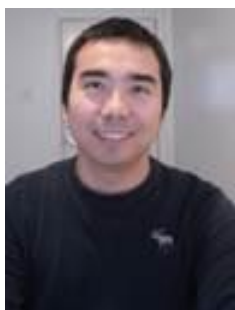


## Abstract

Corrosion has been one of the largest costs to the U.S. economy, only next to health care and real estate in total costs per year. The direct costs of corrosion were estimated at about \$486 Billion in 2012. Researchers have developed various technologies to slow down or even prevent corrosion from happening; however, anticorrosion products that are more effective, lower cost, easy to apply, compatible to the current technologies are still needed. The objective of this proposal is to provide a general solution for metal corrosion protection by developing a smart coating based on Halloysite Nanotubes (HNTs). The coating will release corrosion indicator and inhibitor simultaneously upon occurring of metal corrosion. This smart coating has the ability of early corrosion detection, as well as corrosion inhibition, and could dramatically decrease the corrosion damage and maintenance cost.



### **Biography**

Haoran Chen is currently studying in a Ph.D program in Materials Science, Engineering, and Commercialization Program (MSEC) at Texas State University-San Marcos. He received his master degree in Eastern Michigan University at Ypsilanti, MI. The topic of his master thesis was *Polymers in Fouling release coating science*. He joined MSEC in January 2012 after three years of study in Material Science in University of New Hampshire, Durham, NH. His Ph.D dissertation will be about rice husks (RH). Rice husks contains about 15% of hydrated silica and 85% of lignincellulose (LC). In addition to the two main components, RH also contains a trace amount of other substances such as metal ions, chlorides, phosphates, etc. His dissertation will attempt to utilize the RHs for useful raw materials, such as separating the LC from silica in RH by ionic liquid to be the feed stock of biofuel; using silica in RHs as a substrate of catalyst; using silica to make various ceramic pigment, ceramic glass, and photoluminescent materials.