

## DIVISION OF ENVIRONMENTAL CHEMISTRY

238th ACS National Meeting  
Washington, DC  
August 16-20, 2009

### WEDNESDAY EVENING

#### Emerging Environmental Technologies towards a Cleaner and Sustainable Society

##### Posters

P. Bishop, *Organizer*  
V. Shah, *Organizer, Presiding*

**6:00 - 8:00**

**199.** Removal of viruses and organic matter from water and wastewater using zero-valent iron. **C. Shi**, J. Wei, Y. Jin, K. E. Kniel, P. C. Chiu

##### ABSTRACT

##### ENVR 199

#### Removal of viruses and organic matter from water and wastewater using zero-valent iron

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A major challenge facing the water industry is how to control microbial pathogens, disinfection by-products (DBPs), and chlorine residuals simultaneously, and to do so at an acceptable cost. While alternative disinfection technologies exist, many of them are expensive and have additional drawbacks. We evaluated zerovalent iron (ZVI) as a potential solution to this problem. If applied to a water treatment plant or water reclamation plant, ZVI may help to simultaneously remove viruses and other microorganisms, as well as organic

matter (a DBP precursor), prior to chlorination, hence addressing all three aspects of the problem at the same time. We will present findings from a recent project supported by Water Research Foundation (formerly AwwaRF). Results from a series of flow-through column experiments, using the phages MS2 and phiX174 and the viruses Adenovirus 41 and Aichivirus in synthetic and real water samples from two water treatment plants and a water reclamation plant, support the feasibility of ZVI to water and wastewater treatment processes. The advantages and potential concerns of applying ZVI will also be discussed.