

Module F

Unit 1

Lesson 2

Exp 4

Relating Metamorphic

Rocks to

The Earth's systems

Metamorphic Rocks

- Form when the texture and mineral content of existing rock to change over millions of years due to large changes of temperature, pressure, or both
- Contact with hot fluids can also cause changes to rock.
- **Metamorphism** is another word for this change.



Geological process

- When rock is exposed to physical or chemical conditions that cause the rock's minerals to change and form new minerals, the rock then becomes a new metamorphic rock.
- Each type of metamorphic rock forms under a certain range of temperatures and pressures, and each contains particular kinds of minerals.
- Metamorphic rock can form in areas that are in contact with, or close to, a magma chamber. Rock can also undergo metamorphism when it is buried deep enough in Earth that a large region of rock is subjected to intense heat and pressure
- An example of metamorphic rock is quartzite. Quartzite forms when sandstone, a sedimentary rock, is exposed to high temperature and pressure.

Do Now:

Complete Ebook activities

For Ebook sections:
Metamorphic Rock
Geological Processes

Time Scale

- The formation of metamorphic rock is generally a very slow process, because the changes happen to rock in its solid state.
- The process to form coarser-grained metamorphic rocks with large mineral crystals, such as gneiss, may take tens of millions of years.

Examples of Metamorphic Rocks



Gneiss



Slate



Quartzite



Schist



Marble



Phyllite



foliation

can often look
like twisted
layers in rocks



Do Now: Complete Ebook activities

For Ebook sections:

- Time Scale
- Metamorphic Rock in the Geosphere
- Describe how Metamorphic Rock Forms

Metamorphic Rock in the Geosphere

- If metamorphic rock forms deep inside Earth, how are you able to see it?
The ridges making up much of the Appalachian Mountains are metamorphic rock. This rock formed when the edges of North America and Africa crashed together hundreds of millions of years ago.
- Metamorphic rock may be moved to the surface by uplift, or after erosion removes layers of rock.
- When a metamorphic rock forms, pressure on the rock may force the mineral crystals into parallel layers.
- These layers can show up as dark and light bands.