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Most geochronological data available for the alkaline rocks from the Mesozoic Serra do Mar Alkaline Province (SMAP), SE Brazil, were obtained through K-Ar (biotite, amphibole, whole rock), Rb-Sr (whole rock), and, more recently, Ar-Ar (biotite, amphibole) dating methods. Attempting to evaluate actual and precise crystallization ages we initiated a zircon and/or baddeleyite U-Pb dating program (TIMS) for selected occurrences from the province, especially those composed by saturated to oversaturated felsic varieties. Important occurrences of alkaline rocks related to SMAP, with ca. 230 km<sup>2</sup> exposure, crop out in the São Sebastião Island, northern coast of São Paulo State, intruding neoproterozoic gneisses, migmatites, and granites. The alkaline rocks comprise mostly quartz bearing alkali-feldspar syenites and minor nepheline bearing syenites, which constitute three roughly sub-circular plutons (Serraria, São Sebastião, and Mirante), coeval alkaline mafic-ultramafic stratiform-like complexes, and several alkaline and/or ultramafic to mafic lamprophyric dikes.

K-Ar available data (mainly biotite) for the intrusive rocks range between 81 and 86 Ma, with a weighted average of  $86 \pm 4$  Ma. Our first results were obtained for two samples of leucocratic, coarse-grained, massive quartz bearing alkali-feldspar syenites from the São Sebastião and Serraria plutons. They are made up mainly by mesoperthite, with some quartz, hedenbergite, calcic-sodic and sodic amphiboles, fayalite (São Sebastião) and biotite (Serraria). Apatite, titanite, Fe-Ti oxides, zircon and baddeleyite (Serraria) are the main accessories, while chevkinite, thorite, and pirochlore are occasional phases in the São Sebastião sample.

Five fractions made up of 6-16 clean transparent zircon crystals, with slightly concentric zoned patterns under BSE images, showing well developed prismatic and pyramidal forms, and other three similar fractions, with poor developed crystal faces, from São Sebastião and Serraria plutons, gave concordant mean ages of  $84.8 \pm 0.7$  (MSWD = 0.3) and  $85.0 \pm 0.3$  (MSWD = 1.0) Ma, respectively. A unique baddeleyite concentrate, with more than a hundred of very small and well formed prismatic crystals from the Serraria Pluton, gave an almost concordant age of  $84 \pm 1$  Ma with higher MSWD (ca. 3) and relatively lower concordance probability. These results put some important time constraints on the current models of plume migration in continental Brazil during the Mesozoic. Heritage evidence was not detected in any of the selected zircon fractions suggesting that the analyzed rocks probably do not contain a significant contribution from older continental crust.

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