



The Abdus Salam  
International Centre for Theoretical Physics



---

**EMAS 2008**

*8th EMAS Regional Workshop on*  
**Electron Probe Microanalysis  
of Materials Today**  
Practical Aspects  
including a session on  
synchrotron-based microanalysis

*19 - 22 April 2008*  
Adriatico Guesthouse  
The Abdus Salam International Centre for Theoretical Physics  
Trieste, Italy

**Book of Abstracts**

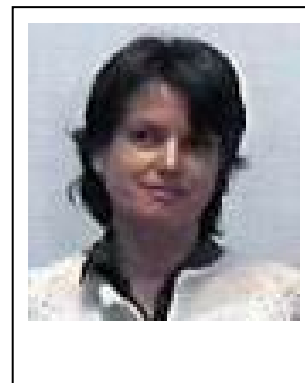
---

## SYNCHROTRON RADIATION $\mu$ -TOMOGRAPHY

**Giuliana Tromba\***

Sincrotrone Trieste S.C.p.A.  
Area Science Park, IT-34012 Basovizza-Trieste, Italy

\* giuliana.tromba@elettra.trieste.it



### **ABSTRACT**

X-ray computed  $\mu$ -tomography ( $\mu$ -CT) is a non-destructive imaging technique that produces a three dimensional digital map of an object. The distribution of regions with different density and/or chemical composition inside the sample is visualized by means of virtual slicing or using 3D volume rendering.

$\mu$ -CT greatly benefits of the peculiar characteristics of synchrotron radiation (SR) such as the high spatial coherence of the X-ray source, the beam monochromaticity and the high intensity and is now routinely used in several SR laboratories to carry out investigations on a variety of subjects. Similarly to other imaging techniques, it can be applied to any kind of samples from different disciplines innovating new areas like archaeometry, food technology, geophysics, environmental science, and biology.

$\mu$ -CT does not require any sample preparation and is not invasive: this means the sample can be after studied by other experimental techniques and/or can be submitted to different treatments (mechanical, thermal, etc...) before being examined again.

SR  $\mu$ -CT allows to access morphological information about the inner structure of a sample in the micron scale of resolution and it is also ideal to perform quantitative studies about the sample mass density and the phase mapping, *in-situ* imaging and dual-energy applications.

The SYRMEP beamline of the Elettra light source is equipped with a system for  $\mu$ -CT suitable to operate either in *absorption* or in *Phase Contrast* modes.

In the talk a review of latest results obtained by  $\mu$ -CT studies carried out at the SYRMEP beamline in material science as well as in bio-medical science will be presented.