

INTISARI

Analisis Pengukuran Indeks Bias Larutan Garam Untuk Menentukan Tingkat Salinitas Air

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Telah dilakukan penelitian tentang analisis pengukuran indeks bias larutan garam untuk menentukan tingkat salinitas air menggunakan refraktometer Abbe. Tujuan penelitian ini yaitu mengukur indeks bias larutan garam pada konsentrasi 1,67%, 5%, 8,30%, 11,67%, dan 16,67% beserta ketidakpastiannya, membandingkan nilai indeks bias dari ketiga jenis larutan garam serta mengelompokkan tingkat salinitas airnya.

Metode yang digunakan dalam penelitian ini adalah metode pembiasan cahaya pada permukaan prisma dan larutan yang terjadi di refraktometer Abbe. Pelarut yang digunakan untuk membuat larutan garam adalah aquades. Sebelum pengukuran dilakukan, refraktometer dikalibrasi menggunakan aquades.

Dari penelitian ini diperoleh hasil bahwa nilai indeks bias tertinggi yaitu larutan garam 1 pada konsentrasi terendah 1,67% ($1,3435 \pm 0,0000$), konsentrasi tertinggi 16,67% ($1,3670 \pm 0,0002$) dan indeks bias paling rendah yaitu larutan garam 3 pada konsentrasi 1,67% ($1,3430 \pm 0,0005$) dan konsentrasi tertinggi 16,67% ($1,3625 \pm 0,0000$). Besarnya konsentrasi larutan garam sebanding dengan indeks biasnya. Semakin besar konsentrasi larutan garam, semakin besar pula indeks biasnya. Dari konsentrasi ketiga jenis garam yang diuji dalam penelitian ini kemudian digunakan untuk menentukan tingkat salinitas airnya, yaitu air payau pada konsentrasi 1,67%, air *saline* pada konsentrasi 5%, dan *brine* pada konsentrasi 8,30% - 16,67%. Dalam uji statistik Friedman yang dilakukan didapatkan hasil bahwa terdapat hubungan antara konsentrasi larutan dan salinitas garam berdasarkan nilai indeks bias yang terukur.

Kata Kunci : refraktometer Abbe, konsentrasi larutan garam, indeks bias, salinitas.

ABSTRACT

Analysis of Refractive Index Measurement of Saline Solution to Determine Water Salinity Level

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The research of the analysis of refractive index measurement of saline solution had been done in order to determine the level of water salinity by using Abbe refractometer. The aims of this research were to measure refractive index of saline solution to the concentration of 1,67%, 5%, 8,30%, 11,67%, and 16,67% with its uncertainty, to compare the value of refractive index from three types of salinity solution, and to categorize the level of salinity water.

The method used in this research was the refraction light method on the prism surface and the solution of Abbe refractometer. The solvent used to make saline solution was aquadest. Before the measurement was done, the refractometer was calibrated by using aquadest.

The result of this research showed that highest refractive index was saline solution 1 on the lowest concentration of 1,67% ($1,3435 \pm 0,0000$), the highest concentration of 16,67% ($1,3670 \pm 0,0002$) and the lowest refractive index was saline solution 3 on the concentration of 1,67% ($1,3430 \pm 0,0005$) and the highest concentration of 16,67% ($1,3625 \pm 0,0000$). The concentration of saline solution was comparable to the refractive index. The greater concentration of saline solution, the greater the refractive index would be. Based on three types of tested salts in this research, they were used to determine the water salinity level that covered the brackish water concentration 1, 67%, the saline water concentration 5% and the brine concentration 8,30% - 16,67%. According to Friedman statistic test that was done in this research, it was found that there was the relationship between the solution concentration and the salt salinity by the measured value of refractive index.

Keywords : Abbe refractometer, the concentration of saline solution, refractive index, salinity