



Colorimetric sensor array for pH measurement

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TRL scale



What's needed for?

This pH meter, based on colorimetric measures, surpasses the current limits of the use of Colorimetric sensor arrays (CSA) for the measurement of pH values. Thanks to a special preparation of the matrix and specific settings in the optical sensor, the analytic performance is comparable to instruments based on potentiometric measurements with a glass electrode. The patent describes a device formed by a matrix of colorimetric sensors for the measurement of pH. Measures 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: even precision of the entire measurement range (pH 1.0-12.0); error inferior to 0.02 pH units; 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) since 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