

CODCr-BOD Index Combination for Organic Pollution Investigation in Brackish Lake: The Characteristic Degradation of DOM

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1. Introduction

BOD (Biochemical Oxygen Demand) is as an index of organic pollution that is known closely models of aquatic ecosystems BOD analysis. In other sides, COD (Chemical Oxygen Demand) is also recognize as an index of organic pollutant which has simple and rapid experimental method.

The brackish lake in water bodies is result from mixing of seawater with fresh water. In this case, Lake Sanaru, located in Hamamatsu City, had been the most deficient water quality around 6 years began in 2001. In present work, we have aim to view the degradation characteristic of organic matter in brackish lake from multi-angles with combining two methods, COD and BOD treatment.

2. Materials and Methods

Field samples were collected from the south part of Lake Sanaru, and it is filtered by glass fiber filter paper ADVANTEC GF-75. The samples are stored in the refrigerator at 4° C for next measuring. The standard measurement method of BOD and COD refer to JIS K 0102 and JIS K 0101, respectively. For BOD treatment, samples were incubated at 20° C and 30° C for 5 days in different light/dark condition.

For COD treatment, HACH Digital Reactor Block 200 was used. Samples were treated at different temperature, 125° C and 150° C.

3. Results

Fig. 1 contains pH, salinity, BOD, and CODCr of field samples direct, and after BOD treatment.

4. Discussion

In Fig. 1, the CODCr values of Lake Sanaru in different conditions are presented.

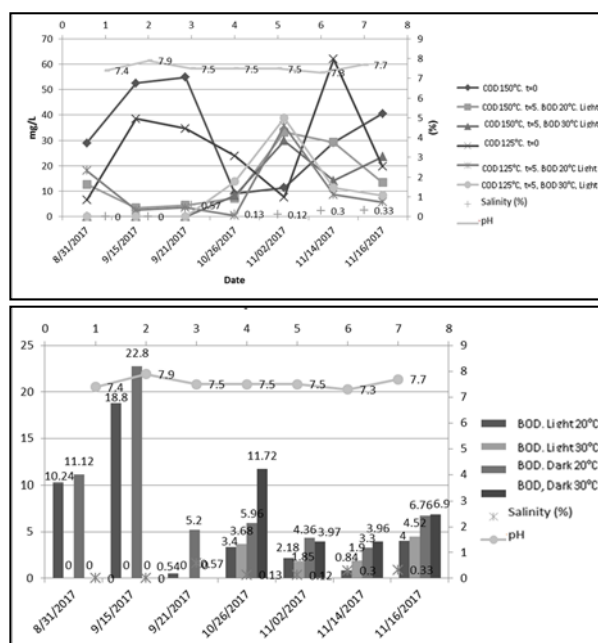


Fig.1 CODCr and BOD values of field water.

Most of data show that the COD in Lake Sanaru decreases after BOD incubation for 5 days. By comparing CODCr and BOD analysis, in CODCr analysis, there is insignificant difference between different light and temperature conditions. According to pH data, the COD values have a trend that it will be smaller in higher pH around >7.5. On the other hand, the more increasing of salinity, the COD value of remaining show the fluctuation result.

Contrary result is shown by BOD treatment characteristic. The different characteristic between CODCr and BOD index indicate that the role of microorganisms have ability to change organic matter through their metabolism process, biologically in BOD comparing COD analysis chemically.