Exploring Radiometric Dating

Dating methods in geology use the parent-daughter decay (P → D), a known half-life, and the daughter/parent ratio determined by mass spectrometry to determine the age or time passed since formation of an igneous rock. You will need the Excelet at

http://academic.pgcc.edu/~ssinex/excelets/age_dating.xls

How does the daughter/parent or D/P ratio change as time passes?

Radiometric dating methods assume that the initial amount of parent isotope, \( P_0 \), is set at the formation of an igneous rock when it crystallizes, turns solid, from magma (molten rock). We assume that the amount of daughter isotope is zero (\( D_0 = 0 \)). How is the age of the rock influenced if \( D_0 > 0 \) from other sources?

To correct for an initial amount of a daughter isotope (usually not known), geologists use the isochron plot. For any parent-daughter pair, how does the age, \( t \), influence this plot?

How does the \( D_0 \) influence the isochron plot as well?

Determine the age of the rocks for the assess and assess II tabs. Attach the graphs of the isochron plots for both, any calculations, and answers to questions on the tabs.