

Real Time BOD Estimations by Automated COD Analysis using the PC-BOD/Titrate Duo

Poster Presentation

Prepared by **L. Peddle**

ManSci Inc., 600 Main Street, Tonawanda, NY 14150-3723

Contact Information: lpeddle@mantech-inc.com

ABSTRACT

Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) are among the most diagnostic parameters for the determination of water quality in natural waterways and waste streams. The standard BOD test requires five days to complete, and is therefore unable to provide continuous monitoring of organic load. COD is therefore often used for BOD screening, however the standard dichromate method is slow, limited in sensitivity and oxidizing power, and requires the use of toxic chemicals. A rapid COD method for BOD estimations is therefore highly desirable.

Recently, a new method has been developed that uses photoactive TiO₂ nanomaterials that provide an alternative means to measure COD. This technology directly measures the amount of oxidizable material in a sample via photoelectrochemical oxidation in a microcell. This new green method is fast and eliminates the need for hazardous chemicals thereby reducing disposal costs and ensuring the safety of laboratory staff.

The new PC-BOD/Titrate Duo is a dual platform system that allows for both the automated analysis of COD using this new green technology, as well as BOD following the standard method. Rather than two separate systems, the PC-BOD/Titrate Duo combines these methods into one efficient system providing a more effective utilization of laboratory equipment. COD is analyzed first, with COD values reported along with the estimated BOD results. Following a batch of COD samples, the analyst simply switches out the rack and probe holder, and the BOD samples are analyzed. This rapid COD method provides the benefit of more continuous organic monitoring to ensure constant compliance with regulations. Furthermore, its function as a BOD screening tool greatly reduces the number of dilutions required for BOD analysis.

Details about the new COD technology will be presented, along with data obtained. More information about the dual platform system will also be discussed.