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Nuclear forensic analysis of natural uranium mined from northern Nigeria.

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Nuclear forensic science seeks to aid attribution process of nuclear or radioactive materials found outside regulatory control. It is progressively seen as fundamental part of a strong nuclear security program. Having abundant deposits of uranium ore in Africa portends potential nuclear insecurity thereby the need to generate fingerprints becomes inevitable task. Isotopic ratios such as uranium, lead and thorium concentration, rare-earth elements patterns, trace impurities elements and age were determined. These analyses provide specific information on the origin and production process of uranium bearing materials. This study investigated these fingerprints and their applications in four selected uranium mines from northern parts of Nigeria (Riruwai, Mika-I, Mika-II and Michika), using Inductively Coupled Plasma Mass Spectrometry (ICP-MS) analytical technique. In the results obtained, isotope system of $^{206}\text{Pb}/^{238}\text{U}$, $^{207}\text{Pb}/^{235}\text{U}$ chronometry and Pb-Pb isochron as applied to the samples, yielded variable average age range of 29.4 ± 0.009 Ma to 4280 ± 0.046 Ma comparable with the age of the Earth (4543 Ma), respectively.

Apply to be considered for a student ; award (Yes / No)?

No

Level for award;(Hons, MSc, PhD, N/A)?

N/A

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