

Hadean $^{146,147}\text{Sm}$ - $^{142,143}\text{Nd}$ signatures in the Ukalik supracrustal belt (Inukjuak domain, Quebec)

GUILLAUME CARO¹, PRECILLIA MORINO¹,
STEPHEN MOJZSIS² AND NICOLE CATES²

¹CRPG-CNRS, Université de Lorraine, Nancy, France

²University of Colorado, Boulder CO, USA

The discovery of negative ^{142}Nd anomalies produced by the decay of now extinct ^{146}Sm in mafic rocks from the Nuvvuagittuq supracrustal belt (NSB) has fueled a debate on the presence of a Hadean (>4 Ga) component within the Archean Innuksuak complex (Northeastern Superior Province, Canada). Despite the uniqueness of these Hadean signatures, the NSB remains so far the only studied supracrustal enclave in an otherwise largely unexplored terrane. This study investigates the $^{146,147}\text{Sm}$ - $^{142,143}\text{Nd}$ record of newly discovered supracrustals located ca. 2 km northeast of Nuvvuagittuq. Petrologically, the Ukalik supracrustal belt (USB) comprises mafic and ultramafic rocks with a minor sedimentary component but lacks the massive cummingtonite amphibolite series characterizing NSB's « Ujaraaluk » unit. While petrologically and geochemically distinct from the NSB, Ukalik metabasalts exhibit correlated variations in $^{142}\text{Nd}/^{144}\text{Nd}$ vs. Sm/Nd space, which, if interpreted as a true isochron, yield an emplacement age of 4.28 Ga ($T_{1/2}=103$ Ma) or 4.36 Ga ($T_{1/2}=68$ Ma). Variations in the Sm/Nd ratio among mafic lithologies are mainly controlled by a two-component mixing relationship between a depleted end-member and a more evolved component exhibiting pronounced negative HFSE anomalies. LREE-enriched metabasalts carrying negative ^{142}Nd effects are, therefore, either crustally contaminated or derived from a metasomatized mantle source. This generates competing interpretations of the Hadean $^{146,147}\text{Sm}$ - $^{142,143}\text{Nd}$ isochrons, the implications of which will be discussed at the meeting.