

Abstract Submitted  
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**Biopolymers for Medical Applications: Polyglycerol Sebacate (PGS) doped Hydroxyapatite (HA)**<sup>1</sup> MARIA TERUEL, NARAYANAN KUTHIRUMMAL, NICOLE LEVI, COLLEGE OF CHARLESTON TEAM, WAKE FOREST UNIVERSITY TEAM — In the investigation to engineer the ideal scaffolding device for cleft palate repair, polyglycerol sebacate (PGS) doped with hydroxyapatite (HA) were chosen for their elastomeric and biodegradable properties, as well as their cost-effective synthesis. Hydroxyapatite was integrated into the PGS to form a composite with high porosity and improved mechanical properties yielding a good substrate for cell attachment during the repair process. FT-IR scans were performed to characterize the composite polymer. Differential Scanning Calorimetry (DSC) was utilized to identify an acceptable glass transition temperature ( $T_g$ ), between -18 and -21 °C. At this  $T_g$ , it was determined that the material was sufficiently polymerized to a point where it was durable yet pliable enough to use for cleft palate devices. In the synthesis of PGS 3% and 5% HA, a  $T_g$  of -20.10 °C and -21.72 °C, respectively, was achieved and further analytical tests were then performed on the polymers. Methods of analysis included X-Ray Diffraction and Tensile Strength Testing.

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