

Abstract Submitted
for the TSF06 Meeting of
The American Physical Society

Mechanism of Arsenic Adsorption Using Wheat Biomass – a spectroscopic study OSCAR CALVO, FELICIA MANCIU, Physics Department, University of Texas at El Paso, JOSEFINA MALDONADO, JORGE GARDEA-TORRESDEY, Chemistry Department, University of Texas at El Paso — Arsenic is a trace element that is toxic to animals, humans included. Since the current Environmental Protection Agency guidelines regarding water quality standards indicate that arsenic concentrations in excess of 50 ppb are hazardous to welfare of humans, the search for new water remediation methods or improvements of previous methods have been a focus in environmental technology. Investigations of arsenic uptake have used wide range of sorbents including iron oxides and oxyhydroxides, for which it have been proved that arsenic shows high affinity. In this study, we used far-infrared spectroscopy to examine the arsenic reduction using biomaterials. pH dependence analysis by FTIR demonstrates the sorption of iron oxides and oxyhydroxides by the wheat biomass. The splitting of 350 cm^{-1} amorphous iron oxide vibrations is a direct proof of the arsenic uptake. In addition, there is evidence of sorption of arsenic at sulfhydryl group of cysteine existent in wheat.

Oscar Calvo
University of Texas at El Paso

Date submitted: 05 Sep 2006

Electronic form version 1.4