

THIRTEENTH INTERNATIONAL CONFERENCE ON
MODERN TRENDS IN ACTIVATION ANALYSIS
MTAA-13

PROGRAM AND ABSTRACTS



Celebrating the 50th Anniversary of the conference series under the auspices of the International Committee on Activation Analysis (ICAA) and in cooperation with the American Nuclear Society (ANS) and the International Atomic Energy Agency (IAEA).

Center for Chemical Characterization and Analysis,
Department of Chemistry, Texas A&M University
College Station, Texas, USA
March 13-18, 2011

Conference Program

Overview:

Sunday, March 13 – George Bush Presidential Library Rotunda

4:00 – 6:00 p.m. Registration

6:00 – 8:00 p.m. Welcome Reception

Monday, March 14 – Interdisciplinary Life Sciences Building Auditorium

7:00 a.m. – 5:00 p.m. Registration

8:30 a.m. Welcome and Opening Remarks

8:50 – 9:20 a.m. Session MOAMA: MTAA 50th Anniversary Review

9:20 – 10:40 a.m. Session MOAMB: Fritz Grass Memorial Session

11:00 a.m. – 12:00 p.m. 2010 Hevesy Award Ceremony and Lecture

1:00 – 2:40 p.m. Session MOPMA: Facility and Method Development (I)

3:10 – 4:50 p.m. Session MOPMB: Facility and Method Development (II)

Tuesday, March 15 - Interdisciplinary Life Sciences Building Auditorium

7:00 a.m. – 5:00 p.m. Registration

8:00 – 10:00 a.m. Session TUAMA: Epidemiology and Trace Elements in Medicine

10:30 a.m. – 12:20 p.m. Session TUAMPA: Poster Session A

1:20 – 3:00 p.m. Session TUPMA: Nuclear Imaging in Medicine

3:30 – 5:00 p.m. Session TUPMB: Introductions to Special Symposia

5:30 – 6:30 p.m. Buffet dinner and special symposia – Hagler Center

6:30 – 8:30 p.m. Session TUPMC: Nano-technology

6:30 – 8:30 p.m. Session TUPMD: Archaeometry

6:30 – 8:30 p.m. Session TUPME: Nuclear Forensics/Border Security

Wednesday, March 16 - Interdisciplinary Life Sciences Building Auditorium

7:00 a.m. – 5:00 p.m. Registration

8:00 – 10:20 a.m. Session WEAMA: Applications in Environmental Studies

10:50 a.m. – 12:30 p.m. Session WEAMB: Applications in Agriculture and Foods

1:00 – 2:40 p.m. Session WEPMA: Applications in Geochemistry

2:40 - 3:00 p.m. Buses load for trip to the Houston Livestock Show and Rodeo

Thursday, March 17 - Interdisciplinary Life Sciences Building Auditorium

8:00 a.m. – 5:00 p.m. Registration

9:00 – 10:40 a.m. Session THAMA: Nuclear Beams and PGAA

11:10 a.m. – 1:00 p.m. Session THAMPB: Poster Session B

2:00 – 3:40 p.m. Session THPMA: Prompt Gamma Activation Analysis

4:10 – 5:50 p.m. Session THPMB: Method Enhancements/RNAA/Speciation

6:30 – 8:30 p.m. Conference Banquet and 2011 Hevesy Award Ceremony and Lecture

Friday, March 18 - Interdisciplinary Life Sciences Building Auditorium

7:00 – 10:00 a.m. Registration

8:00 – 9:40 a.m. Session FRAMA: Metrology/QC/Standards (I)

10:00 – 11:00 a.m. Session FRAMB: Metrology/QC/Standards (II)

11:00 a.m. – 12:00 p.m. Session FRAMC: Next Generation/Conference Closing

LOG 169

Investigating the Antimony Determination in Environmental Samples by NAA

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In recent years, environmental concerns regarding antimony have grown considerably due to anthropogenic processes that have resulted in increased concentration of Sb in the environment. Due to its environmental impacts and possible adverse effects to living organisms, Sb and its compounds are listed as pollutants of the highest priority. Several techniques have been used, in recent decades, to obtain reliable results for Sb, since its concentrations are present at low levels, requiring analytical instrumentation with low detection limits. The neutron activation analysis (NAA) technique has a high metrological level for the determination of several elements in different matrices. However, Sb determination in environmental and biological samples presents some analytical difficulties due to its low concentrations and gamma ray spectrum interferences. The objective of this research was to study antimony determination in environmental reference materials by NAA. For this study ten environmental reference materials were analyzed. Aliquots of these materials and synthetic standard of Sb were irradiated at the IEA- R1 nuclear reactor under a thermal neutron flux of about $5 \times 10^{12} \text{ n cm}^{-2} \text{ s}^{-1}$ for 8 or 16 h. The induced gamma activities of ^{122}Sb and ^{124}Sb were measured using a hyperpure Ge detector. Antimony concentrations were calculated using the comparative method and the uncertainties were estimated using statistical counting errors of the sample and standard. Relative errors of the results demonstrated that the accuracy depends mainly on the Sb radioisotope measured, the decay time for counting and the sample composition.

LOG 170

Ca and Mg determination from inhabitants of Brazil using Neutron Activation Analysis

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In this study, Ca and Mg were measured in the blood of Brazilian inhabitants considering lifestyle factors (non-smokers and non-drinkers) and sex. The knowledge of the concentration of elements in body fluids, mainly blood, of people without occupational exposure is a fundamental to establish the reference values for evaluation of the intensity of exposure and uptake in human being. The blood samples came from Blood Banks from several regions of Brazil. The routine tests in serum for transmitted diseases as Hepatitis B and C, AIDS, Syphilis and Chagas permitted a selection of healthy donor. The result were presented following a statistics procedure which includes the evaluation of the mean, the standard deviation, median and mode making possible the comparison with data derived for different regions from Brazil. The influence of age was also investigated considering several age ranges.