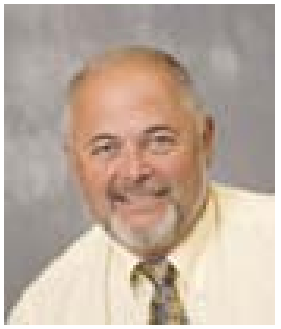
EAPS 10000 Y01
Online Course
Planet Earth

Prof. Lawrence Braile

Welcome to the EAPS 10000 Y01 online course
Planet Earth *(also known as EAPS 100)!*



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PURDUE UNIVERSITY

Earth Atmospheric Planetary Sciences

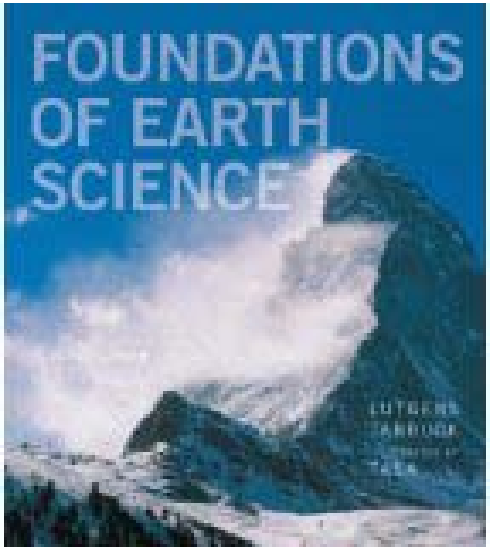
EAPS 10000 Y01 – Planet Earth (online course)
Week 2, Chapter 2 (pages 44-75, text)

Week	Chapter	Assigned Pages	Major Concepts	Important Terms
2	**2 – Rocks**	44 – 75	Rock cycle, rock classification, weathering	Igneous, sedimentary, metamorphic, magma, felsic (silicic), mafic

Igneous

Metamorphic

Sedimentary



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Week 2, Chapter 2 (pages 44-75, text)

When you have finished reading Chapter 2 and viewing the weekly PowerPoint file for Week 2 Chapter 2, take the weekly quiz (Qz 2; be sure to read the Syllabus for more information on quizzes). You can use your book, notes, etc. during the quiz.

The PPT files (converted to PDF files) are best viewed with the Full Screen view in browsers.

The following slides illustrate some of the important concepts and topics of Chapter 2.

Rock: Aggregate of minerals.

Rock (granite): an aggregate of minerals
(Figure 1.3, text)

Rock Types:

Igneous (from melt)

- volcanic (cools rapidly on surface, fine grain)
- plutonic (cools slowly in interior, coarse grain)

Sedimentary

- clastic or detrital (made up of fragments of mineral grains and rocks; mudstone, sandstone, conglomerate)
- chemical (precipitated; salt, limestone, gypsum)

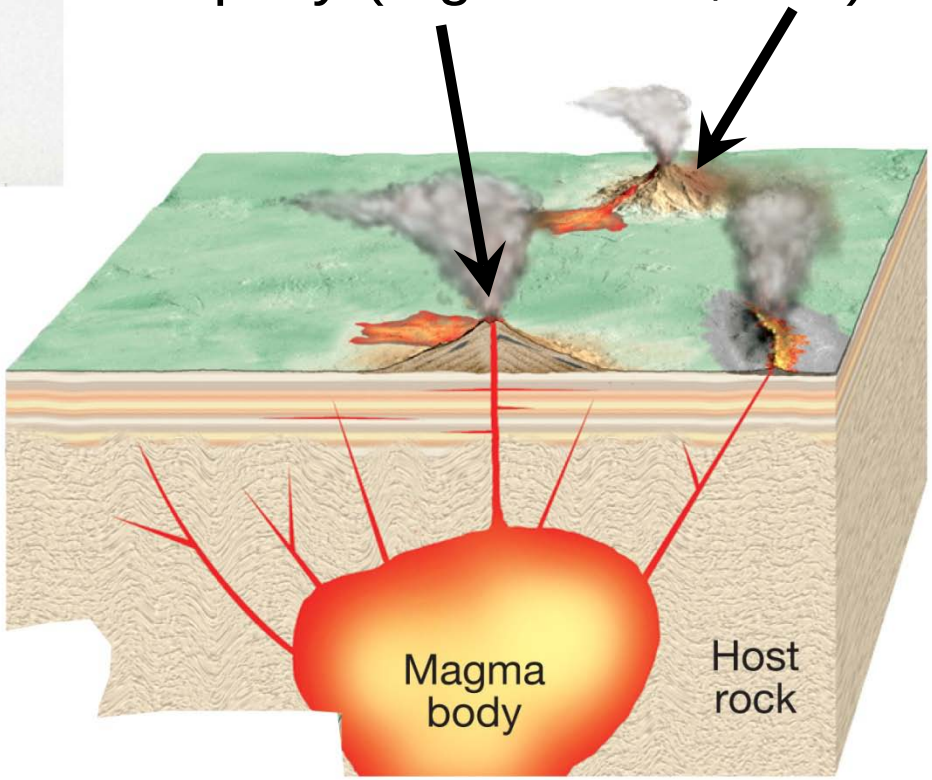
Metamorphic

- deformed and re-crystallized by heat and pressure (*without melting*) at depths of several km in Earth

Igneous Rocks (two types – volcanic and plutonic [intrusive])

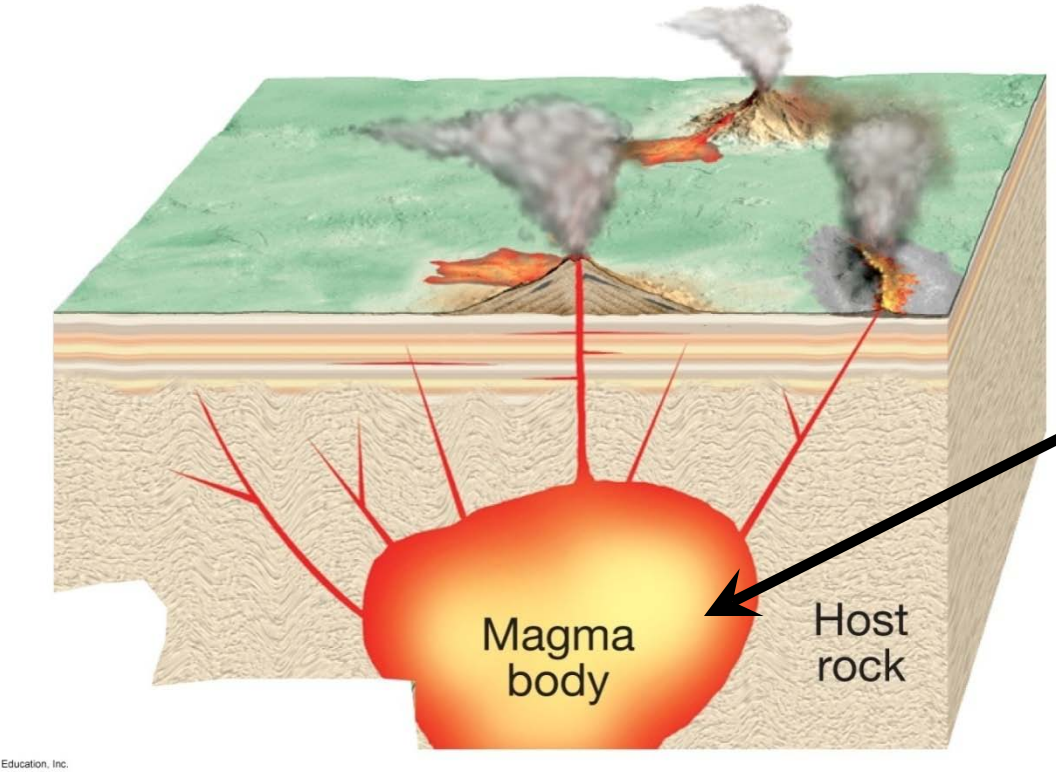
Igneous, ***volcanic***, fine grain, rhyolite (Figure 2.6, text)

Volcanic, fine grain, erupts on surface of Earth, cools rapidly (Figure 2.12, text)



Igneous

Plutonic (intrusive), coarse grain, cools slowly at depth so crystals grow to larger size (Figure 2.12, text)



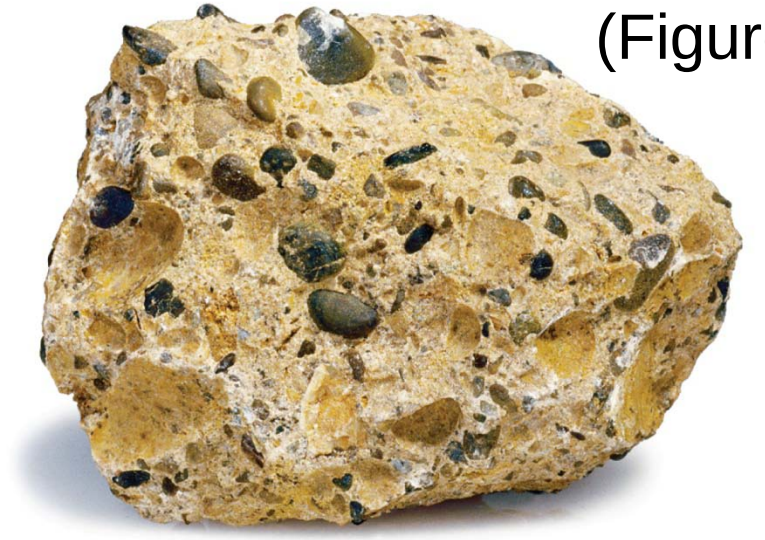
Igneous, ***plutonic (intrusive)***, coarse grain, granite (Figure 2.6, text)

Sedimentary Rocks (two types – clastic *or detrital* [fragments or grains] and chemical [precipitates]).

Clastic sedimentary rocks classified by grain size.

Sandstone
(Figure 2.18, text)

Conglomerate
(Figure 2.18, text)

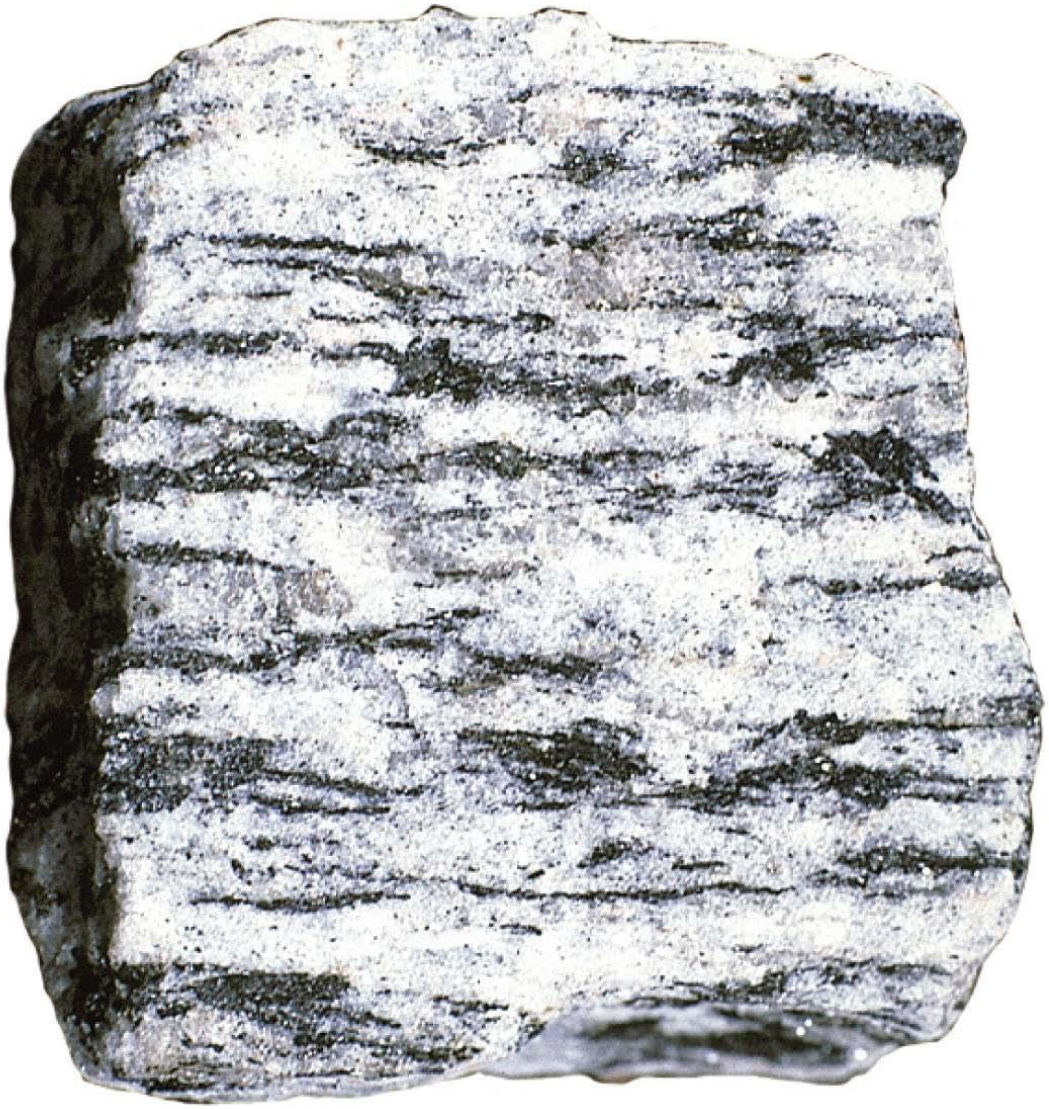


Mudstone or shale
(Figure 2.18, text)

Sedimentary Rocks

Chemical sedimentary rocks – chalk cliffs – chalk is a type of limestone ($CaCO_3$), the most abundant chemical sedimentary rock.

Chalk (limestone)
(Figure 2.21, text)



Metamorphic Rocks – types classified by grain size and degree of deformation

Metamorphic (gneiss, note banding/alignment, metamorphic rocks are rocks that have been deformed and re-crystallized by heat and pressure) (Figures 2.30, text)

The **Rock Cycle** illustrates how any rock (igneous, sedimentary, or metamorphic) can become another rock type by **erosion and deposition** (to create a new sedimentary rock), **melting** (to create a new igneous rock), or by **heat and pressure**, by burial) to create a new metamorphic rock. (Also see Figure 2.1, text)