Smoky Mountain Bible Institute
Biology, Radiometric Dating 106

Welcome back to the lab. Time, time and more time—we will continue our short detour from the topic of biology and touch on chemistry and geology for the next couple of lessons relating to time. There is a large number of dating methods, and they produce greatly varying dates. We will discuss one more radiometric dating method, and then move on to some dating methods that provide much younger earth results before concluding our detour on time.

To perform radiometric dating, a rock is crushed to a fine powder and the minerals are separated. Each mineral has different ratios between its parent and daughter concentrations. This topic is much too complicated to be dealt with in a single lesson, not to mention it carries great potential for painful boredom. I will therefore try to condense this into one lesson that describes the concepts without becoming too scientific and complicated. Isochron dating is a common radiometric dating technique applied to date natural events like the crystallization of minerals as they cool, changes in rocks by metamorphism, or what are essentially naturally occurring shock events like meteor strikes. Minerals present in these events contain various radioactive elements which decay, and the resulting daughter elements can then be used to deduce the age of the mineral through an isochron. So, what is an isochron? In the mathematical theory of dynamic systems, an isochron is a set of initial conditions for the system that all lead to the same long-term behavior. Translation: a mathematical method of determining the initial condition of something based on its current composition. This is interesting because as we mentioned last month, assumptions are the thorn in the side of all dating methods. So, the appeal of isochron dating is that it does not presuppose the initial amount of the daughter element in the decay sequence. This method is used to determine the initial amount. If I seem to be talking in circles it is because old earth dating methods must talk in circles to achieve their goal using naturalistic explanations that illogically exclude the possibility of the supernatural.

Isochron dating began when scientists recognized difficulties with the assumptions of radiometric dating, especially how much of the daughter isotope might have been present when the mineral first formed. Isochron dating was developed in an attempt to solve that problem, but in so doing, created different assumptions and problems of its own. Isochron dating is primarily used in determining the age of igneous rocks, metamorphic rocks and even shock events like asteroid impacts. Some of the more commonly used parent/daughter isotope pairs used for isochron dating are rubidium/strontium, samarium/neodymium, and uranium/lead. Translation: the parent isotope over time decays into the daughter isotope (for example—uranium decays into lead).

All isochron dating assumes that the source of the rock or rocks contain unknown amounts of both radiogenic and non-radiogenic isotopes of the daughter element, along with some amount of the parent nuclide. Thus, at the moment of crystallization, the ratio of the concentration of the radiogenic isotope of the daughter element to that of the non-radiogenic isotope is some value independent of the concentration of the parent. As time goes on, some amount of the parent decays into the radiogenic isotope of the daughter, increasing the ratio of the concentration of the radiogenic isotope to that of the daughter. No matter how many times you read this paragraph, it will still be hard to see how scientists do not see this as a mathematical estimate of the initial number of specific elements in the rock that is being tested; read "assumption"!

Not to mention that in this method, outside contamination can form good-looking isochron data, and uniformitarian geologists know it. The real way a "true" isochron is distinguished from a false isochron is by how well it agrees with how old the fossils in that layer are considered to be; read "circular logic". Isochron dating is also unreliable because it assumes that the samples are congenic, assuming that they form at the same time from a reasonably homogeneous common pool. This assumption is also invalid. In particular, mixing two sources with different isotopic compositions gives meaningless, but apparently valid, isochron plots. One more real problem with this dating method is disconcordant dates. In most cases when you test different chemicals in the same rock, you get great variations in the dates on the order of millions and billions of years. If the methods were dependable should they not all come up with similar dates? More in the next lesson.