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PREVIEW

ALPHA-INDUCED X-RAY


EMISSION ANALYSIS

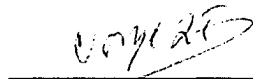
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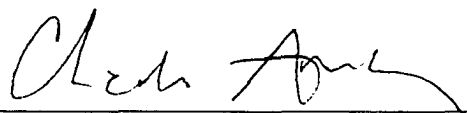
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ALPHA-INDUCED X-RAY EMISSION ANALYSIS

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THESIS

Presented to the Faculty of the Graduate School of

The University of Texas at El Paso

in Partial Fulfillment

of the Requirements

for the Degree of

MASTER OF SCIENCE

Department of Physics

THE UNIVERSITY OF TEXAS AT EL PASO

December 1998

To my beloved wife Wei Wang and lovely son Norman Shunan.

To my family and my wife's family.

To my friends, especially Jianchun Xu and Xu Wang.

PREVIEW

Acknowledgments

I would like to thank my supervising professor, Dr. Jorge López, for his guidance throughout the research process.

I would like to thank Dr. Dwight P. Russell for his concern during my study at UTEP and for being part of my examination committee.

Thanks to Dr. James Craig for the financial support provided during my stay at the Physics Department of UTEP.

I also would like to thank Dr. Jorge L. Gardea-Torresdey, from Chemistry Department, for being part of my examination committee and for providing environmental samples.

Special thanks to Jaime Morales for the constructive discussions and his assistance in the lab work. Thanks to Dr. William Durrer for kindly providing his computer. Thanks to Miguel Castro-Colin for his help in the thesis editing.

July 16, 1998

Xiaofang Mu

Abstract

The objective was to study alpha-induced X-ray emission analysis and apply alpha-PIXE to element analysis in environmental samples. The equipment was set up and gave good spectrum of heavy elements. 20mm is found to be the optimal the distance between the target and the source in the set-up. The backward angle can affect the spectrum due to cross-section and secondary electron bremsstrahlung background. The optimal angle is found to be 135° in the present set-up. The alpha particle induced X-ray emission is the dominating factor to the spectrum in the experiments though gamma ray and characteristic X-ray from Am source also contribute to the spectrum. The spectrum of a plant root sample shows the presence of Fe, Ni, Cu, Zn, Ga, Pb and Sr.

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