Potentiometric determination of free acid in phosphoric acid liquor

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The determination of the free acid in solutions containing metal ions is required the studies of hydrolysis, polymerization and complexation of metal ions and the control of acidity in separation processes such as solvent extraction, ion exchange and precipitation [1]

A simple potentiometric method for the determination of free acidity from the leaching of phosphate rocks with inorganic acids in particularly sulfuric acid was developed. In this method an appropriate aliquot of the sample is mixed with n-butanol, two phases are formed: a solid (metal ions) and a liquid (n-butanol plus water and free acid). An aliquot of the liquid phase is taken and the free acid is titrated with standard sodium hydroxide solution employing an appropriated pH electrode [2] [3].

The described method is simple, accurate and reproducible. This method is especially applicable to the determination of free acidity from the leaching of phosphate rocks with inorganic acids.

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Production of colloidal gold

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The colloidal gold was produced to be used as a radiotracer. This work has being conducted in collaboration with the laboratory of radio-tracers DIRA-SERAD and it is part of the project submitted to FINEP (Grant 01.10.0248.00, Subproject SP04 - Tracer), allocated in the production of nano-tracers for application in the oil industry and gas. Samples of colloidal gold were synthesized in an aqueous medium and sent to irradiation at reactor Argonauta. Feasibility studies aiming at a later production of colloidal gold in organic media [1, 2].

Figure 1. Photograph showing a sample of colloidal gold.

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