Report on comparison measurement

Prueba de Aptitud SNM-LMQ-05 "Medición de pH en matriz acuosa"

ZMK -ANALYTIK- GmbH
Ortsteil Wolfen
P-D ChemiePark Bitterfeld-Wolfen
Areal A, Filmstr. 7
06766 Bitterfeld-Wolfen

1 General

The comparison measurement was organized by the National Metrology Institute of Peru (INDECOPI).
The following information concerning the solution provided by INDECOPI was given:

Measuring object:	pH buffer solution / Phosphate
pH:	6 to 8
Quantity:	1 bottle / 500 ml
Lot No.:	LMQ002
Identification No.:	18
Date of receipt:	26th November 2008

2 Calibration methods

The calibration of the pH buffer solution was carried out using the following calibration methods:

1) Measurement by differential cell (Baucke cell)
2) Multipoint calibration

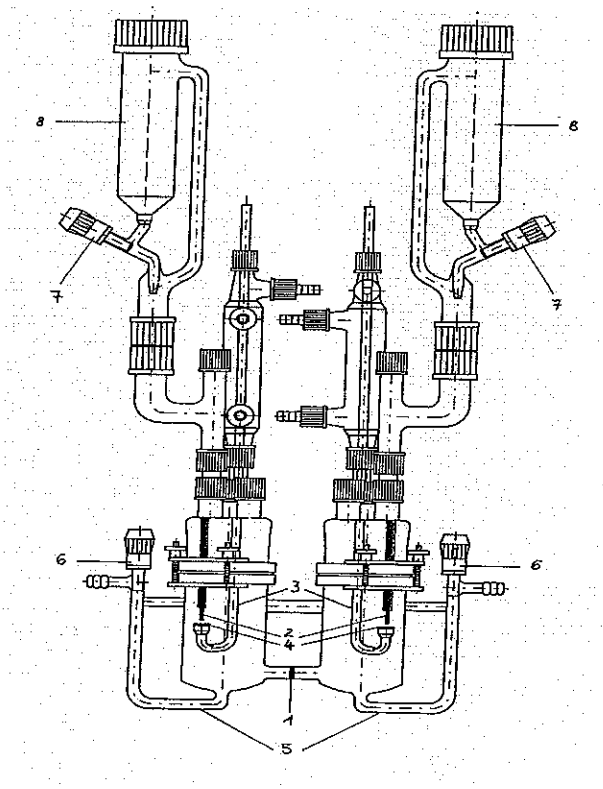
2.1 Differential cell / Baucke cell

Procedure / cell design:

The cell is constructed according to Baucke [1].

The electrode system consists of two platinum electrodes that are surrounded by hydrogen.

The measuring cell is placed in a thermostatic bath with a stability of 5 mK.



Secondary reference buffer solution:

Phosphate (pH 6,865)

Lot No.: 20280/41640 / Preparation no.: 22

Traceability: DKD-K-06901 / PTB / NIST

[1] F.G.K. Baucke, J. Electroanal. Chem. 368 (1994), 67-75

2.2 Multipoint calibration

Procedure

The calibration was carried out using a glass electrode measuring system.

The glass electrode measuring system was calibrated with 5 reference buffer solutions and a calibration curve was determined. The unknown buffer solution was implemented in this method. Referring to the parameters of the calibration curve the pH value of the unknown buffer solution was calculated. The calibration was carried out in a water bath with a stability of 5 mK.

Secondary reference buffer solutions:

- Tetra oxalate (pH 1,680)
  Lot No.: 10860 / Preparation no.: 22
  Traceability: DKD-K-06901 / PTB / NIST

- Phthalate (pH 4,008)
  Lot No.: 32350 / Preparation no.: 27
  Traceability: DKD-K-06901 / PTB / NIST

- Phosphate (pH 6,865)
  Lot No.: 20280 / 41640 / Preparation no.: 22
  Traceability: DKD-K-06901 / PTB / NIST

- Borate (pH 9,184)
  Lot No.: 71840 / Preparation no.: 28
  Traceability: DKD-K-06901 / PTB / NIST

- Carbonate (pH 10,014)
  Lot No.: 4070A / K2693269947 / Preparation no.: 21
  Traceability: DKD-K-06901 / PTB / NIST

3 Measuring results

Measuring method	Date of measurement	Temperature °C	Result pH	Measuring uncertainty *U* (*k*=2)
Differential cell	08.12.2008	25,0	6.863	0.003
Multipoint calibration	08.12.2008	25,0	6.86	0.01

Bitterfeld-Wolfen, 08th December 2008

Diana Jehnert

Dr. Barbara Werner
Head of DKD-K-06901