



Colorimetric sensor array for pH measurement

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TRL scale



What it is needed for?

The invention is a novel pH-meter based on Colorimetric sensor arrays (CSA), that surpasses the current limits of the CSA pH-meters, such as single use, relatively slow reaction times and inaccurate pH measurements both in acidic and basic ends of the scale.

The patent describes a device formed by a matrix of colorimetric sensors for the measurement of the pH. Measurements are based on the Hue (H) coordinate in the colour space HSV from the acquisition of images with a CCD camera. The position of sigmoidal H profiles (pH) can change by varying the concentration of a cationic surfactant: this allows an extension of the range within which a single indicator is stable, therefore creating a measuring system comparable to glass electrode meters: (i) even precision of the entire measurement range (pH 1.0-12.0); (ii) error inferior to 0.02 pH units; (i) response time around 10-20 seconds.

The instrument is reversible and can operate within a 10-30°C range. It is especially useful for in-line measurements (including turbid samples) given that it does not require continuous calibration.

Advantages

- Requires only one initial calibration,
- Can be used for in-line measures,
- Precise measurement of saline water,
- No leaching,
- No acidic or alkaline error,
- Fast, simple to use and low cost.

Applications

- pH measurement,
- pH measurement in saltwater and soil,
- pH measurement of waste water,
- In-line pH measurement,
- Clinical pH measurement.