Potassium Argon ages

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Many minerals contain at least some potassium, and an isotope of potassium (^{40}K) decays to an argon isotope (^{40}Ar) at a known rate. By measuring the amount of ^{40}K and the amount of ^{40}Ar very accurately with a mass spectrometer, the age of the mineral can be calculated. The richer the mineral is in potassium, the more accurate the age determination. I knew that many Olympic sandstones were rich in biotite and or muscovite and that the micas would be rich in potassium. But these micas were eroded out of older rocks and an age would be a composite of the age of the older rocks. But the degree of metamorphism in the sandstones of the Olympics varied from practically none to considerable in sandstones that had been squeezed to a streaky rock that we identified in the field as semischist. I thought that the micas in these most-squeezed and probably recrystallized rocks would have their radiometric clocks reset to the age of the metamorphism. Most of these highly deformed rocks were in the core of the mountains. The actual determination of the age was dependent in evaluating how metamorphosed the rocks were. I explain this in a journal article: Tabor, R.W., 1972, Age of the Olympic Metamorphism, Washington: K-Ar dating of low grade metamorphic rocks: Geol. Soc. America Bull., v. 83, p. 1805-1816.