New generation Radiocarbon Accelerator Mass Spectrometry

for Cultural Heritage, Environment and Life Sciences

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ABSTRACT

The CEDAD-Center of Applied Physics, Dating and Diagnostics was established at the University of Salento in 1999 in the frame of a large scale research project funded by the Italian Ministry of Research and Education. It is the first Center in Italy for research and service for measuring radiocarbon with the Accelerator Mass Spectrometry technique for Cultural Heritage studies. At CEDAD 4 Ion Beam Analysis beamlines are also available for materials characterization and for applications in many research areas.

With the prp@ceric project a new compact AMS system with permanent magnet and high throughput has been installed. The new generation BAMS accelerator will be used in life sciences for measuring radiocarbon labelled drugs, for biological and environmental applications and for cultural heritage.

During the talk a comparison of the 3 MV Tandetron accelerator and the new BAMS accelerator will be done and the advantages of accelerator-based techniques for Cultural Heritage and, in particular, AMS will be illustrated. An overview of studies carried out at CEDAD will be presented some of them contributed to completely change consolidated beliefs or wrong attributions based on stylistic methods. Studies on archaeological sites by using and integrated approach of the AMS-IBA techniques will be shown.

SHORT BIOGRAPHY

Lucio CALCAGNILE is Full Professor of Applied Physics at University of Salento, Italy. He is the founder and director of CEDAD-CEnter of Applied Physics, DAting and Diagnostics, the first Italian center for research and service for

radiocarbon dating by AMS. CEDAD is also a strategic research infrastructure of the Apulia Region and some of its facilities are associated to CERIC-ERIC.
He was at AMOLF Institute for Atomic and Molecular Physics in Amsterdam, at the Tandetron Laboratory-CNRS Gif sur Ivette, France, the AGLAE Laboratory at the Louvre Museum, and at the Leibniz Laboratory for Isotope Analyses, University of Kiel, Germany.
He is coauthor of more the 300 scientific papers on international journals and he was responsible of many national and international research projects on Cultural Heritage, Materials and Environmental Sciences. He is co-director of the Bio Open Lab and the prp@ceric and Ingenio projects funded by the Italian Ministry of Research.