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U-Pb SHRIMP II dating of detrital zircon from Santa Catarina quartzite

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RESUMO: Three methods were used to date the 2BBV40 zircon sample: Thermal Ionization Mass Spectrometer (TIMS), Laser Ablation-Ion Coupled Plasma-Mass Spectrometer (LA-ICP-MS) and Sensitive High Resolution Ion Microprobe (SHRIMP). The TIMS analytical procedures are based on the Krogh technique, with small modifications including the use of mixed ^{205}Pb - ^{235}U spike and anion exchange small column. The U-Pb results shown in the concordia diagram yielded a concordia age of 2182 ± 9 Ma, not so different from the LA-ICP-MS concordia age of 2199 ± 16 Ma. The GJ1 zircon was used as U/Pb isotopic reference standard (600 Ma) during LA-ICP-MS analyses. 109 zircon crystals were analyzed by SHRIMP determination. The U concentration ranged from 30 to 470 ppm with a mean value of 205 ± 0.85 ppm and $^{232}\text{Th}/^{238}\text{U}$ ratios from 0.1 to 1.70. 85 of 109 spots are concordant and they yielded a concordia age of 2193 ± 5.7 Ma. The $^{207}\text{Pb}/^{206}\text{Pb}$ weighted average age is 2191.9 ± 2.5 Ma (mean of 102 spots), therefore very close with the concordia age. The 2BBV40 transparent zircon crystals show quite homogeneous U-Pb isotopic composition and a $^{207}\text{Pb}/^{206}\text{Pb}$ weighted average age of 2192 Ma. Additional work is in progress to test if 2BBV40a can be used as a Paleoproterozoic Brazilian internal laboratory standard.

PALAVRAS CHAVE: SHRIMP, LA-ICP-MS, DETRITAL ZIRCON