



FAMU – FSU COLLEGE OF ENGINEERING  
DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING  
2525 Pottsdamer Street  
Tallahassee, Florida



**Tag Meeting No. 1**  
Friday, January 27, 2012  
11:30 – 1:30, Room B202

## Minutes

**Project Title:** Usage of Microbial Fuel Cell Technology in Landfills. Year II. Enhanced Organic Compound Decomposition and Nitrogen Removal

**Tag Members:** Lee Martin, Peter Grasel, Michael Watts, and Clayton Clark

**Principle Investigators:** Gang Chen, Amy Chan Hilton, and Kamal Tawfiq

In attendance: Peter Grasel, Lee Martin, Michael Watts, Clayton Clark, Gang Chen, Amy B. Chan Hilton, Sandip Patil, Matthew Hendrix. John Schert and Tim Vinson attended the meeting through GoToMeeting.

A website has been developed for this research ([www.eng.fsu.edu/~gchen](http://www.eng.fsu.edu/~gchen)). All the information regarding this project has been uploaded to this site to facilitate the dissemination of the research discovery.

## Agenda

### 1. Project Overview

Detailed information is available at <http://www.eng.fsu.edu/~gchen>

### 2. Landfill Leachate Treatment in Ammonium Oxidation/MFC Reactor

Landfill leachate collected from landfills located in Northwest Florida will be treated in a laboratory scale continuous ammonium oxidation/MFC reactor, which is composed of an in-line nitrification column and a MFC reactor. Impact factors such as the organic load, retention time, pH, and alkalinity as well as nitrification reaction time will be investigated.

### 3. Landfill Leachate Treatment in MFC/Anammox Reactor

Landfill leachate collected from landfills located in Northwest Florida will be treated in a laboratory scale continuous MFC/Anammox reactor. Besides factors impacting organic removal such as the organic load and retention time, factors that may impact the nitrite accumulation in the Anammox reaction such as the dissolved oxygen concentration and alkalinity will be explored. The MFC/Anammox reactor will be compared with the ammonium oxidation/MFC reactor in terms of power generation as well as organic compound decomposition and nitrogen removal.

#### **4. Dissemination Plan for this Project**

#### **5. Potential Funding Sources for the Continuation of Related Research**

— NSF/CBET/Environmental Engineering

#### **6. Discussion**

1. Peter Grasel mentioned that nearby a landfill site located in Miami, pure sugar was used to provide carbon source to encourage denitrification in the aquifer. However, owing to the heterogeneity of the geological formation, the process was not successful. Therefore, for field applications, there will be uncertainties. For technology of this research to be promoted to field applications, field pilot research may be required.

2. Matt Hendrix shared his experience of field work of in situ remediation.

3. Discussion was held for seeking following-up funding to continue the research. It seems that the Environmental Engineering Program under CBET of NSF should be the first priority. Results of this research will be used as primary data for applications of continuous funding. The deadline of the funding application from NSF will be February 2013.

4. Dr. Mike Watts proposed to use ozone for nitrification in the Ammonium Oxidation/MFC Reactor. We agree to test it during the experiments.

5. Power generation was discussed. The TAG members suggest the comparison of power generation with those of methane from small landfills.

6. Lee Martin raised the following question: “It may be too early to tell but as the project progresses, it seems one question that will come up could be; would there be any size limitations/restrictions on the MFC/Anammox reactor concept if it were constructed at a landfill site?” We all agree this is a good question and we will address this question with the progress of this research.