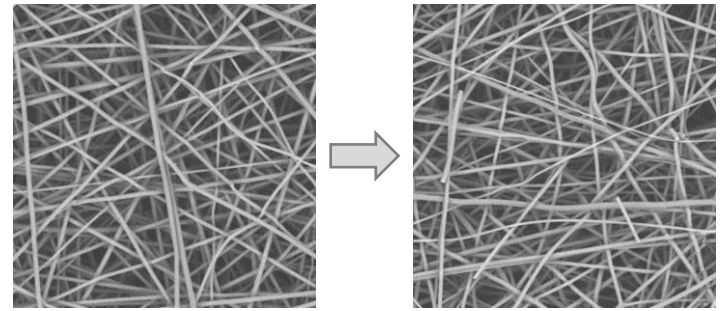


Our objective is to understand structure and physical properties of polymer materials at surface and interfacial regions associated with their degradation in underwater environments. In addition, we will lead to the development of multi rock-type biopolymers based on the establishing of the degradation control methods. Various surface materials such as melt-spun fibers, electro-spun fiber mats, and thin films are used as samples. The surface morphologies are examined by scanning force microscopy. Furthermore, thermal molecular motion and mechanical properties are investigated based on dynamic mechanical analyses and tensile tests, respectively. Local conformation at the water interface is analyzed by sum frequency generation spectroscopy. Polymer samples blended with different polymers such as hyperbranched polymers and enzymes are prepared and various factors are examined. By clarifying the relationships between each factor and degradation behaviors, we aim to create polymer materials that can arbitrarily control their degradation characteristics in underwater environments.

Degradation of Polymer Materials

Fiber mat



Thin film

