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Isotopic age constraints from electron microprobe U-Th-Pb dates, using a three-dimensional concordia diagram

YVETTE D. KUIPER

Department of Geology, University of New Brunswick, Fredericton, New Brunswick E3B 5A3, Canada

ABSTRACT

Using a three-dimensional U-Th-Pb concordia diagram, electron microprobe (EMP) U-Th-Pb analyses are shown to yield isotopic age constraints on isotopically concordant and discordant data that have not been recognized previously. The three-dimensional U-Th-Pb concordia diagram is discussed. It is demonstrated that a date obtained from an EMP analysis is as old as or younger than the ^{207}Pb/^{235}U and ^{207}Pb/^{206}Pb ages, and as old as or older than the ^{208}Pb/^{232}Th age. EMP analyses always yield a minimum age for the oldest Pb component.