

Seminar: 11:10 am Friday, January 19
Science 1: Room 1002

Host: Yi Zhang

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Towards Renewable and Recyclable Barrier Materials

Abstract: There is an ongoing international effort to develop circular alternatives to conventional plastics, particularly in the packaging sector, the largest contributor to packaging waste. Primary barrier packaging that provides low oxygen and water vapor transmission is a large contributor to single-use plastic waste, due to the difficulty of separating and recovering the individual layer components at end of life. One way to achieve a circular economy of materials is to derive materials from renewable resources that have the ability to be recycled or upcycled. This talk describes innovations in the production of barrier polymer coatings suitable for food, pharmaceutical and electronics packaging, based on combinations of cellulose and chitin, in various forms (i.e., soluble or fiber). Two significant challenges include the poor water vapor barrier properties of native poly(saccharide) materials, and uncertainty about their recoverability and recyclability. The talk will focus on two recent advances: 1. chemical modifications that enable management of water vapor barrier properties and 2. the ability to recover and recycle cellulose and chitin nanomaterials.

Meredith Lab webpage: <https://sites.gatech.edu/meredith/>