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Sm-Nd, Rb-Sr AND K-Ar AGE CONSTRAINTS OF THE EL MOLLE AND BARROSO PLUTONS, WESTERN SIERRA DE SAN LUIS, ARGENTINA

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Within the Early Paleozoic Famatinian orogeny of Southern Sierras Pampeanas (Sierra de San Luis and Sierra de Córdoba), the post-orogenic granitoids are characterized by circular intrusions. The published Rb-Sr and K-Ar ages from plutons in the Sierra de San Luis range between 408 and 320 Ma. The El Molle and Barroso monzonitic plutons are two main exposures of a post-orogenic intrusive complex located in the western area of the Sierra de San Luis basement, and are also distinguished by a circular feature. From these plutons we obtained new Sm-Nd, Rb-Sr and K-Ar dates in order to contribute to the understanding of the magmatic and metamorphic evolution of the final stages of the Famatinian orogeny in the Sierra de San Luis. The Sm-Nd whole rock – mineral isochron yielded an age of 348 ± 25 Ma, with initial $^{143}\text{Nd}/^{144}\text{Nd}$ 0.51199 $\pm$ 0.00001, MSWD 0.3 and T_{DM} between 958 and 1137 Ma. The Rb-Sr whole rock isochron gave an age of 378 ± 48 Ma, with initial $^{87}\text{Sr}/^{86}\text{Sr}$ 0.7071 $\pm$ 0.0002, and MSWD 2.0. The K-Ar biotite date obtained from one of the granitoid rocks was 380 ± 7 Ma, whereas another K-Ar biotite date from a shear zone that cuts the pluton yielded 364 ± 7 Ma. Although these isotopic results are not totally consistent, we consider that up to now an age of about 380 Ma is the best approximation to the crystallization age, and is within the time interval of the post-orogenic granitoids of Sierra de San Luis. The younger limit for the pluton age is set by the K-Ar biotite age of 364 ± 7 Ma from a shear zone that affects the pluton, whereas the Sm-Nd isochron age of 348 ± 25 Ma is interpreted as representing another equivalent local shear zone metamorphism.