

Geology

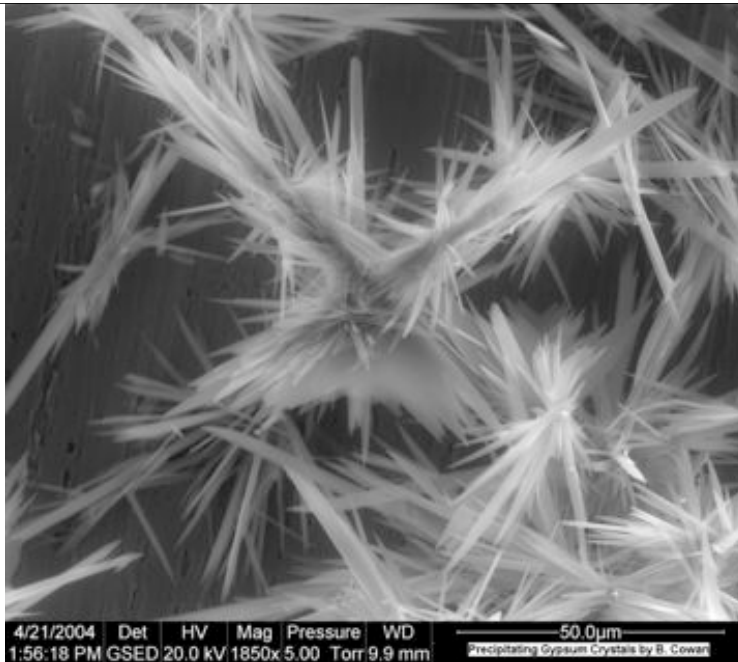
application of
physics &
chemistry
to questions
about Earth



Big Picture



Small Picture



Course of Study



Hazards



Hazards



Hazards



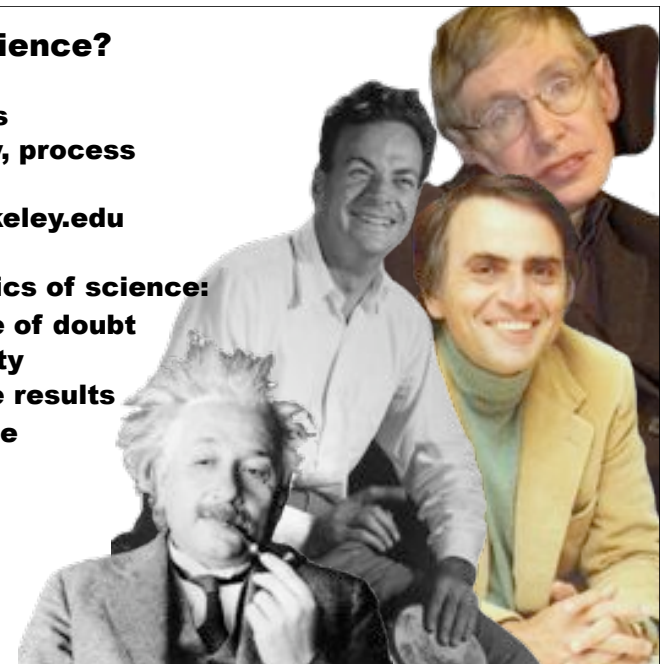
What is Science?

**not just facts
methodology, process**

undsci.berkeley.edu

characteristics of science:

- 👤 **a culture of doubt**
- 👤 **testability**
- 👤 **tentative results**
- 👤 **falsifiable**



Hierarchy of Information

personal communication

books
pop sci

peer-reviewed
journal articles

peer-review



Scientists = Mad Observation Skillz



Subjective, Objective qualitative, quantitative



Scientific Notation

the mass of the Earth=
5,973,600,000,000,000,000,000 kg

in scientific notation,
 5.9×10^{24} kg
“ten to the 24th power”

$10^6 = 1,000,000$
 $10^{-6} = 0.000001$

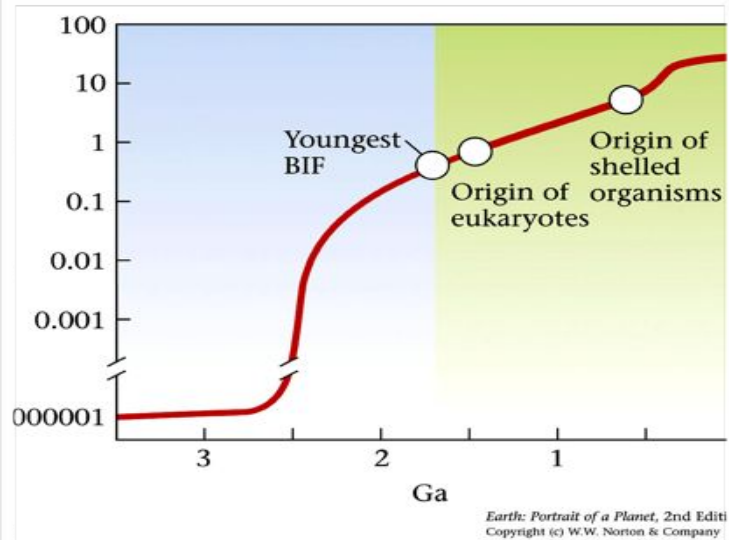
$10^1 = 10$
 $10^2 = 100$
 $10^3 = 1000$

the mass of an electron =
0.00000000000000000000000000091093826 kg

in scientific notation,
 9.1×10^{-32} kg

order of magnitude: 10^2 to 10^3 , 10^{-5} to 10^{-6}

Logarithmic Scales



Units

science uses only "SI" units
Système international d'unités

meters, kilogram, Celsius

1 meter (m) = 3.28 feet

1 kilometer (km) = 1000 meters = 0.621 miles

1 gram (g) = 0.035 ounces

1 kilogram (kg) = 2.2 pounds

0° Celsius = 32° Fahrenheit

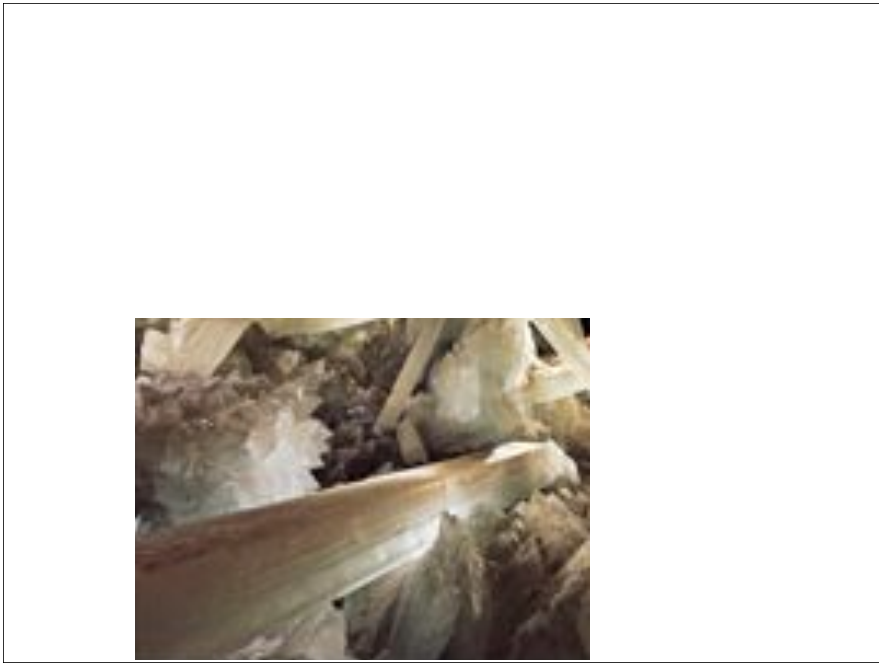
100° C = 212° F

to convert C to F, multiply by 1.8 and add 32



Scale—we need a reference to determine size





**Naica
Mountain
Mexico**



Geologic Time

Ka = kiloannum
1,000 years

Ma = megaannum
1,000,000 years

Ga = gigaannum
1,000,000,000 years