

**Environmental Engineering**

**and Earth Sciences**

**EEES Department Seminar**

**“molecular biogeochemistry for critical environmental issues: climate change, nano-material pollution and antibiotic resistance”**

**PRESENTED BY**

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**Abstract**:

There are many grand challenges for sustainable development and environmental stewardship, including climate change, antibiotic resistance development and pollution of engineered nano-materials. To resolve these issues, complete understanding about the environmental reactions for major elements and pollutants is needed. Our research interests are focused on the organic matter-mineral-bacteria interfacial redox reactions, with implications on the stability of carbon in soil and degradation of emerging contaminants. I will present several examples including: 1) the stability of carbon in the redox reactions; 2) microbial degradation and plant uptake of carbon nanotube; 3) organic matter-mediated degradation of triclosan. Our results demonstrated the importance of iron reduction in the mobilization and transformation of organic carbon. We showed a bacterium able to transform and degrade carbon nanotube, which would improve the treatment of carbon nanotube-polluted waters and prediction of their natural fate. Digestion coupled with Raman and thermal gravimetric analysis was used to analyze the uptake and translocation of carbon nanotube in agricultural plants. Our results also showed the dual role of natural organic matter in regulating the degradation of antimicrobial agent, as electron shuttle and sequester.

**Bio:**

Yu Yang is an assistant professor of environmental chemistry in the Department of Civil and Environmental Engineering at University of Nevada, Reno. Yu Yang’s research interests focus on organic matter-mineral-bacteria interfacial reactions, with implications on the cycles of carbon and degradation of emerging contaminants. His current work is funded by Department of Energy, Department of Agriculture, NSF EPSCoR, and industry partners. He has published 41 peer-reviewed articles, with 15 in Environmental Science and Technology. He has actively collaborated with colleagues at UNR, Desert Research Institute, University of Wisconsin-Madison, University of Delaware, Georgia Institute of Technology, Lawrence Livermore National Lab, Oak Ridge National Lab, and others. He is currently a guest editor of Chemical Geology, and a member of editorial board of Chemosphere. He received his B.S., and Ph.D. degree from Peking University (China) in 2010, and did his postdoctoral projects at Yale University and University of Notre Dame.

**2:30 PM**

**Friday, October 7, 2016**

**L.G. Rich Auditorium Advanced Material Center**

***Refreshments following Seminar***