

LAB PROJECT PROPOSAL

RESEARCH QUESTION: Is activated sludge with fixed film packing more resilient under variable loading than traditional activated sludge suspended growth systems?

EQUIPMENT REQUIRED:

- Two (2) Chemostats: one chemostat will be used to simulate activated sludge with fixed film packing and the other will be used to simulate a traditional activated sludge suspended growth system
- Fixed Film Media: Siemens Agar and Anox Kaldnes have both provided media that may be used for the experiment.
- Peristaltic Pump on Timer: a peristaltic pump will be used to periodically dose each chemostat with fresh substrate.

CHEMICAL/PHYSICAL ANALYSIS:

- Settrometer: liquor from each chemostat will be periodically removed and settleability will be measured.
- COD Demand: initial substrate COD demand and final liquor decant COD demand will be measured.
- Total Nitrogen: initial substrate total nitrogen and final liquor decant total nitrogen will be measured.
- Dissolved Oxygen: chemostat DO will be measured periodically.
- Oxygen Uptake Rate: oxygen uptake rate will be measured periodically.

METHODS:

1. Constant Feed: Set up and run chemostats with constant dose of substrate and measure settleability, COD Demand reduction, Total Nitrogen reduction, DO, and Oxygen Uptake Rate. Record data as baseline for chemostat behavior under constant feed conditions.
2. Intermittent Feed: Set up and run chemostats with intermittent dose of substrate and measure settleability, COD Demand reduction, Total Nitrogen reduction, DO, and Oxygen Uptake Rate. Record data for chemostat behavior under intermittent feed conditions and compare with constant feed conditions.