

TREATMENT OF WASTE FROM ATOMIC EMISSION SPECTROMETRIC TECHNIQUES AND REUSE IN UNDERGRADUATE LAB CLASSES FOR QUALITATIVE ANALYSIS

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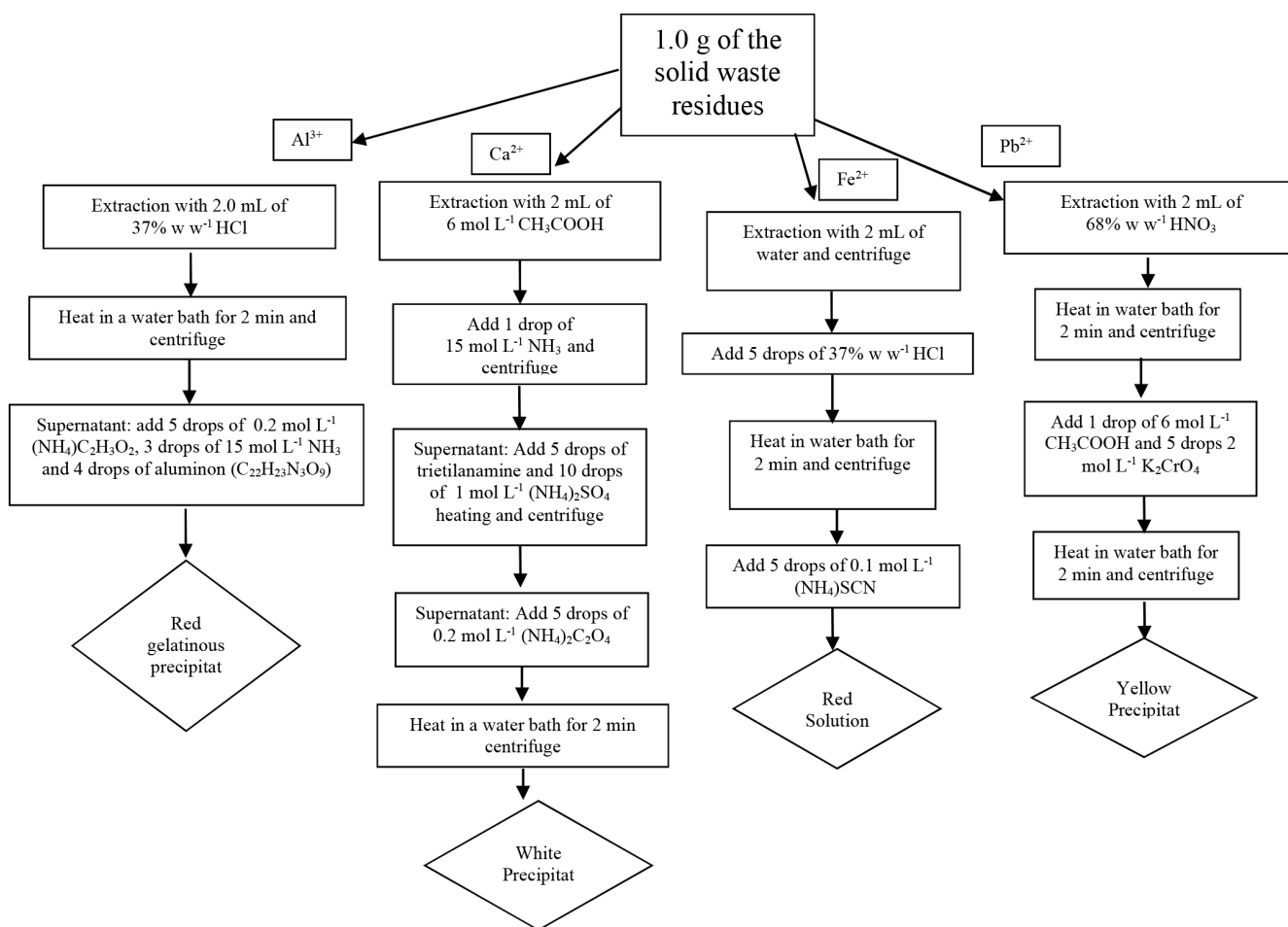


Figure 1S. Identification of cations in solid residue obtained from ICP OES waste treatment

## QUESTIONNAIRE ABOUT CATION ANALYSIS IN REAL SAMPLE

### About first step (01) of the analysis:

- 01) About the ability to observe the formation of red gelatinous precipitate at the end of the first step of the procedure? (1- Extremely difficult, 2- Poor, 3- Good, 4- Very good, 5- Excellent)
- 02) About the level of difficulty in performing the determination of the cation described in the first step of the procedure? (1- Very difficult; 2- Difficult; 3- Average; 4- Easy; 5- Very Easy)
- Describe the main difficulties faced during the experiments in this first step (01) of the analysis:

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### About second step (02) of the analysis:

- 03) About the ability to observe the formation of the precipitate when you added  $(\text{NH}_4)_2\text{SO}_4$ ? (1- Extremely difficult, 2- Poor, 3- Good, 4- Very good, 5- Excellent)
- 04) About the level of difficulty in performing the determination of the second step (02) of the analysis? (1- Very difficult; 2- Difficult; 3- Average; 4- Easy; 5- Very Easy)
- Describe the main difficulties faced during the experiments in this second step (02) of the analysis:

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### About third step (03) of the analysis:

- 05) About the ability to observe the formation of the blood-red solution after the addition of  $(\text{NH}_4)\text{SCN}$ ? (1- Extremely difficult, 2- Poor, 3- Good, 4- Very good, 5- Excellent)
- 06) About the level of difficulty in performing the analysis described on the third step (03)? (1- Very difficult; 2- Difficult; 3- Average; 4- Easy; 5- Very Easy)

Describe the main difficulties faced during the experiments in this third step (03) of the analysis:

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### About fourth step (04) of the analysis:

- 07) About the ability to observe the formation of the yellow precipitate after the addition of  $\text{K}_2\text{CrO}_4$ ? (1- Extremely difficult, 2- Poor, 3- Good, 4- Very good, 5- Excellent)
- 08) About the level of difficulty in performing the analysis described in the fourth step (04)? (1- Very difficult; 2- Difficult; 3- Average; 4- Easy; 5- Very Easy)

Describe the main difficulties faced during the experiments in this fourth step (04) of the analysis:

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