Determination of copper content of a penny by atomic absorption spectroscopy

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Practical:

Abstract
Pennies are now made of steel coated with copper. This practical introduces atomic absorption spectroscopy and has been set in a forensic science context (part of the text would need modifying for a chemistry course). A penny is dissolved in acid, diluted and analysed. It is part of a (Scottish) second year module, and could be year 1 or 2, depending on the course.

Intended academic level
Undergraduate 2

Duration
2 hours, depending on the length of introduction and availabilityof AAS (i.e. if shared for several groups it may take a bit longer)

Outcomes
a) The student will have used AAS for analysis (this needs relating to theory)

b) Use of dilution and calibration curves will have been reinforced.

c) Students are reminded of the need for nitric acid to dissolve copper

Materials
AAS

Beaker, pipette, standard flasks.

Penny. (Note- old pennies are not magnetic and will need additional dilution)
Standard solution of copper in iron and nitric acid matrix.

Nitric acid

Costs
Small consumable cost

Further comments
Select magnetic pennies, although you could use this as a problem solving exercise "What do I do if my sample isn't what I expected?" (Slower to dissolve, and need to dilute. In theory you ought to make standards in a different matrix, but this could be noted rather than done in practice).

Reading
N/A

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