

# **Shear Bond Strength Evaluation of an Experimental Dentin Adhesive In Comparison With 5 Commercial Adhesives in a Dental School Setting**

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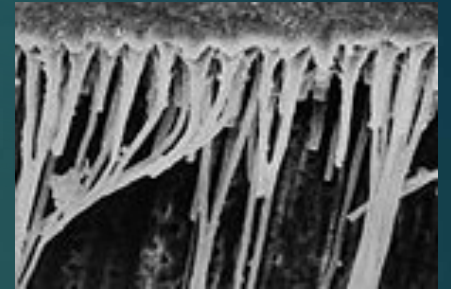
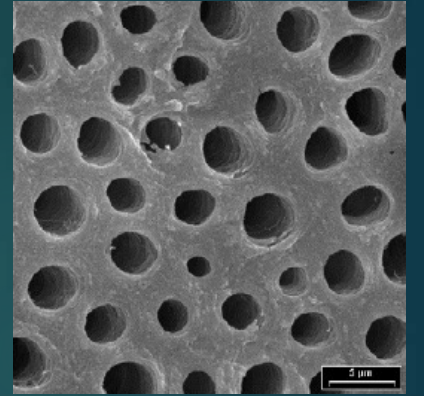
# OBJECTIVE:

- ▶ The aim of the in-vitro study was to evaluate the shear bond strength of a newly developed experimental dentin adhesive and compare it with the shear bond strength of different commercially available dentin adhesives in a dental school setting.



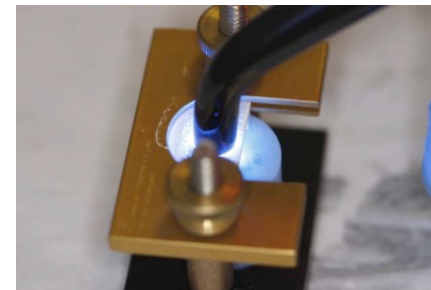
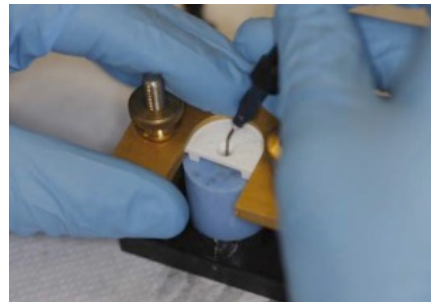
# INTRODUCTION:

- ▶ Adhesive dentistry is a rapidly evolving discipline. For many years, the dental profession has strived to achieve good adhesion of resin composite to tooth substrate, since reliable bonding would produce less micro leakage and enhanced restoration stability.
- ▶ With changing technologies, dental adhesives have evolved from no etch to total-etch (4th and 5th generation) to self-etch (6th, 7th and 8th generation) systems. In current times, development of new products is occurring at an unprecedented rate.



# METHODS AND MATERIAL:

- ▶ 143 dental students enrolled in the University of Pacific Arthur A. Dugoni School of Dentistry were assigned to participate in a “Shear Bond Test Exercise” using cross sectioned teeth that are embedded in acrylic resin for shear bond testing. Each student conducted six tests.



Sample preparation



# METHODS AND MATERIAL:

- ▶ Exposed dentin was treated with the following adhesive system:
- ▶ experimental material Nougat (3M),
- ▶ Scotchbond Universal(3M),
- ▶ Peak SE (Ultradent),
- ▶ Peak LC (Ultradent),
- ▶ Prelude (Danville) and
- ▶ Clearfil Universal (Kuraray).

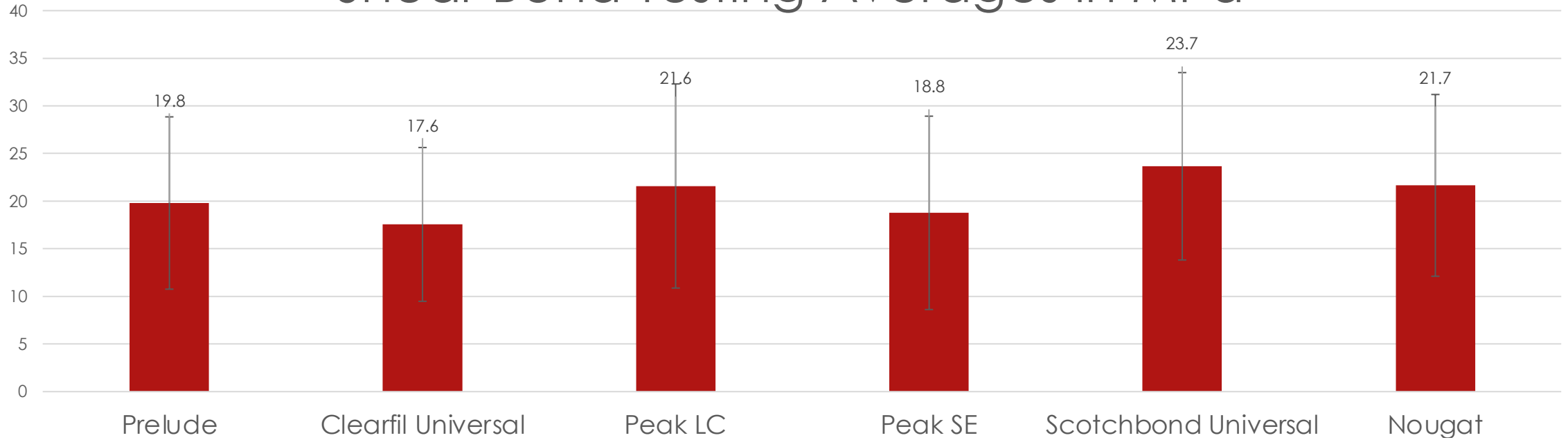


# METHODS AND MATERIAL:

- ▶ The samples have then been inserted in a clamp holder to create perpendicular composite rods. These rods were sheared off with an Ultratester machine at a speed of 1mm per min.
- ▶ The results are recorded in MPa.
- ▶ ANOVA One Way statistical analysis was performed.

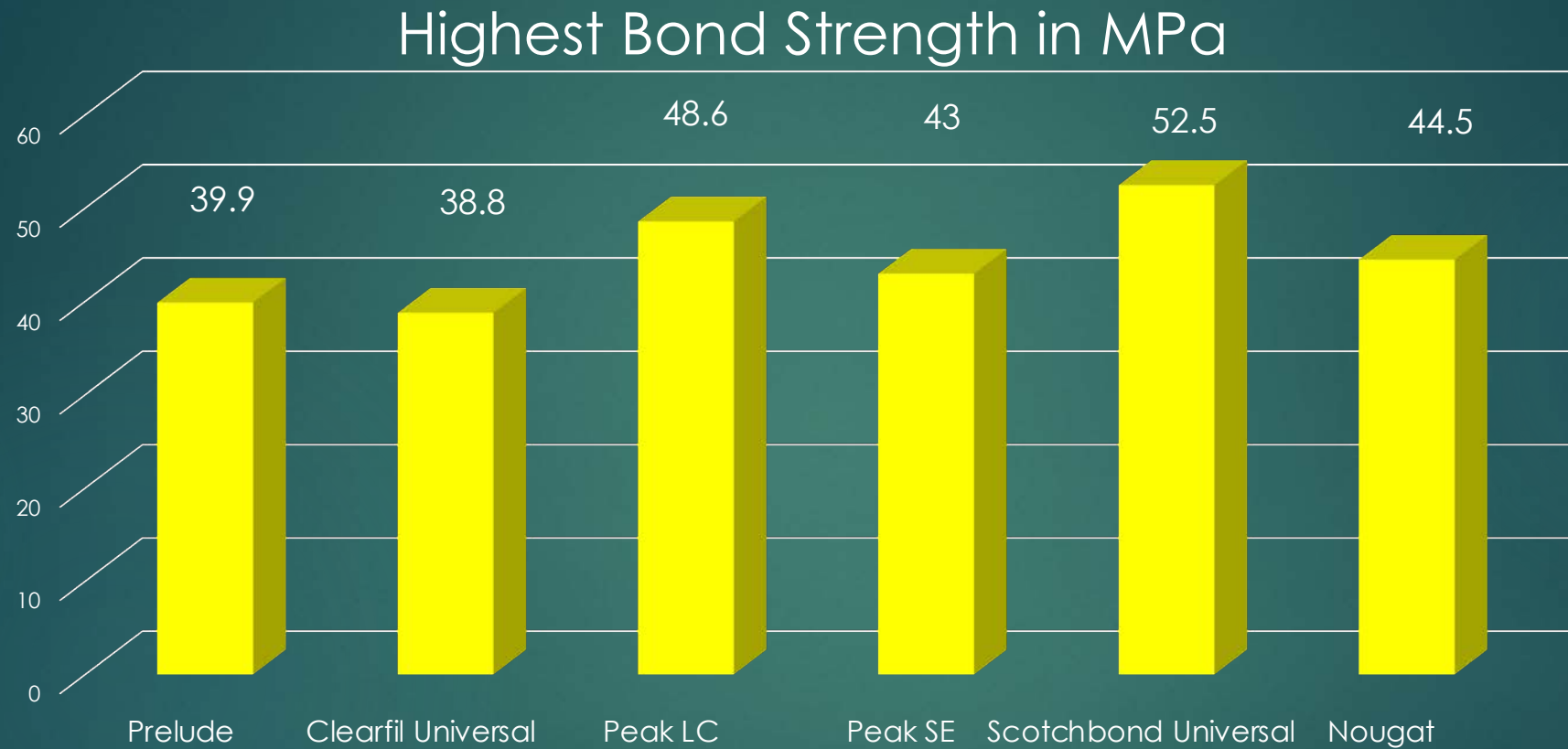


## Shear Bond Testing Averages in MPa



**RESULTS:**

# RESULTS:



One-way ANOVA test revealed statistically significant differences among all the groups ( $p= 5.28\text{E-}07$ )



# CONCLUSION:

- ▶ The experimental material Nougat (3M) does show a promising improvement in the dentin bond strength compared to the other commercially available dentin adhesives that were tested in this study. However, Scotch bond Universal from the same company 3M still provides the highest shear bond strength and was superior to Nougat.



# Acknowledgements

- ▶ Thank you, 3M, for the Material support.
- ▶ A special thank you to Dr. Karen Schulze for providing invaluable guidance through out the process.



# Thank You For Your Attention!

QUESTIONS?