

Rattanaorn Tepmalai 2010: Development Portable Turbidity Meter for Application in Local Water Treatment Plant. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Assistant Professor Monthon Thanuttamavong, Ph.D. 106 pages.

The purpose of this research was to study local water production and treatment plant through case study of water treatment plant in Kasetsart University Chalermphrakit Sakon Nakhon Province Campus. The plant has manufacture rate of $150 \text{ m}^3/\text{hr}$ using polyaluminum chloride (PACl) as coagulant. This research focuses on studying the process of rapid and slow mixing. Calculation velocity gradient and mixing time are use to for find relationship between optimum dose versus raw water's turbidity using jar test with estimate turbidity of raw water between 10-60 NTU. The experiment found that optimum dose of PACl that is suitable for the system is 13 mg/L for turbidity between 10-40 NTU, which is the turbidity for most of Sakon Nakhon's lake. However, the most suitable turbidity for the procedure is between 30-45 NTU because it has an optimum dose of only 11.25 mg/L.

Furthermore, this research is to design a low cost prototype model of turbidity meter using readily accessible local material. This invention use principle of spectroscopy and scattering light's particles. The main materials consist of tungsten lamp as a light source, glass cylinder for sample cell or cuvette, filter and light dependent resistor (LDR) as a detector of light signal which converts to corresponding voltage. The experiment uses water using synthetic raw water prepared from Kaolin clay at turbidity between 0-100 NTU. HACH's turbidity meter type 2100 AN is uses to measure turbidity, follow with voltage measurement by the invented device. The results from experiment are then graph to show relationship between turbidity versus voltage.

Student's signature

Thesis Advisor's signature