

Joint ICTP-IAEA Advanced Workshop on High Sensitivity 2D & 3D
Characterisation and Imaging with Ion Beams | (smr 2856)

Contribution ID : 2

Type : **not specified**

External nuclear microprobe specificities and challenges

Monday, 26 September 2016 10:00 (1:00)

Content

Heritage samples specificities (e.g. uniqueness, fragility, complexity, sensitivity to beam-induced modification) Large artefacts, complex shape (positioning) Often cannot stand vacuum Artefact safety (handling and damage risk reduction, AIEA TM) Main addressed questions (e.g. provenancing, manufacture, preservation) Which IBA techniques is suitable for each question Photon-based: PIXE/PIGE/IBIL Particle-based: RBS/NRA/ERDA/SIMS Ion imaging added value compared to classical imaging techniques Limiting factors in external IBA imaging (SRIM simulations) Protons and helium ions: probe size Energy straggling Review of exit window material and size, and practically achieved resolution Gas atmosphere (impact zone cooling) Charge monitoring Mechanical scan Lowering beam intensity Current challenges IBA imaging of non-flat (3D) surfaces Stereoscopic view using multiple detectors Gamma-ray and particle detectors acceptance improvement Use of heavy ion beams (e.g. ^{19}F and ^{15}N beams for NRA)

Summary

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Session Classification : DAY 1