Mineralized collagen scaffolds have been used extensively to promote bone regeneration and heal critical sized bone defects in craniomaxillofacial applications, such as cleft palate and battlefield trauma. These scaffolds provide the right pore size and bioactivity for this type of application; however, they lack the necessary mechanical support needed for bone replacement. 3D printed poly(lactic acid) was added to mineralized collagen scaffolds to increase the mechanical properties to more closely match those of bone. This image demonstrates the full incorporation of the poly(lactic acid) mechanical reinforcement with the surrounding porous mineralized collagen to create a composite for bone regeneration. This composite material had the same bioactivity and increase mechanical properties compared to mineralized collagen scaffolds without reinforcements. Using 3D printed poly(lactic acid) as a mechanical support enables various designs to be printed and combined with the mineralized collagen for increased support and even shape-fitting properties, and in addition, poly(lactic acid) is an FDA approved, biodegradable material safe for the body.