, Fatti LP. Pulpal response to phosphoric acid. *J Oral Pathol* 1974;3:114-22.



296. Retief DH, Denys FR. Adhesion to enamel and dentin. *Am J Dent* 1989;2:133-44.
297. Retief DH. Adhesion to dentin. *J Esthet Dent* 1991;3:106-13.
298. Roeters J, de Kloet H. Kosmetische Zahnheilkunde mit Hilfe von Komposit. Berlin: Quintessenz, 1992.
299. Rosa BT, Perdigao J. Bond strengths of nonrinsing adhesives. *Quintessence Int* 2000;31:353-8.
300. Rosales JI, Marshall GW, Marshall SJ, Watanabe LG, Toledano M, Cabrerizo MA, Osorio R. Acid-etching and hydration influence on dentin roughness and wettability. *J Dent Res* 1999;78:1554-9.
301. Roulet J-F. Plastische Füllungstherapie im Seitenzahnbereich. *Freie Zahnarzt* 1982;26:79-90.
302. Roulet J-F. In vivo wear measurement of composite resins. In: Vanherle G, Smith, D.C. (Eds), *Posterior composite resin dental restorative materials*, St.Paul, Minnesota: Peter Szulc Publication Co., 1985:365-72.
303. Roulet J-F. Degradation of dental polymers. Basel: Karger Verlag, 1987.
304. Roulet J-F. Werkstoffkundliche Parameter und ihre Auswirkungen auf die Klinik. *Dtsch Zahnärztl Z* 1988;43:887-92.
305. Roulet J-F, Reich T, Blunck U, Noack M. Quantitative margin analysis in the scanning electron microscope. *Scanning Microsc* 1989;3:147-58.
306. Roulet J-F. Marginal integrity: clinical significance. *J Dent* 1994a;22(Suppl 1):9-12.
307. Roulet J-F. Zahnfarbene Restaurationen als Amalgam-Alternativen. *Dtsch Zahnärztl Z* 1994b;49:859-66.
308. Roulet J-F, Blunck U. Probleme und Lösungsansätze der Adhäsivtechnik im Seitenzahnbereich. *Neue Gruppe* 9 1996;10-3.
309. Roulet J-F. Benefits and disadvantages of tooth-coloured alternatives to amalgam. *J Dent* 1997;25:459-73.
310. Roulet J-F, Blunck U, Janda R. Adhäsion. In: Gürel G (Hrsg), *Keramikveneers als Wissenschaft und Kunst*, Berlin: Quintessenz Verlag, 2003:113-33.
311. Rueggeberg FA, Craig RG. Correlation of parameters used to estimate monomer conversion in a light-cured composite. *J Dent Res* 1988;67:932-7.
312. Rueggeberg FA, Caughman WF, Curtis JW, Jr., Davis HC. Factors affecting cure at depths within light-activated resin composites. *Am J Dent* 1993;6:91-5.
313. Rueggeberg FA, Caughman WF, Curtis JW, Jr. Effect of light intensity and exposure duration on cure of resin composite. *Oper Dent* 1994;19:26-32.
314. Rueggeberg FA, Ergle JW, Mettenberg DJ. Polymerization depths of contemporary light-curing units using microhardness. *J Esthet Dent* 2000;12:340-9.

315. Ruse ND, Smith DC. Adhesion to bovine dentin--surface characterization. *J Dent Res* 1991;70:1002-8.
316. Ruyter IE. Unpolymerized surface layers on sealants. *Acta Odontol Scand* 1981;39:27-32.
317. Ruyter IE. Composites - characterization of composite filling materials: reactor response. *Adv Dent Res* 1988;2:122-9.
318. Saeki K, Marshall SJ, Gansky SA, Marshall GW. Etching characteristics of dentin: effect of ferric chloride in citric acid. *J Oral Rehabil* 2001;28:301-8.
319. Sano H, Shono T, Takatsu T, Hosoda H. Microporous dentin zone beneath resin-impregnated layer. *Oper Dent* 1994;19:59-64.
320. Sano H, Takatsu T, Ciucchi B, Horner JA, Matthews WG, Pashley DH. Nanoleakage: leakage within the hybrid layer. *Oper Dent* 1995;20:18-25.
321. Santini A, Mitchell S. Microleakage of composite restorations bonded with three new dentin bonding agents. *J Esthet Dent* 1998;10:296-304.
322. Santini A, Plasschaert AJ, Mitchell S. Effect of composite resin placement techniques on the microleakage of two self-etching dentin-bonding agents. *Am J Dent* 2001;14:132-6.
323. Sasafuchi Y, Otsuki M, Inokoshi S, Tagami J. The effects on pulp tissue of microleakage in resin composite restorations. *J Med Dent Sci* 1999;46:155-64.
324. Saunders WP, Strang R, Ahmad I. Effect of composite resin placement and use of an unfilled resin on the microleakage of two dentin bonding agents. *Am J Dent* 1990;3:153-6.
325. Saunders WP, Saunders EM. Microleakage of bonding agents with wet and dry bonding techniques. *Am J Dent* 1996;9:34-6.
326. Schmid O, Krejci I, Lutz F. Ausarbeitung von adhäsiven zahnfarbenen Inlays aus Komposit und Keramik. *Schweiz Monatsschr Zahnmed* 1991;101:177-84.
327. Schröder HE. *Orale Strukturbioogie*. Stuttgart: Georg Thieme Verlag, 2000.
328. Schulze KA, Oliveira SA, Wilson RS, Gansky SA, Marshall GW, Marshall SJ. Effect of hydration variability on hybrid layer properties of a self-etching versus an acid-etching system. *Biomaterials* 2005;26:1011-8.
329. Schumacher GE, Eichmiller FC, Antonucci JM. Effects of surface-active resins on dentin/composite bonds. *Dent Mater* 1992;8:278-82.
330. Schüpbach P, Krejci I, Lutz F. Dentin bonding: effect of tubule orientation on hybrid-layer formation. *Eur J Oral Sci* 1997;105:344-52.
331. Shimada Y, Tagami J. Effects of regional enamel and prism orientation on resin bonding. *Oper Dent* 2003;28:20-7.
332. Shin WS, Li Y, Schwartz B, Wunder SL, Baron GR. Determination of degree of the cure of dental resins using Raman and FT-Raman spectroscopy. *Dent Mater* 1993;9:317-24.

333. Shirai K, De Munck J, Yoshida Y, Inoue S, Lambrechts P, Suzuki K, Shintani H, Van Meerbeek B. Effect of cavity configuration and aging on the bonding effectiveness of six adhesives to dentin. *Dent Mater* 2005;21:110-24.
334. Silverstone LM. Fissure sealants. Laboratory studies. *Caries Res* 1974;8:2-26.
335. Söderholm K-JM. Die hydrolytische Degradation von Composites. Teil I: Physikalisch-chemische Grundlagen. *Phillip J* 1988;6:323-8.
336. Söderholm KJ. Correlation of in vivo and in vitro performance of adhesive restorative materials: a report of the ASC MD156 Task Group on Test Methods for the Adhesion of Restorative Materials. *Dent Mater* 1991;7:74-83.
337. Spohr AM, Conceicao EN, Pacheco JF. Tensile bond strength of four adhesive systems to dentin. *Am J Dent* 2001;14:247-51.
338. Staninec M, Mochizuki A, Tanizaki K, Fukuda K, Yasuhiko T. Interfacial space, marginal leakage, and enamel cracks around composite resins. *Oper Dent* 1986;11:14-24.
339. Stanley HR, Going RE, Chauncey HH. Human pulp response to acid pretreatment of dentin and to composite restoration. *J Am Dent Assoc* 1975;91:817-25.
340. Stanley HR. Pulpal consideration of adhesive materials. *Oper Dent* 1992;17(Suppl 5):151-64.
341. Stettmaier K, Kinder J, Vahl J, Reinhardt K-J. Untersuchungen des thermischen Verhaltens von Schmelz, Dentin und ausgewählten Dentalwerkstoffen. *Dtsch Zahnärztl Z* 1978;33:474-6.
342. Sugizaki J. The effect of the various primers on the dentin adhesion of resin composites - SEM and TEM observations of the resin-impregnated layer and adhesion promoting effect of the primers. *Jpn J Conserv Dent* 1991;34:228-65.
343. Summitt JB, Chan DC, Burgess JO, Dutton FB. Effect of air/water rinse versus water only and of five rinse times on resin-to-etched-enamel shear bond strength. *Oper Dent* 1992;17:142-51.
344. Summitt JB, Chan DC, Dutton FB, Burgess JO. Effect of rinse time on microleakage between composite and etched enamel. *Oper Dent* 1993;18:37-40.
345. Suzuki S, Nakabayashi N, Masuhara E. The evaluation of new dental resins prepared with polyfunctional methacrylate monomers. *J Biomed Mater Res* 1982;16:275-87.
346. Suzuki S, Suzuki SH, Cox CF. Evaluating the antagonistic wear of restorative materials when placed against human enamel. *J Am Dent Assoc* 1996;127:74-80.
347. Suzuki S, Ori T, Saimi Y. Effects of filler composition on flexibility of microfilled resin composite. *J Biomed Mater Res B Appl Biomater* 2005;74:547-52.
348. Swift EJ, Triolo PT. Bond strengths of Scotchbond Multi-Purpose to moist dentin and enamel. *Am J Dent* 1992;5:318-20.
349. Swift EJ, Perdigão J, Heymann HO. Bonding to enamel and dentin: a brief history and state of the art, 1995. *Quintessence Int* 1995;26:95-110.
350. Swift EJ, Triolo PT, Barkmeier WW, Bird JL, Bounds SJ. Effect of low-viscosity resins on the performance of dental adhesives. *Am J Dent* 1996;9:100-4.

351. Szep S, Frank H, Kenzel B, Gerhardt T, Heidemann D. Comparative study of composite resin placement: centripetal buildup versus incremental technique. *Pract Proced Aesthet Dent* 2001;13:243-50.
352. Tagami J, Hosoda H, Fusayama T. Optimal technique of etching enamel. *Oper Dent* 1988;13:181-4.
353. Tagami J, Tao L, Pashley DH. Correlation among dentin depth, permeability, and bond strength of adhesive resins. *Dent Mater* 1990;6:45-50.
354. Taira M, Urabe H, Hirose T, Wakasa K, Yamaki M. Analysis of photo-initiators in visible-light-cured dental composite resins. *J Dent Res* 1988;67:24-8.
355. Tao L, Pashley DH. Dentin perfusion effects on the shear bond strengths of bonding agents to dentin. *Dent Mater* 1989;5:181-4.
356. Tay FR, Gwinnett AJ, Pang KM, Wei SH. Micromorphologic relationship of the resin-dentin interface following a total-etch technique in vivo using a dentinal bonding system. *Quintessence Int* 1995a;26:63-70.
357. Tay FR, Gwinnett AJ, Pang KM, Wei SH. Variability in microleakage observed in a total-etch wet-bonding technique under different handling conditions. *J Dent Res* 1995b;74:1168-78.
358. Tay FR, Gwinnett AJ, Wei SH. The overwet phenomenon: an optical, micromorphological study of surface moisture in the acid-conditioned, resin-dentin interface. *Am J Dent* 1996a;9:43-8.
359. Tay FR, Gwinnett AJ, Wei SH. The overwet phenomenon: a scanning electron microscopic study of surface moisture in the acid-conditioned, resin-dentin interface. *Am J Dent* 1996b;9:109-14.
360. Tay FR, Gwinnett AJ, Wei SH. The overwet phenomenon: a transmission electron microscopic study of surface moisture in the acid-conditioned, resin-dentin interface. *Am J Dent* 1996c;9:161-6.
361. Tay FR, Gwinnett AJ, Wei SH. Micromorphological spectrum from overdrying to overwetting acid-conditioned dentin in water-free acetone-based, single-bottle primer/adhesives. *Dent Mater* 1996d;12:236-44.
362. Tay FR, Gwinnett AJ, Pang KM, Wei SH. Resin permeation into acid-conditioned, moist, and dry dentin: a paradigm using water-free adhesive primers. *J Dent Res* 1996e;75:1034-44.
363. Tay FR, Gwinnett AJ, Wei SH. Relation between water content in acetone/alcohol-based primer and interfacial ultrastructure. *J Dent* 1998a;26:147-56.
364. Tay FR, Gwinnett AJ, Wei SH. Micromorphological spectrum of acid-conditioned dentin following the application of a water-based adhesive. *Dent Mater* 1998b;14:329-38.
365. Tay FR, Sano H, Carvalho R, Pashley EL, Pashley DH. An ultrastructural study of the influence of acidity of self-etching primers and smear layer thickness on bonding to intact dentin. *J Adhes Dent* 2000;2:83-98.
366. Tay FR, Pashley DH. Aggressiveness of contemporary self-etching systems. I: Depth of penetration beyond dentin smear layers. *Dent Mater* 2001;17:296-308.
367. Tay FR, Pashley DH, Suh BI, Carvalho RM, Itthagarun A. Single-step adhesives are permeable membranes. *J Dent* 2002;30:371-82.
368. Taylor MJ, Lynch E. Microleakage. *J Dent* 1992;20:3-10.

369. Terkla LG, Brown AC, Hainisch AP, Mitchem JC. Testing sealing properties of restorative materials against moist dentin. *J Dent Res* 1987;66:1758-64.
370. Tjan A, Bergh B, Lidner C. Effect of various incremental techniques on the marginal adaptation of class II composite resin restorations. *J Prosthet Dent* 1992;67:62-6.
371. Tjan AH, Castelnovo J, Liu P. Bond strength of multi-step and simplified-step systems. *Am J Dent* 1996;9:269-72.
372. Toida T, Watanabe A, Nakabayashi N. Effect of smear layer on bonding to dentin prepared with bur. *J Jpn Dent Mater* 1995;14:109-16.
373. Toledano M, Osorio R, de Leonardi G, Rosales-Leal JI, Ceballos L, Cabrerizo-Vilchez MA. Influence of self-etching primer on the resin adhesion to enamel and dentin. *Am J Dent* 2001;14:205-10.
374. Torstenson B, Brännström M. Contraction gap under composite resin restorations: effect of hygroscopic expansion and thermal stress. *Oper Dent* 1988;13:24-31.
375. Torstenson B, Oden A. Effects of bonding agent types and incremental techniques on minimizing contraction gaps around resin composites. *Dent Mater* 1989;5:218-23.
376. Tredwin CJ, Stokes A, Moles DR. Influence of flowable liner and margin location on microleakage of conventional and packable class II resin composites. *Oper Dent* 2005;30:32-8.
377. Triolo PT, Swift EJ, Mudgil A, Levine A. Effects of etching time on enamel bond strengths. *Am J Dent* 1993;6:302-4.
378. Tsai PC, Meyers IA, Walsh LJ. Depth of cure and surface microhardness of composite resin cured with blue LED curing lights. *Dent Mater* 2004;20:364-9.
379. Uno S, Asmussen E. Marginal adaptation of a restorative resin polymerized at reduced rate. *Scand J Dent Res* 1991;99:440-4.
380. Uno S, Finger WJ. Effects of acidic conditioners on dentine demineralization and dimension of hybrid layers. *J Dent* 1996;24:211-6.
381. Urabe I, Nakajima S, Sano H, Tagami J. Physical properties of the dentin-enamel junction region. *Am J Dent* 2000;13:129-35.
382. Van Dijken J, Horstedt P, Waern R. Directed polymerization shrinkage versus a horizontal incremental filling technique: interfacial adaptation in vivo in Class II cavities. *Am J Dent* 1998;11:165-72.
383. Van Meerbeek B, Lambrechts P, Inokoshi S, Braem M, Vanherle G. Factors affecting adhesion to mineralized tissues. *Oper Dent* 1992a;17(Suppl 5):111-24.
384. Van Meerbeek B, Inokoshi S, Braem M, Lambrechts P, Vanherle G. Morphological aspects of the resin-dentin interdiffusion zone with different dentin adhesive systems. *J Dent Res* 1992b;71:1530-40.
385. Van Meerbeek B, Dhem A, Goret-Nicaise M, Braem M, Lambrechts P, VanHerle G. Comparative SEM and TEM examination of the ultrastructure of the resin-dentin interdiffusion zone. *J Dent Res* 1993a;72:495-501.

386. Van Meerbeek B, Willems G, Celis JP, Roos JR, Braem M, Lambrechts P, Vanherle G. Assessment by nano-indentation of the hardness and elasticity of the resin-dentin bonding area. *J Dent Res* 1993b;72:1434-42.
387. Van Meerbeek B, Braem M, Lambrechts P, Vanherle G. Dentinhaftung: Mechanismen und klinische Resultate. *Dtsch Zahnärztl Z* 1994;49:977-84.
388. Van Meerbeek B. Kunststoff-Dentin-Grenzflächen nach Total-Etch/ Total Bonding. *Phillip J* 1997;14:313-5.
389. Van Meerbeek B, Yoshida Y, Lambrechts P, Vanherle G, Duke ES, Eick JD, Robinson SJ. A TEM study of two water-based adhesive systems bonded to dry and wet dentin. *J Dent Res* 1998;77:50-9.
390. Van Meerbeek B, Yoshida Y, Snauwaert J, Hellemans L, Lambrechts P, Vanherle G, Wakasa K, Pashley DH. Hybridization effectiveness of a two-step versus a three-step smear layer removing adhesive system examined correlatively by TEM and AFM. *J Adhes Dent* 1999;1:7-23.
391. Versluis A, Tantbirojn D, Douglas WH. Do dental composites always shrink toward the light? *J Dent Res* 1998;77:1435-45.
392. Viehl J, Dermann K, Quast D, Venz S. Die Chemie zahnärztlicher Füllungskunststoffe. München: Carl Hanser Verlag, 1986.
393. VOCO. Grandio® Produkt-Profil. Herstellerinformation, VOCO GmbH, 2006.
394. Vossen ME, Letzel H, Stadhouders AM, Hertel R, Henriks FH. A rapid scanning electron microscopic replication technique for clinical studies of dental restorations. *Dent Mater* 1985;1:158-63.
395. Walshaw PR, McComb D. SEM evaluation of the resin-dentin interface with proprietary bonding agents in human subjects. *J Dent Res* 1994;73:1079-87.
396. Wang JD, Hume WR. Diffusion of hydrogen ion and hydroxyl ion from various sources through dentine. *Int Endod J* 1988;21:17-26.
397. Wang Y, Spencer P. Quantifying adhesive penetration in adhesive/dentin interface using confocal Raman microspectroscopy. *J Biomed Mater Res* 2002;59:46-55.
398. Wang Y, Spencer P. Effect of acid etching time and technique on interfacial characteristics of the adhesive-dentin bond using differential staining. *Eur J Oral Sci* 2004;112:293-9.
399. Wassell RW, McCabe JF, Walls AW. Subsurface deformation associated with hardness measurements of composites. *Dent Mater* 1992;8:218-23.
400. Wassell RW, McCabe JF, Walls AW. Wear characteristics in a two-body wear test. *Dent Mater* 1994a;10:269-74.
401. Wassell RW, McCabe JF, Walls AW. A two-body frictional wear test. *J Dent Res* 1994b;73:1546-53.
402. Watanabe I, Nakabayashi N, Pashley DH. Bonding to ground dentin by a phenyl-P self-etching primer. *J Dent Res* 1994;73:1212-20.
403. Watts DC. Radiopacity vs. composition of some barium and strontium glass composites. *J Dent* 1987;15:38-43.

404. Weaver WS, Blank LW, Pelleu GB. A visible-light-activated resin cured through tooth structure. *Gen Dent* 1988;36:236-7.
405. White GJ, Beech DR, Tyas MJ. Dentin smear layer: an asset or a liability for bonding? *Dent Mat* 1989;5:379-83.
406. White KC, Cox CF, Kanka J, 3rd, Dixon DL, Farmer JB, Snuggs HM. Pulpal response to adhesive resin systems applied to acid-etched vital dentin: damp versus dry primer application. *Quintessence Int* 1994;25:259-68.
407. Willems G, Lambrechts P, Braem M, Celis JP, Vanherle M. A classification of dental composites according to their morphological and mechanical characteristics. *Dent Mater* 1992;8:310-9.
408. Willems G, Lambrechts P, Braem M, Vanherle M. Composite resins in the 21st century. *Quintessence Int* 1993;24:641-58.
409. Xu J, Stangel I, Butler IS, Gilson DF. An FT-Raman spectroscopic investigation of dentin and collagen surfaces modified by 2-hydroxyethylmethacrylate. *J Dent Res* 1997;76:596-601.
410. Yamaguchi R, Powers JM, Dennison JB. Thermal expansion of visible-light-cured composite resins. *Oper Dent* 1989;14:64-7.
411. Yoshida Y, Nagakane K, Fukuda R, Nakayama Y, Okazaki M, Shintani H, Inoue S, Tagawa Y, Suzuki K, De Munck J, Van Meerbeek B. Comparative study on adhesive performance of functional monomers. *J Dent Res* 2004;83:454-8.
412. Yoshikawa T, Burrow MF, Tagami J. A light curing method for improving marginal sealing and cavity wall adaptation of resin composite restorations. *Dent Mater* 2001;17:359-66.
413. Yoshiyama M, Tay FR, Doi J, Nishitani Y, Yamada T, Ito K, Carvalho RM, Nakajima M, Pashley DH. Bonding of self-etch and total-etch adhesives to carious dentin. *J Dent Res* 2002;81:556-60.