

Frontier research at the Louisiana Accelerator Center: present and future plans

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Abstract

The Louisiana Accelerator Center (LAC) is a University Center within the Materials Research Institute. The Centre is operates a 1.7 MV Pelletron Accelerator which focuses on to materials research. The purpose of the presentation is alert practising geologists, researchers and students of the work that is ongoing at LAC and future possibilities for investigations and research.

In the first part of the presentation the tools and methods currently available at LAC are outlined. These include (i) a MeV ion microprobe, (iii) a system for irradiation with ultra-low fluxes of protons to simulate the radiation doses that are encountered space travel in Low Earth orbit and interplanetary missions as well as proton beam cancer therapy and (iii) a system for high flux irradiation that can be used to simulate exposure of materials to radiation from NORM (naturally occurring radioactive materials).

The next part of the presentation will discuss some recent work on using the MeV ion microprobe to identify different phases in metal alloys and rocks by a colocalization technique by using mercury pathways in dental amalgams and a piece of drill core (provenance unknown) to develop the method.

The final part will outline new tools that are planed including a unique MeV-SIMS microscope that can will open unique possibilities for quantitative mapping of specific inorganic and organic molecules in geological samples.