WATER AND ENERGY SUSTAINABLE TECHNOLOGY CENTER (WEST)

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Abstract

WEST is a new Center at the University of Arizona which opened in the spring of 2016. The $10m facility is the result of a public/private partnership between the University of Arizona and Pima County Regional Wastewater Reclamation Department. Multiple unique features make WEST uniquely positioned for state-of-the-art research and technology evaluation with respect to wastewater treatment, and water and biosolids reuse. For example, WEST is co-located with a newly commissioned wastewater treatment plant (Agua Nueva) allowing for direct access to sewage, effluent and biosolids throughout the treatment train. Current studies related to wastewater include: i) evaluation of microbial indicators for process control of wastewater treatment including phage and other viruses; ii) evaluation of the survival of human pathogenic viruses during anaerobic digestion; iii) high throughput sequencing for process control of wastewater treatment; iv) new technologies for reduced energy consumption during sewage treatment including removal of high concentrations of ammonia from effluent using anammox technology; and v) advanced treatment of reclaimed water.

Keywords

High Throughput Sequencing for Process Control of Wastewater Treatment; Novel Technologies for Wastewater Treatment; Pathogens Removal from Sewage; WEST Center

Introduction

The WEST Center is a new facility that is focused on water and wastewater treatment, and monitoring technologies, and resource recovery. WEST is co-located with the new Pima County Water and Energy Sustainability Campus, which includes a full-scale advanced wastewater treatment and water reclamation facility, recycled water production by Tucson Water using engineered recharge basins and constructed wetlands. WEST is unique in its ability to conduct the translational research necessary to advance the sustainable water and energy technologies of the future.

Figure 1: Water & Energy Sustainable Technology Center (WEST)

WEST Concept Vision

The WEST Center aspires to be a venue for research and development of water treatment technologies, contaminant monitoring tools, energy minimization and production, and innovative educational and training components.

The WEST Center Laboratories

- Administrative offices, conference rooms, student study areas
- Real-Time Water Monitoring Lab
- Molecular Microbiology Lab
- Aquatic Toxicology Lab
- Water Treatment Lab
- Energy Lab
- Hi-Bay area for Demonstration Laboratory Water Treatment Trains and Technologies

Figure 2: Real-Time Sensor Lab

The WEST Private/Public Partnership

What makes the WEST Center unique is a public and private sector partnership which provides funding for the Center, which enhances extramural grant support and University of Arizona support.

Figure 3: Pima County lab

WEST Membership Annual Fees

- Founding Member $100,000
- Member $35,000
- Associate Member $15,000

Potential Partners

- Municipal drinking water treatment system manufacturers
- Municipal wastewater treatment system manufacturers
- Industries with water and energy usage
- State and federal water quality regulators
- Municipal drinking water agencies
- Municipal wastewater agencies
- Water industry organizations/associations (AWWA, EPA, NSF, WRRF, WaterRF, WERF, etc.)
- Energy companies
- Research scientists
- National Science Foundation Water & Environmental Technology (WET) Center
- Federal agencies including, but not limited to: DoE; DoD; CDC; Homeland Security; EPA; NSF

All members constitute the Industrial Advisory Board (IAB) which meets biannually to select new projects and report on ongoing projects. The membership level determines voter privileges on specific projects. The Bylaws and additional information on WEST can be found at http://west.arizona.edu.

In this presentation examples of current projects at WEST will be discussed.