

Electron Probe Micro Analysis for Nuclear Science

Mona P. Moret¹, Anne-Sophie Robbes¹, Carl Henderson¹,
Chandrasekhar Uchagaonkar²

¹ CAMECA
29 quai des Grésillons 92622 Gennevilliers Cedex, France

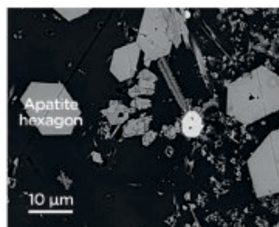
² AMETEK India
Mumbai, India,

Corresponding Author : Mona P. Moret <mona.moret@ametek.com>

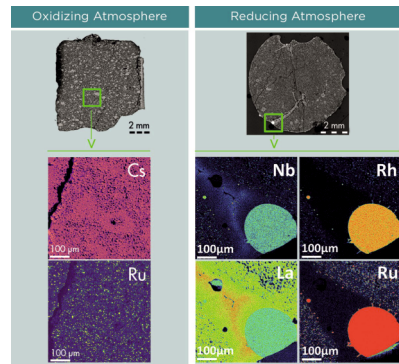
1. Abstract

Quantitative elemental analysis is a requirement in many scientific fields related to materials. Electron Probe Micro Analysis (EPMA) is the ideal technique for quantitative elemental 2D analysis of inorganic solid matter. Earth and planetary science with natural materials and materials science and metallurgy with man-made materials rely on EPMA. Nuclear science is a field that requires to cover all these challenges from ore extraction and mining, to characterize specific welding, to study cycled fuel pellet or exposed structure materials, to understand severe accident, and finally up to target proper waste storage.

The technique and instrumentation of electron probe will be reviewed and examples of studies for nuclear science will be presented with both standard EPMA SXFiveTACTIS and shielded EPMA SKAPHIA.



Elements	Weight %
B	0.16
Na	0.24
Si	8.91
P	1.08
Nd	27.02
Pr	8.13
Ce	6.72
La	10.44
Cs	0.22
Ca	5.75
Sn	0.01
Sr	0.23
O	30.11
Total	99.03



Non-shielded EPMA:
SXFive analysis of micro-crystals in glass matrices for storage investigation.

Shielded EPMA: EPMA investigation of nuclear fuels in severe oxidizing and reducing environment to understand and model accurately nuclear accidents.

2019 is also the year of CAMECA 90th year anniversary and some brief highlights on the company will be shared.

