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Soil and Water Sciences Department Graduate Student Research Seminar

Speaker: **Tiantian Li**
Ph.D. Dissertation Degree Candidate

Advisor(s): Yuncong Li, Ph.D.
Zhaohui Tong, Ph.D.

Title: **Fabrication and Characterization of Bio-Based Adsorbents from Biomass Derived Wastes**

Date: Friday, November 1st

Time: 3:00 pm – 4:00 pm

Location: McCarty Hall A, Room G186

In recent years, the conversion of bio-based wastes to bio-adsorbents has attracted a lot of attention due to its low cost, abundance, renewability, and biodegradability. The objective of this research was to chemically and physically functionalize bio-wastes (lignin and biochar) for developing effective and low-cost bio-adsorbents that removes nitrate and phosphate anions from aqueous solutions. Experimental results indicate that the sorption abilities of pristine biochar for P are limited. After grafting polyethyleneimine (PEI) to biochar, the sorption of P significantly improved. Pristine lignin showed little adsorption ability of nitrate and phosphate. However, lignin functionalized with amine groups was capable of adsorbing nitrate and phosphate ions in aqueous solution. Adsorption of phosphate was further enhanced by embedding iron oxide in the lignin to create amine functionalized magnetic lignin. The increase adsorption was due to electrostatic interaction, ligand exchange and surface precipitation/crystallization.

This seminar can be viewed via live or watched later via this link: **Tiantian Li.** Viewers of the live stream may now ask questions by clicking on the message icon at the bottom. Questions will be read at the end during the question and answer portion. In addition, all seminars are archived for viewing on our **SWSD Seminar Page**.