

1996 Research Award

Principal Investigator: Professor Robert P. Kusy

Other Investigators: Mr. Scott Zufall

Title of the Project: Enhancing Composite Archwire Performance Using Parylene C Surface Coatings

Institution: University of North Carolina at Chapel Hill

Brief Summary: In keeping with the goal of developing an array of aesthetic wires that allow the clinician to control wire stiffness without having to change wire size, this research project evaluated the *in vitro* performance of a Parylene C composite archwire coating by measuring its containment, friction, notching, and sorption characteristics. As a result of coating, the reinforcement fibers were contained during severe bending, and sorption properties were slightly improved. Frictional measurements were higher than expected, albeit likely exaggerated by the notching effects. During the friction tests, the coating protected the reinforcement fiber from damage caused by sharp edges on the floor and sides of the bracket slots. In general, a Parylene C coating improved the ability of the composite archwire to withstand the rigorous demands of orthodontic treatment.