

Soil and Water Science Department Seminar

Speaker: **Tiantian Li**
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Advisor: Dr. Yuncong Li & Dr. Bin Gao

Title: **Chitosan and graphene oxide nanocomposites as coating materials for controlled release fertilizer**

Date: Monday, July 6th

Time: 3:15 pm

Location: McCarty Hall A Room G186

Fertilizers are one of the most essential components for crop production, profitable commodities for agrichemical industry, and also potential sources for water and air pollution. Using controlled-release fertilizers (CRFs) is an effective approach to provide needed nutrients for plant growth and minimize losses of nutrients into water and air, and represents one of the major developments in the fertilizer industry recently. Currently CRF is achieved through packaging a water-soluble fertilizer with a polymer or sulfur coating. Ideally, fertilizer releases from CRFs synchronize with nutrients demand for plant growth. However, commercial CRFs often release nutrients too quick or too slow because of the coating materials used. After released nutrients, these synthetic coating shells take long time for degradation and cause environmental concern on soil quality. This is an opportunity for developing a new type of controlled release fertilizers. In this study, a novel CRF technology was developed using chitosan (CS) and graphene oxide (GO) nanocomposites as coating materials. Findings from this study showed that CS and GO interacted with each other and formed homogeneous nanocomposites film. Water soluble fertilizers were successfully encapsulated by CS-GO nanocomposites with controlled-release behavior. With the presence of GO, the physicochemical properties of coatings have been improved.

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