Determination of Silver by Differential Pulse Anodic Stripping Voltammetry

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Practical:

Summary: Voltammetry is an important analytical technique, for example, in the analysis of heavy metal ions, and is used in the mining industry for this purpose. In this experiment students use anodic stripping voltammetry to pre-concentrate silver from water samples and determine the level at which it is present.

In this experiment students explore this technique and build their analytical skills by

• Examining the effect of varying accumulation time

• Exploring the effect of adding EDTA

• Checking the accuracy of their technique by analysing a sample of known concentration, using the methods of external standard and standard additions

• Analysing a sample of unknown concentration, making wise choices about dilution, accumulation time, presence of EDTA, etc.

The effectiveness of this experiment lies in the students having to solve the puzzle themselves, it might take a bit of effort for them to get the correct experimental conditions and sample dilutions but they have a huge sense of achievement when they accomplish it. They like the relevance to an environmental issue, too.

Abstract

It is set in first semester, in a third year unit of a B.Tech (Applied and Analytical Chemistry) degree. Most students are concurrently completing a second unit that covers other analytical techniques, such as Atomic Absorption Spectroscopy. This enables them to consider how analytical techniques complement each other and we encourage them to consider such issues as relative cost, time, etc. Students doing this unit have already completed a second year Physical Chemistry unit that includes some electrochemistry theory and a first year inorganic chemistry unit that gives theoretical background for the use of complexing agents. Basic analytical skills, such as making appropriate dilutions are a thread throughout the course.

Duration

Prior to Lab	1 hr
In Laboratory	2-3 hrs
After Laboratory	2-3 hrs

Further comments

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