lives, potassium-40 and rubidium-87 are used for dating in the range of millions of years.

Basic Measurement Methods

Method	Material	Time dated	Useful time span (years)
Carbon-14	Wood, peat, charcoal	When plant died	1000 to 50,000
	Bone, shell	Slightly before animal died	2000 to 35,000
Potassium–argon	Mica, some whole rocks	When rock last cooled to about 300°C	100,000 and up
	Hornblende Sanidine	When rock last cooled to about 500°C	10,000,000 and up
Rubidium–strontium	Mica	When rock last cooled to about 300°C	5,000,000 and up
	Potash feldspar	When rock last cooled to about 500°C	50,000,000 and up
	Whole rock	Time of separation of the rock as a closed unit	100,000,000 and up
Uranium–lead	Zircon	When crystals formed	200,000,000 and up
Uranium-238 fission	Many	When rock last cooled	100 to 1,000,000,000 (Depending on material)

One of the most publicized dating efforts using the potassium–argon technique is that involving the fossil skull of Zinjanthropus, found a few years ago by the British anthropologist Dr. L. S. B. Leakey in the Olduvai Gorge in Tanzania. The measurements of radioactive decay of potassium-40, with its long half-life of 1.3 billion years, to argon-40 were made at Berkeley by Garniss Curtis and Jack Evernden. Our earliest human ancestor turned out to be almost two million years old, considerably older than anticipated. Because the amount of argon produced in two million years is extremely small and contamination by argon from the air is a serious problem, the fossils were studied a second time and the measurements repeated. Zinjanthropus was again determined to be nearly two million years old, plus the time, of course, that it took to repeat the tests.