LFEUI - Investigation Proposal

Detection of Li in Technological Materials through Nuclear Reactions

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1 Proposal Summary

State clearly the aim of the proposed experiment together with the general and specific scientific background.

Our main goal is to develop a scientific research project alongside three senior investigators from CTN (Centro Tecnológico e Nuclear), Rodrigo Mateus, Rui Silva and Norberto Catarino.

Our project will be focused on the detection of Li in technological materials through nuclear reactions. The main motivation for this project is to study and develop a detection technique for elements such as Li and Br with high sensitivity.

Through the year there have been multiple techniques with the same purpose such as atomic spectroscopy and ?. Particularly, the one we aim to use was introduced in ?.

2 Experimental technique

Describe the experimental set-up and requirements. Queries concerning the feasibility (technical or safety aspects) of an experiment should be clarified with hosts before the proposal is submitted.

3 Safety considerations

Experimental conditions requiring special safety precautions such as the use of lasers, high pressure cells, bacteria, dangerous substances, toxic substances and radioactive materials, must be identified in the proposal.

4 Beamtime requested

Specify the dates of the beamtime requested and the number of shifts. The beamtime requested should be in accordance with the estimated duration of the experiment. Specify the place and the investigators who will guide the experiment.

In order to complete our project we will need one full day of beamtime at the CTN laboratory. Alongside this day, we will also meet with the investigators at CTN for another two mornings to discuss the project, before the experiment and the results after the experiment:

Phase	Date	Duration
Theoretical Background, Planning and Lab Overview	30/11/2023 9h30	4h
Experiment	7/12/2023 8h00	8h
Results Discussion	?? 9h30	4h

5 Results expected

Describe the results expected from the measurements, their scientific (or technical) relevance, and how they relate to existing work on the topic.

6 Concluding remarks

Justify the beam time you request and give technical reasons which make the apparatus necessary for your experiment. Include REFERENCES where these are relevant, but do not assume that they will be systematically consulted for essential details.

References

[1] *CAMPUS TECNOLÓGICO E NUCLEAR, Instituto Superior Técnico, Universidade de Lisboa*. Estrada Nacional 10 (km 139,7), 2695-066 Bobadela LRS, Portugal.

[2] Leonard C. Feldman and James W. Mayer. *Fundamentals of Surface and Thin Film Analysis*. North-Holland, 1986.

[3] Kenneth S. Krane. *Introductory Nuclear Physics*. John Wiley & Sons, Inc., 1988.