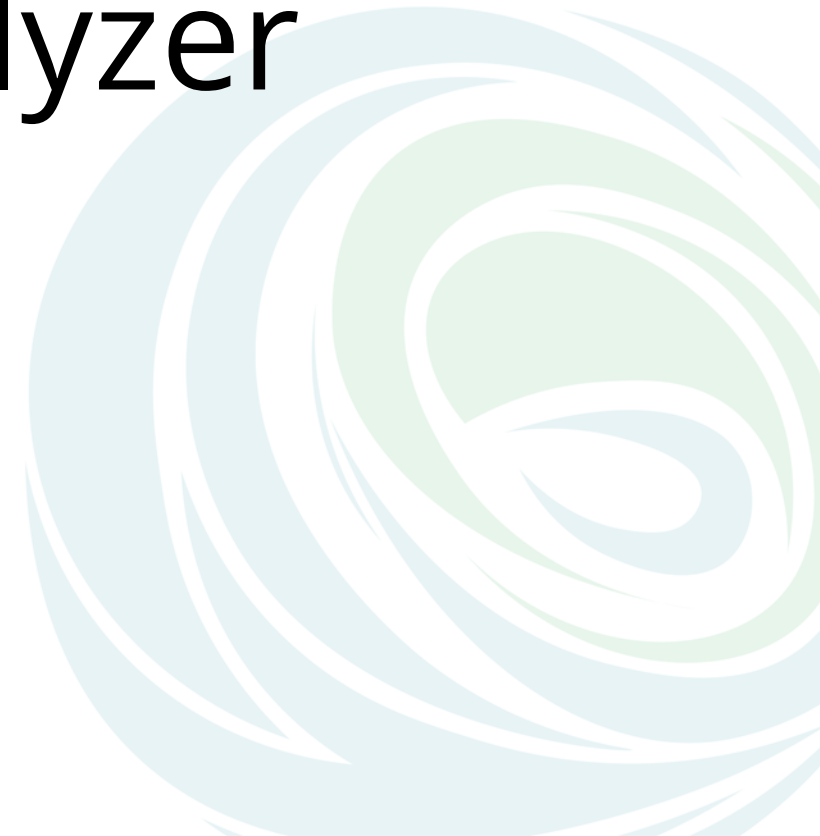


Introduction to the MANTECH PeCOD[®] COD Analyzer



About MANTECH

- MANTECH is a manufacturer of online, portable and laboratory analyzers for water and wastewater.
- With more than 2,000 analyzers installed in 45 countries, over 500,000 samples are analyzed everyday by MANTECH systems.



MANTECH's mission is to generate the highest quality results in the shortest amount of time with the goal of enabling our customers to have significant positive economic and sustainable impacts on their businesses and communities.

Chemical Oxygen Demand

- Chemical oxygen demand (COD) is the amount of oxygen required to fully oxidize organic matter
 - It is used as a measurement of the oxygen-depletion capacity of a sample contaminated with organic waste
- COD is a valuable measurement for the determination of water quality in natural waterways and waste streams

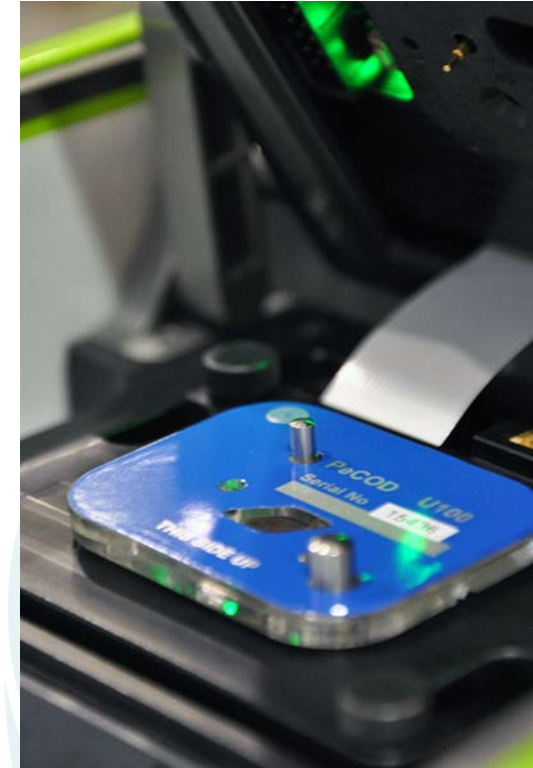
PeCOD[®] COD Analyzer

- A patented technology that measures soluble COD in real time by oxidizing organic matter, and measuring the extent of oxidation.
- PeCOD[®] eliminates the use of **mercury and potassium dichromate**
- Safe for both the environment and the analyst
- Results in less than 15 minutes
- Accurate method with a detection limit of 0.7 mg/L, and upper range of 15,000 mg/L

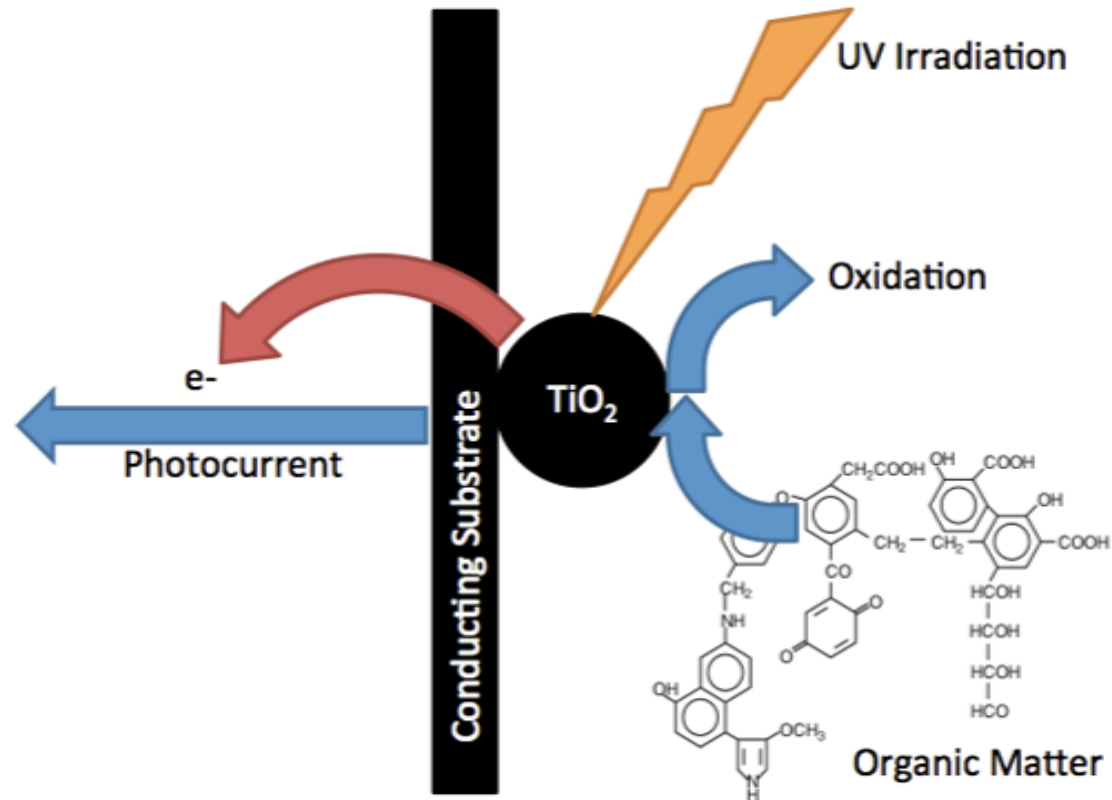


Nanotechnology

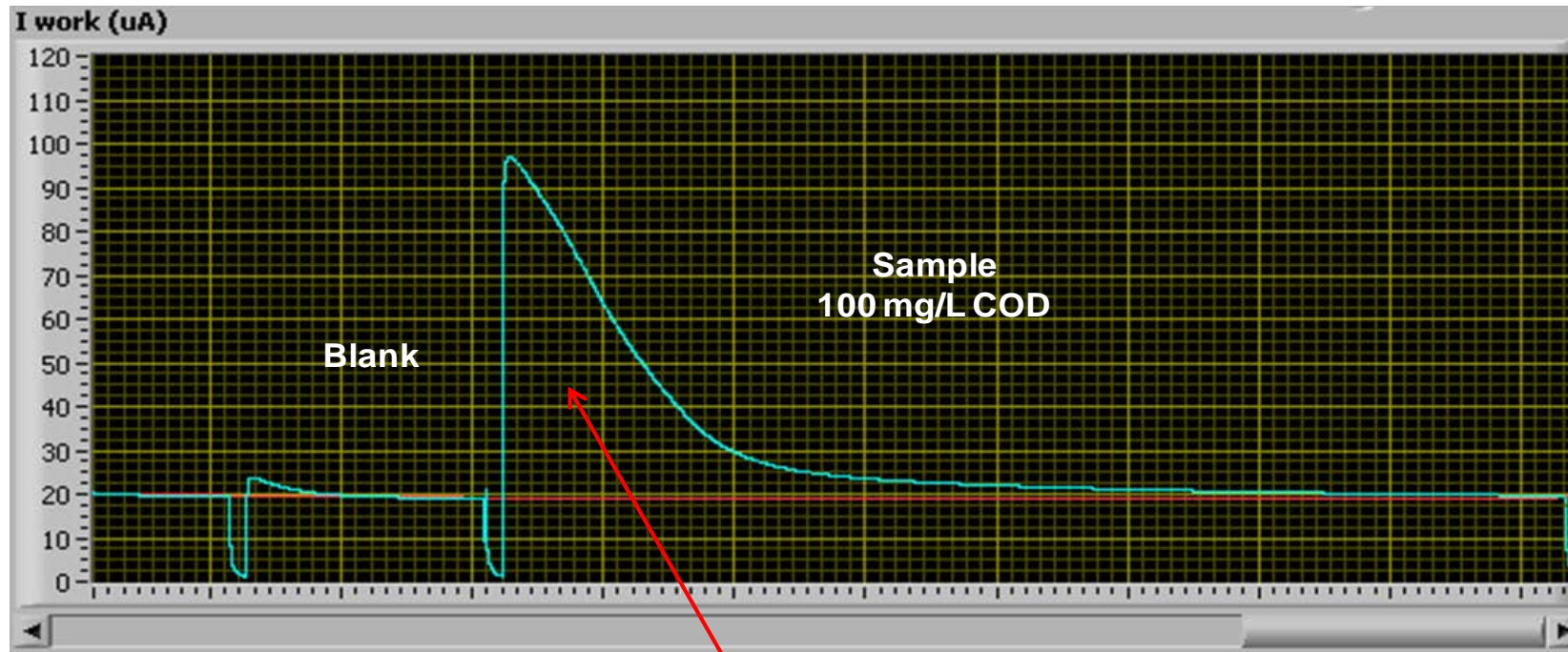
- The core of the technology is the PeCOD[®] sensor, which consists of a UV-activated nanoparticle TiO₂ (titanium dioxide) photocatalyst coupled to an external circuit.
- The powerful oxidizing potential of UV-illuminated TiO₂ ensures that virtually all species will be fully oxidized giving a true measure of COD.



Reaction with TiO_2



Electrons to COD

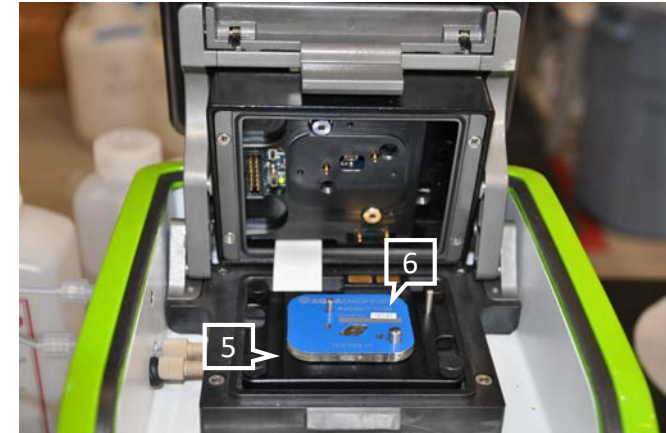


← Time 4 min →

Area under curve = Q_{net}
 $COD = k \cdot (Q_{net} - Q_{blank})$

PeCOD[®] COD Analyzer Components

1. Port A – for sample and calibration solution
2. Port B – for blank control solution
3. Port W – for waste
4. Analyzer Lid
5. Electrode Block
6. Sensor



Consumable Items:

- Calibrant Solution - COD Standard
- Electrolyte
- Sensors

PeCOD[®] Configurations

Benchtop L100



- Minimal bench space
- Manual sample prep
- Portable – optional battery operation

Automated L100



- Unattended analysis for a large number of samples
- Automated sample prep, calibrations, and rinsing
- Additional parameters can be added on, including pH, conductivity, alkalinity, and ammonia

PeCOD[®] Configurations

Online L100



- Continuous sampling
- Automated sample prep, calibrations, and rinsing
- Connected directly to low flow sample stream

Online P100



- Online monitoring
- 4-20 mA output for SCADA connection
- Connected directly to high flow sample stream with automated filtration, sample analysis, calibrations and rinsing

PeCOD[®] Applications

Municipal



- Incoming COD monitoring
- Weather events
- Discharge compliance
- Potable water analysis
- Water reuse applications

Industrial



- In-plant COD monitoring
- Process optimization
- Discharge compliance
- Fine avoidance

Laboratory



- Rapid COD analysis
- Multi-parameter
- Improved accuracy and detection
- Safety of employees

Resources

- Website: <http://mantech-inc.com/>
- Email: info@mantech-inc.com
- PeCOD[®] Analyzer – 15 min Chemical Oxygen Demand:
<https://www.youtube.com/watch?v=ZsISm rh3zFk>

