

Location: Vaughan Hall, Rm. 300
Time: Tuesday-Thursday: 12:30 - 1:50 p.m.
Instructors: Pat Castillo (3131 Sverdrup Hall, pcastillo@ucsd.edu)
 Emily Chin (3121, Sverdrup Hall, e8chin@ucsd.edu)
References*: on reserve in Eckart Building, 2nd floor

Grading (Letter grade):

20% Homework
 20% Midterm
 60% Final Exam

Tentative class schedule:

9 Jan	PC	Intro to isotope geology, nucleosynthesis, radioactive decay and growth
11 Jan	PC	Trace element geochemistry, mass spectrometry
16 Jan	PC	Radiogenic isotope geochemistry, Rb-Sr isotope systematics
18 Jan	PC	Sm-Nd isotope systematics; two-component mixtures
23 Jan	PC	Pb isotope systematics
25 Jan	PC	Lu-Hf & Re-Os isotope systematics
30 Jan	PC	Mantle geodynamics I; the Sr-Nd-Pb isotopes of the mantle
1 Feb	PC	Mantle geodynamics II; the origin of mantle end-members
6 Feb	PC	Mantle geodynamics III; Pb and Hf paradoxes
8 Feb	PC	K-Ar and $^{40}\text{Ar}/^{39}\text{Ar}$ methods of dating, extinct radionuclides
13 Feb	EC	Mid-term
15 Feb	EC	Noble gases as tracers in the solid earth, ocean, and atmosphere
20 Feb	EC	Cosmogenic isotopes I – Surface exposure dating, ^{10}Be and ^{36}Cl
22 Feb	EC	Cosmogenic isotopes II – Carbon-14 as tracer and clock
27 Feb	EC	Principles of isotope fractionation and water isotopes
1 March	EC	Oxygen isotopic composition of carbonate shells/paleothermometry
6 March	EC	Carbon isotopes; photosynthetic fractionation; major reservoirs
8 March	EC	Carbon isotopes; applications
13 March	EC	Nitrogen Isotopes
15 March	EC	Sulfur Isotopes

Final exam: Tuesday, 11:30 a.m. – 2:29 p.m., 20 March

*** References:**

Faure, Gunter. Principles of isotope geology, Wiley, c1986
QE501.4.N9 F38 2005

Allègre, Claude J., Isotope geology, Cambridge University Press, 2008
QE501.4.N9 A45 2008

Dickin, Alan P., Radiogenic isotope geology, Cambridge University Press, 2005
QE501.4.N9 D53 2005

H.-G. Attendorn and R.N.C. Bowen, Radioactive and Stable Isotope Geology, Chapman & Hall
QE501.4.N9 A895 1997

Robert Bowen, Isotopes in the earth sciences
QE501.4.N9 B69 1988