Abstract

Analytical procedures for U-Pb isotope dilution analyses at the Pará-Iso isotope geology laboratory of the Federal University of Pará (UFPA) are described in detail. The procedures are applied to zircon, titanite, rutile, apatite, columbite-tantalite and whole rock. Reagent preparation and chemical processing are done in clean-room conditions. Samples are dissolved using Teflon microcapsules in steel jacket Teflon Parr Instrument bomb or Teflon screw cap containers. U and Pb are separated using anion exchange AG 1x8 resin columns. Typical blanks for mineral sample amounts of 0.01 to 1.0 mg are less than 1 pg U and 20-30 pg Pb. Isotope analysis of the U and Pb from the same filament are carried out using a Finnigan MAT 262 mass-spectrometer in static and dynamic modes. The current analytical level is demonstrated on analyses of international standard zircon 91500 with three different 235U-205Pb and 235U-208Pb isotope tracers and whole rock standards. Results of analyses of two zircon samples are also presented.

Keywords

U-Pb dating, zircon, accessory mineral, isotope dilution.