



**Re-Os AND Sm-Nd ISOTOPE SYSTEMATICS AND CONSTRAINTS ON THE
ORIGIN AND AGE OF THE KOMATIITES OF THE QUADRILÁTERO
FERRÍFERO, MINAS GERAIS, BRAZIL.**

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ABSTRACT

The komatiites of the Quadrilateral Ferrífero (QF) of Minas Gerais state, Brazil, are located in the southern São Francisco Craton and are part of the basal sequence of the gold-mineralized Nova Lima group. The age of the komatiites is unknown but likely between *ca.* 3.400 Ma and 2.700 Ma based on ages of basement TTG sequences and upper felsic units of the Nova Lima group. Komatiites from the western QF (Morro Onça) have some original igneous textures preserved, whereas textures from the eastern QF (Mina Francisco and Jaspe) have been destroyed by high degrees of serpentinization and chloritization. Rhenium-Osmium data on the western komatiites indicate some of the original isotope systematics have been retained; komatiites with the highest Os concentrations have the least radiogenic $^{187}\text{Os}/^{188}\text{Os}$ ratios (model age of 3.054 Ma). The altered eastern komatiites also give some model ages of *ca.* 3.100 Ma but show more evidence of metamorphic resetting (e.g. major element data), with extremely altered komatiites having super-chondritic Os isotopic compositions. Komatiites show a positive correlation on Sm-Nd isochron diagrams which give an imprecise age for metamorphic resetting of $2.791 \text{ Ma} \pm 430 \text{ Ma}$ with the majority having superchondritic $^{147}\text{Sm}/^{144}\text{Nd}$ ratios and together indicate Nd > Sm removal as a result of Archean or Paleoproterozoic metamorphism. Modification of Os isotopic ratios with an originally Archean signature likely occurred as a result of interaction with one or more post-crystallization metamorphic events and combined with Re-Os results from previously analyzed QF gold-associated sulfides, indicate a Brasiliano-age for the ultimate disturbance.