



Contribution ID: 309

Type: Poster Presentation

Overview of the Mineral-PET run of mine Diamond bearing rock sorter

Tuesday, 8 July 2014 17:10 (1h 50m)

Abstract content

 (Max 300 words)
Formatting &
Special chars

Mineral-PET is a technology for the sorting of diamond bearing rock (kimberlite ore) based on a mineral analogue of the well-known medical Positron Emission Tomography (PET) imaging technique. The naturally occurring carbon in kimberlite needs to be activated via photonuclear transmutation before it can be imaged. For the R&D phase of the project, a technology demonstrator has been built. This is a planar PET array built around a conveyor belt using kimberlite phantoms. The phantoms consist of blocks of cement with the radioactive material (Na-22) uniformly distributed throughout it to simulate the homogenous background radiation from various non-diamond PET emitters. Diamonds are modeled in the phantom by the inclusion of a localized "hot-spot" of Na-22. This system has been used to benchmark computational simulations and to explore the physics issues for the specification of a pilot scale plant at a mine. The review will provide new results and updates on the performance and outlook for Mineral-PET.

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 award (Yes / No)?

yes

Level for award

(Hons, MSc,

 PhD)?

PhD

Main supervisor (name and email)
and his / her institution

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Would you like to
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yes

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Session Classification: Poster1

Track Classification: Track F - Applied Physics