CHAPTER IV

RESULTS

The normality of the data was analyzed by one sample Kolmogorov Smirnov test. The distribution of data was found to be normal, so it was analyzed by independent t-test at 0.05 significance level. The mean micro-tensile bond strengths (MPa) and standard deviations of all adhesives are shown in Figure 4.

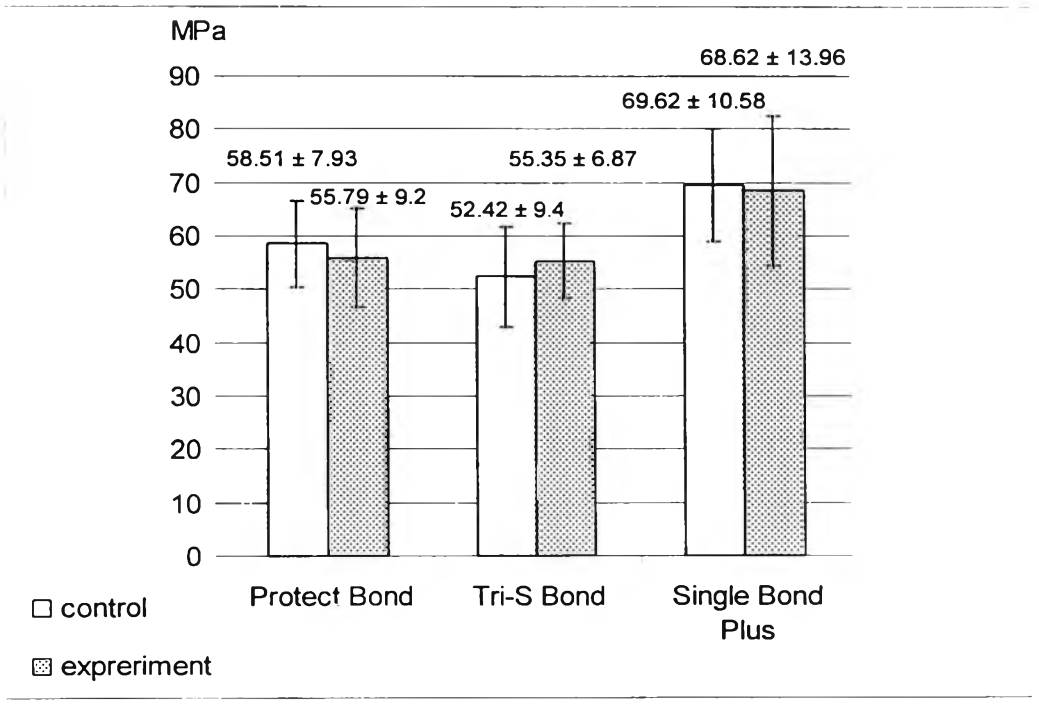


Figure 4 Mean Micro-tensile Bond Strength and Standard Deviation (n=20 for each group)

The result showed that there was no statistically significant difference (P>0.05) of micro-tensile bond strengths between control and experimental groups for all adhesives used.

For both groups, Single Bond Plus (2-step total-etch adhesive) showed significantly higher bond strengths than Clearfil Protect Bond (2-step self-etch adhesive) and Clearfil Tri-S Bond. However, there was no statistical difference between the bond strength of Clearfil Protect Bond and Clearfil Tri-S Bond.

The failure modes of each group evaluated by SEM are shown in Figure 5.

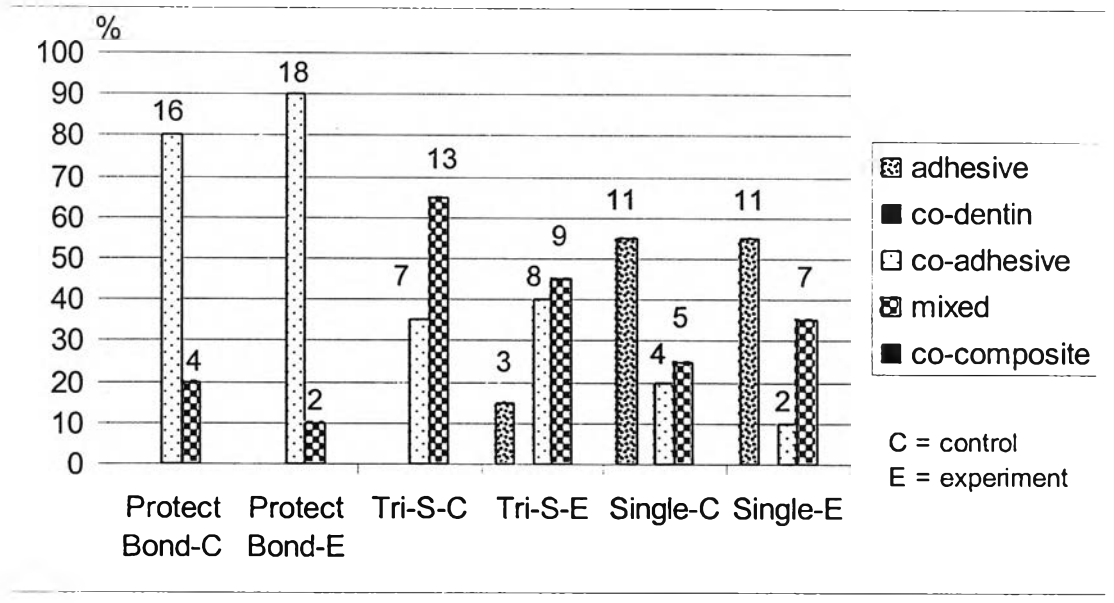


Figure 5 Percentage of Failure Mode (numbers of specimens)

For SEM analysis, there are no differences of failure modes between control and experimental groups of the same adhesive. Generally, cohesive failure in adhesive resin and mixed failure type are largely found. None of the specimens is indicated as cohesive failure in dentin and in resin composite.

Most of fracture specimens produced by Clearfil Protect Bond are cohesive failure in adhesive resin (Figure 6a), only few are mixed (Figure 6b). The majority of the specimens of Clearfil Tri-S Bond are mixed type (Figure 7c), the rest are cohesive failure in adhesive resin (Figure 7a,b). For Single Bond Plus, the large numbers of specimens are adhesive type (Figure 8a) and the remainders are mixed (Figure 8b) and cohesive failure in adhesive resin (Figure 8c).

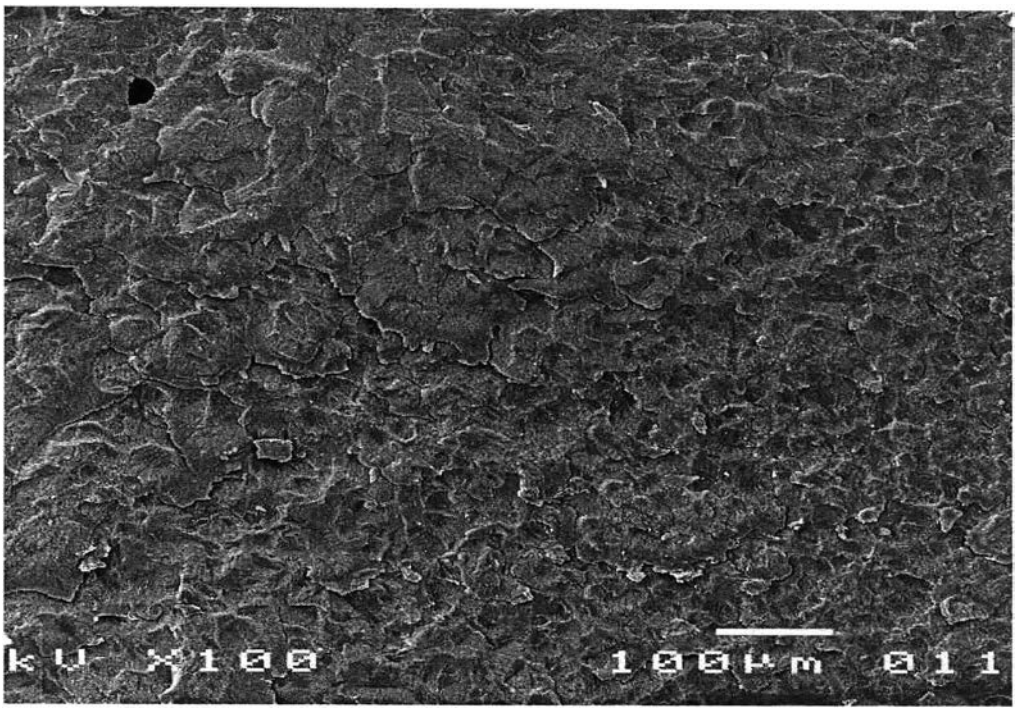
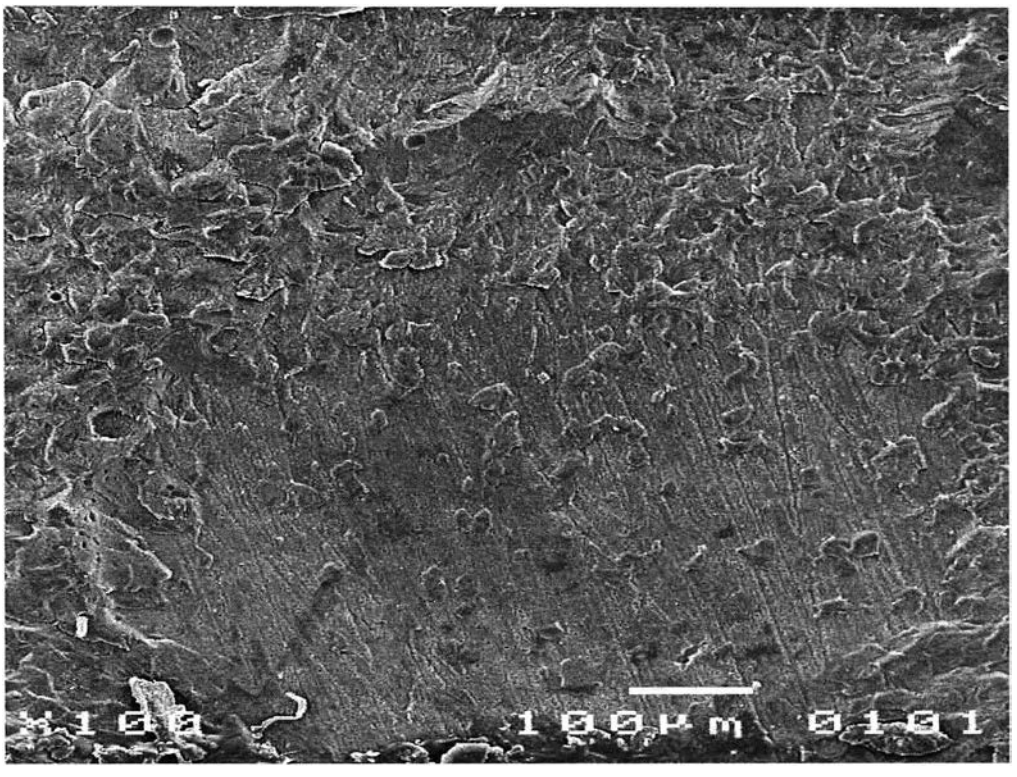


Figure 6a-b Fracture surface from Clearfil Protect Bond

a: cohesive failure in adhesive resin at resin side



b: mixed failure at dentin side

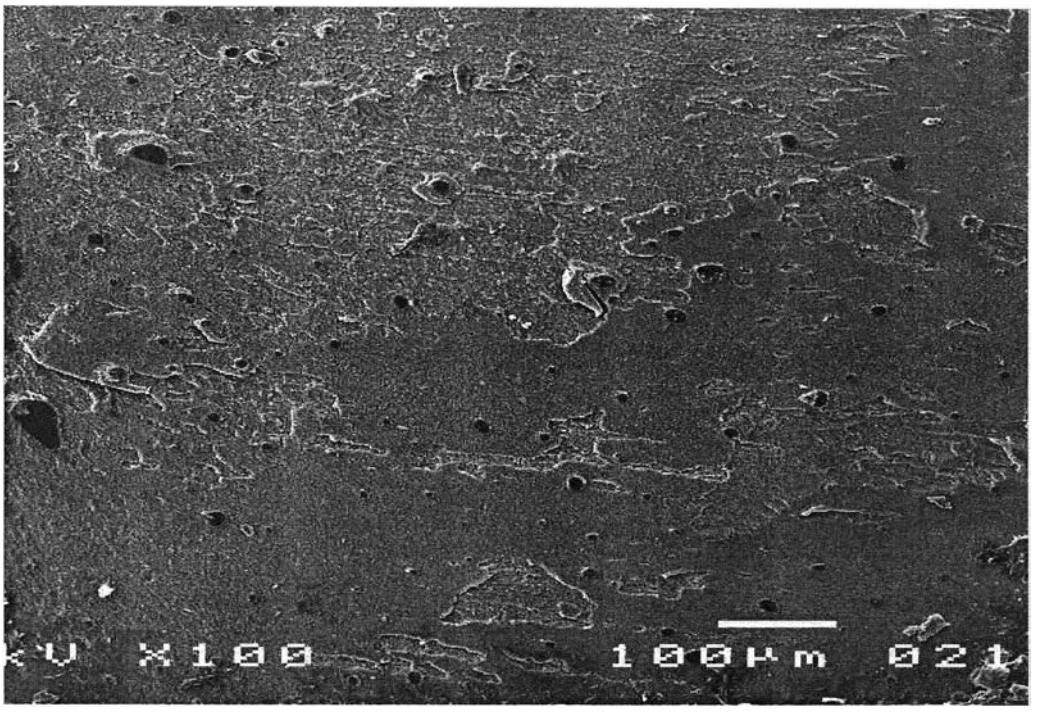
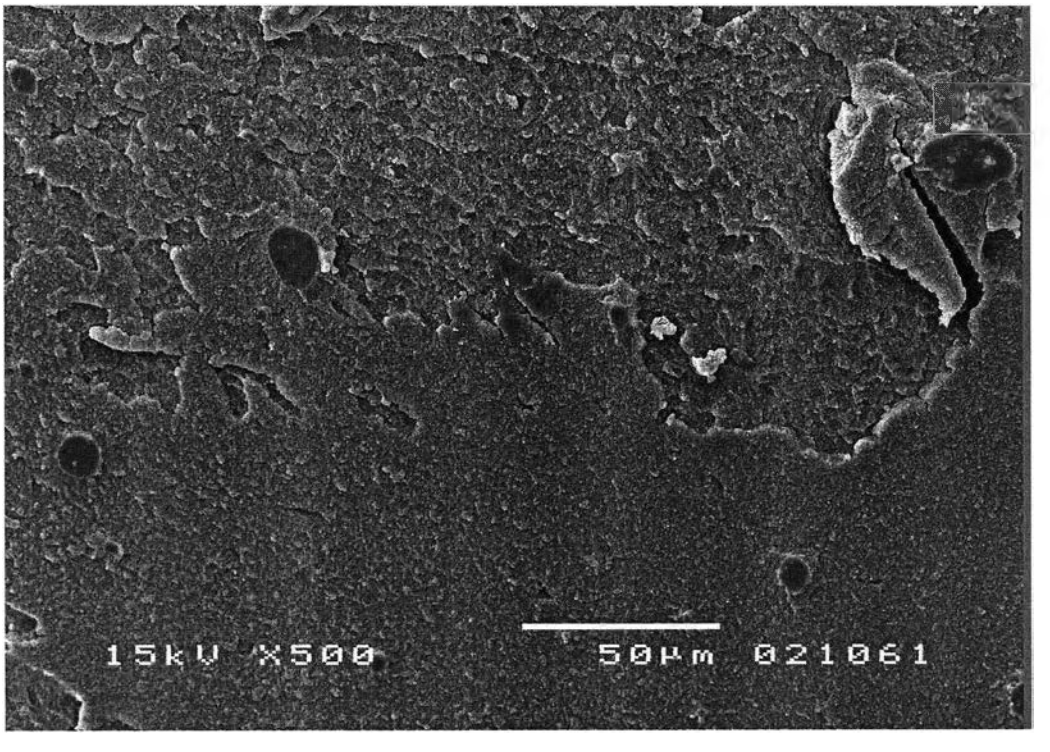
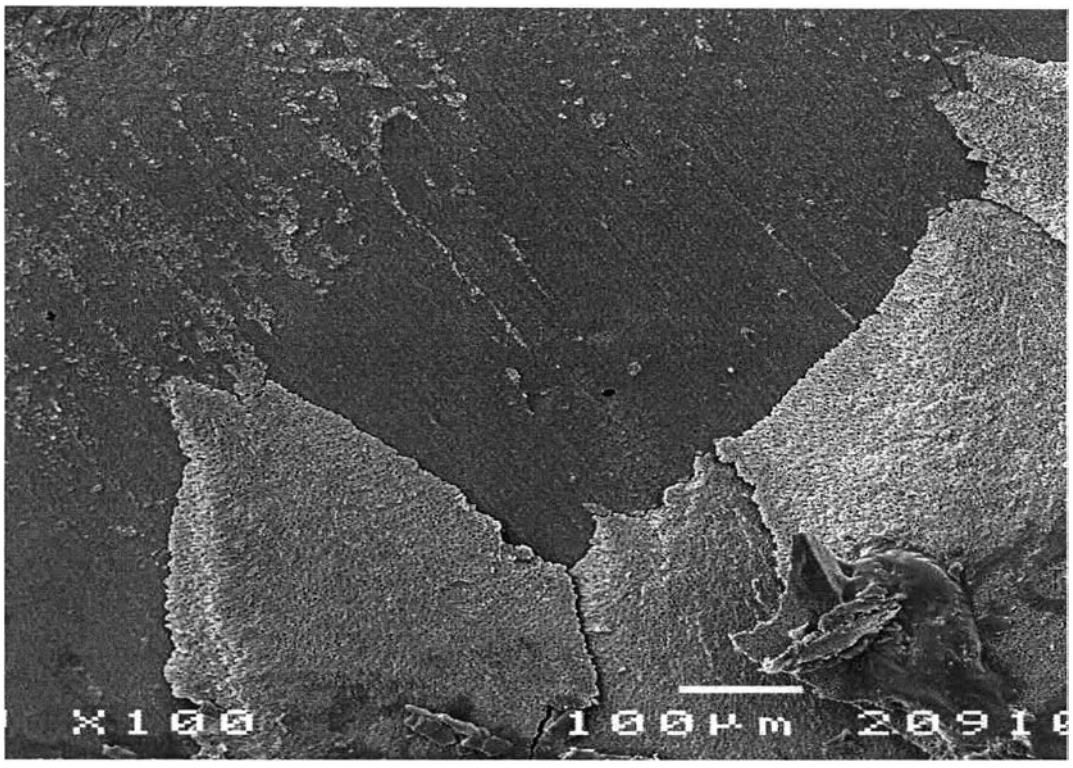


Figure 7a-c Fracture surface from Clearfil Tri-S Bond

a: cohesive failure in adhesive resin at dentin side



b: cohesive failure in adhesive resin at a higher magnification



c: mixed failure at resin side

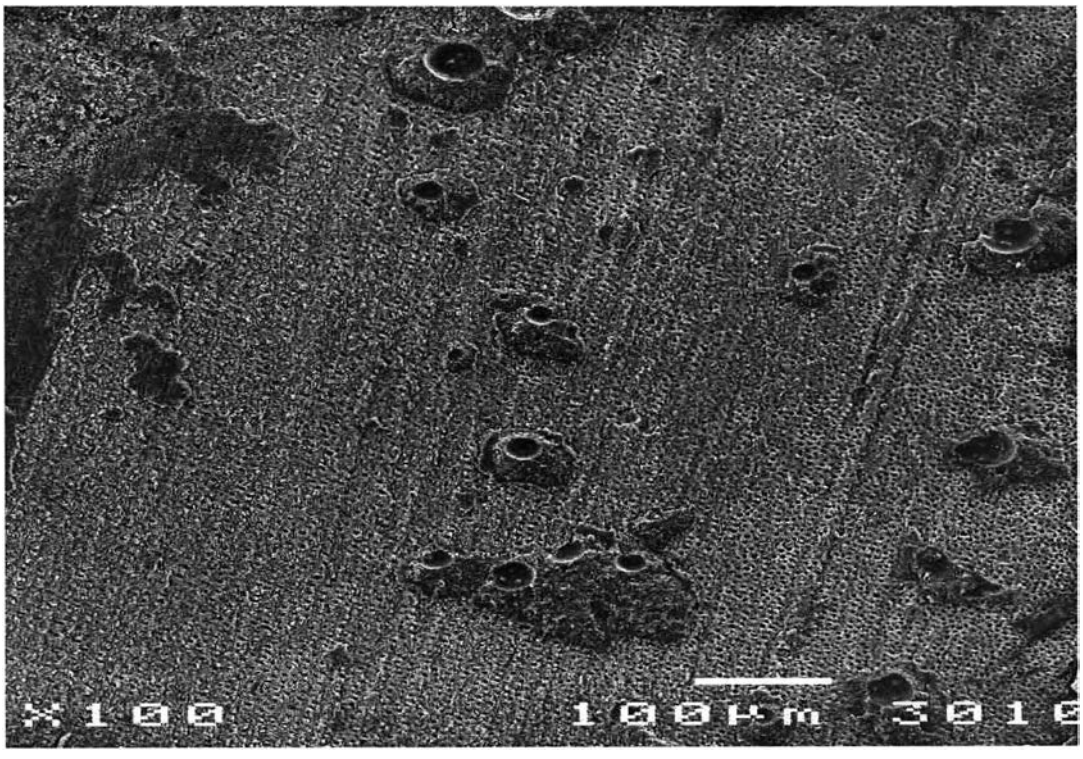
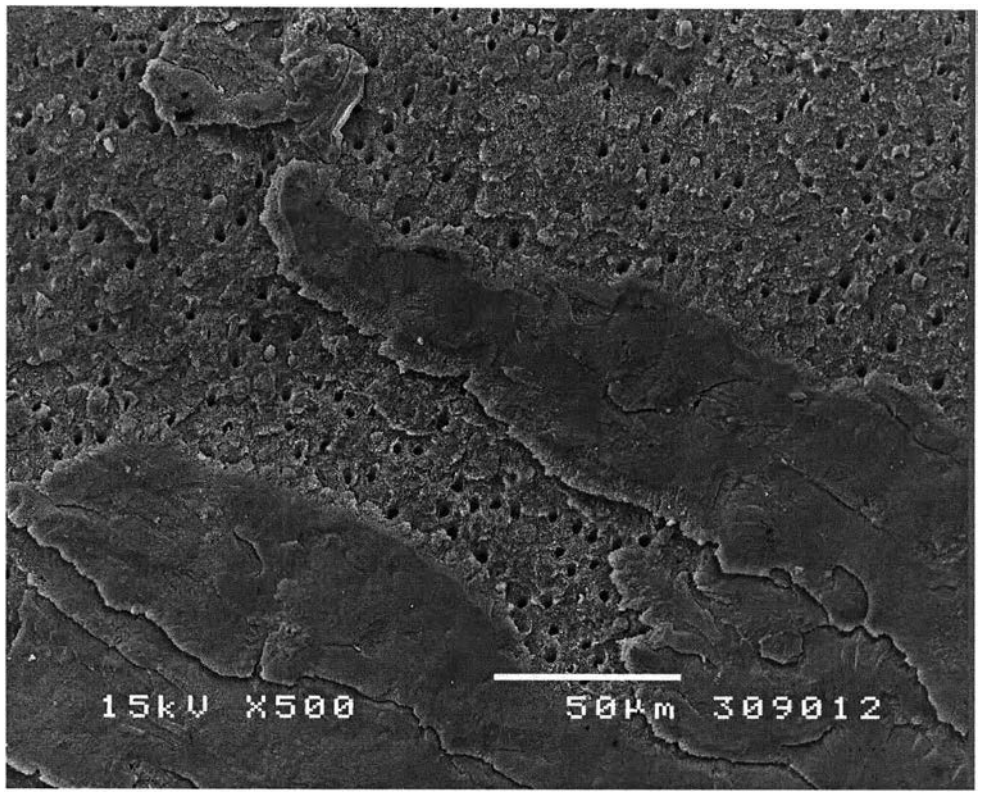
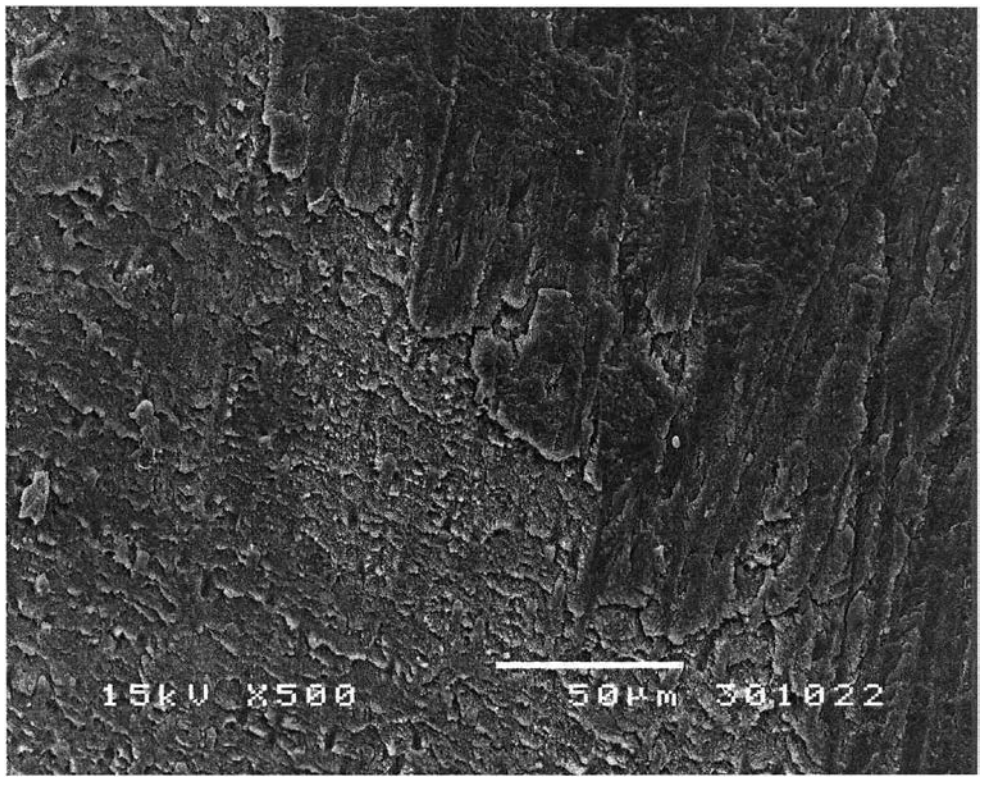


Figure 8a-c Fracture surface from Single Bond Plus

a: adhesive failure at dentin side



b: mixed failure at dentin side



c: cohesive failure in adhesive resin at dentin side.