C.F.R. § 1.56(a) exists.

Brief Summary of the Invention

At least one embodiment of the present disclosure~~invention~~ is directed towards a method of measuring at least one property of a predominantly liquid sample. The method comprises the steps of: 1) adding at least one chemical reagent to the sample, the chemical reagent capable of inducing a measurable optical effect when added to the sample that is directly related to the property to be detected, 2) measuring the optical effect, and 3) deducing the value of the property by comparing the measured optical effect to pre-determined values associated with the property to be determined. The relationship between the measured optical effect and the property to be determined is independent of the volume of the liquid sample and independent of the volume of the reagent added to the sample. In an aspect, there is provided a method of measuring at least one property of a flowing, predominantly liquid sample, the method comprising the steps of: adding at least one chemical reagent to the flowing sample, the chemical reagent capable of inducing a measurable optical effect when added to the flowing sample that is directly related to the property to be detected, mixing the at least one chemical reagent with the flowing sample, measuring at least two optical properties of the flowing sample to determine a measured optical effect, and deducing a value of the property by comparing the measured optical effect to pre-determined values associated with the property, wherein the measured optical effect is independent of the volume of the flowing liquid sample and independent of the volume of the reagent added to the flowing sample.

The measured property may be one item selected from the list consisting of: pH, iron concentration, chloride concentration, and any combination thereof. The measured optical effect may be a colorimetric effect, turbidity effect, or a fluorescent effect. The reagent may be thoroughly mixed with the sample. The optical effect may be measured by determining an absorbance level at a particular wavelength whose measurement is recognized as an isosbestic point for all values of the property, detecting at least one other absorbance level for one other wavelength, comparing the two absorbance levels with pre-determined data, and correlating the two absorbance levels to the known absorbance levels of a particular value of the property. The reagents may be selected from the list consisting of: bromcresol purple, fluorescein, PTSA, TPPTSA, calcein blue, Ferrozine, silver nitrate, thioglycolic acid, ammonia, pH buffer, ferric iron reductant, fluorescent dye, lucigenin, and any combination thereof.

The optical effect may be measured by the reagents being at least two fluorescent