20 Quantitative contribution of the collagen network in dentin hybridization AJ GWINNETT, FT TAY, KM PANO, SY WHI (*SUNY Stony Brook, NY, Faculty of Dentistry, University of Hong Kong).

Absence of a zone of partial demineralization in dentin conditioned with certain acids was found. For the purpose of this study which was to determine the quantitative contribution of the resin infiltrated, demineralized collagenous network to interfacial dentin bonding strength. Four groups each containing ten, caries-free molars were established. Dentin was decalcified in a transversal manner by 5% nitric acid for 30 minutes and then conditioned with one of the following wet silane coupling agent. Two groups served as controls bonded with All Bond 2 (10% H₃PO₄, 20%) and AmalgaBond (10-3 solution, 10%) according to manufacturer's instructions. The tested groups were subjected to 12% phosphoric acid etching of the acid tested test site at 37°C for 60 s. After washing, drying, bonding BisFl and Zeta-Crit to these specimens with All Bond 2 and AmalgaBond resulted in bond strengths of 24.2 ± 3.9 and 19.0 ± 5.6 with collagen deficient groups scoring 26.4 ± 2.30 and 19.7 ± 4.2 respectively. No statistically significant difference exists between the control and experimental groups. It was concluded that the the resin reinforced or hybridized, collagen network does not contribute any significant quantitative value on to dentin bonding with the systems tested.

21 Bonding to Demineralized and Remineralized Dentin. M. NAGAMANE*, M. STANNICEK, and K. INOSU (Kansai University, Japan and University of California, Los Angeles, USA). It was shown that the presence of fluoride accelerates dentin remineralization. The aim of this study was to evaluate bonding strength to dentin demineralized and remineralized in the presence of fluoride. 216 fresh bovine dentine specimens were prepared as follows: ID + intact, DD = demineralized for 7 days in a solution of 3% (w/v) CaCl₂ and 0.11 M NaH₂PO₄ in pH 6.5. Bonding to specimens subjected to 4 of the specimens was performed by using Bis-Therm (BIS-enchanted dentin bonding system) or self-etching adhesive system. Tensile test was performed at a crosshead speed of 1 mm/min. The mean value for each group was compared with the DD group using a two-tailed t-test and the difference between bonding to demineralized and remineralized dentin was statistically significant.

22 TEM Study on in vivo and in vitro Resin-Dentin Interfaces by Phosphorus-31 Based Vibrational NMR and X-ray photoelectron spectroscopy: Effect of a hybrid layer. A. ANZELI, W. S. DALL, and R. VAN NOORT (Department of Restorative Dentistry, University of Washington, Seattle, WA, USA).

The effects of acid primers on dentin bonding have been studied in the past. However, no studies have been performed following application of their associated resin bonding systems. The purpose of this study was to evaluate the effect of resin bonding systems. The authors examined the behavior of bonding systems by using microradiography and confocal microscopy. They hypothesized that the hybrid layer is formed by the polymerization of the resin monomers and that it is not affected by the presence of residual water. The results of this study suggest that the presence of residual water does not significantly affect the formation of the hybrid layer.

23 Structural changes in dentine surfaces demineralized with different acid primers. A. ANZELI, R. E. NORTHEAST*, and R. VAN NOORT (Department of Restorative Dentistry, University of Washington, Seattle, WA, USA).

The effects of acid primers on dentin bonding have been studied in the past. However, no studies have been performed following application of their associated resin bonding systems. The purpose of this study was to evaluate the effect of resin bonding systems by using microradiography and confocal microscopy. They hypothesized that the hybrid layer is formed by the polymerization of the resin monomers and that it is not affected by the presence of residual water. The results of this study suggest that the presence of residual water does not significantly affect the formation of the hybrid layer.