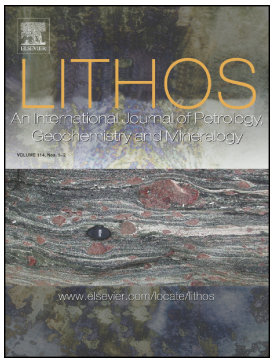

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Combined Lu-Hf and Sm-Nd geochronology of the Mariánské Lázně Complex: New constraints on the timing of eclogite- and granulite-facies metamorphism

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ABSTRACT

Lu-Hf and Sm-Nd garnet-whole rock geochronology combined with petrographic observations, minero-chemical variations, thermodynamic modelling and structural data was used to constrain the P−T−t−d evolution of eclogites from the Mariánské Lázně Complex (Bohemian Massif). Boudins of mostly isotropic eclogite with relict steep eclogite-facies fabric are affected by steep migmatitic foliation, which is followed on a regional scale by the development of almost pervasive, predominantly SE-dipping, extensional foliation. The structural succession shows continuous transition from eclogite to garnetiferous migmatitic amphibolite and to amphibolite migmatite.

A least retrogressed sample of eclogite shows clusters of fine-grained inclusion-poor garnet, omphacite relicts surrounded by a fine-grained clinopyroxene-plagioclase symplectite with minor amphibole, biotite-plagioclase intergrowths after white mica, kyanite with plagioclase-spinel coronas and accessory rutile. Rare potassic white mica occurs as inclusions in omphacite. A more retrogressed eclogite, with no omphacite or kyanite relicts, contains inclusion-poor garnet surrounded by