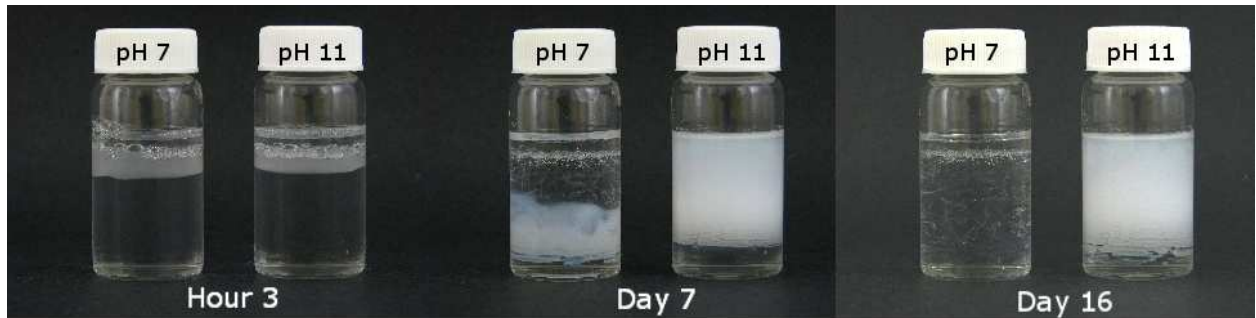


Novel Biocomposite Materials



Biomaterial design has advanced significantly since the inception of artificial, implantable devices a half-century ago. As scientific mastery nears the level of scientific imagination, the efficacy of engineered biologic materials and the number of applications for them continues to grow. With a continually improving understanding of how native tissues are formed in situ, novel techniques can be applied to artificial synthesis methods to create materials which more closely mimic natural systems.

One of the most significant advancements in the field of biomaterials has been the increasing use of composites for designing synthetic tissues. By incorporating multiple components into one material, engineers are able to tune a larger range of physical properties with a greater degree of control. In some situations, the improvement to mechanical, chemical or biological properties is greater than the sum of the individual parts.

In the Bhatia lab, we are currently working on new biocomposite materials for a wide range of applications. Our hydrogel/calcium-phosphate composites combine the elasticity and strength of a networked gel with the stiffness and bioactivity of bone-like apatite. With results from a series of characterization techniques we hope to show you how these composites and others like them are shaping up to be the next generation of bio-inspired materials.