

Chapter 4

Igneous (Fire)

Rocks



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It's all about Magma...



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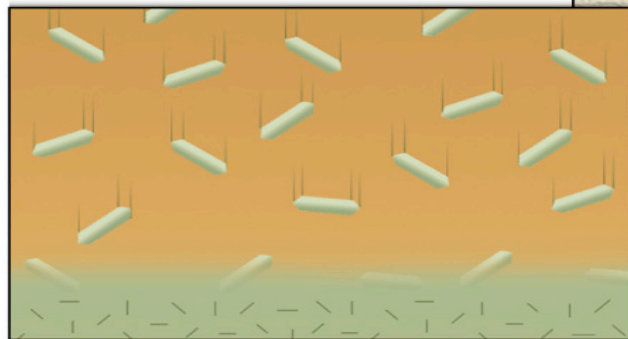
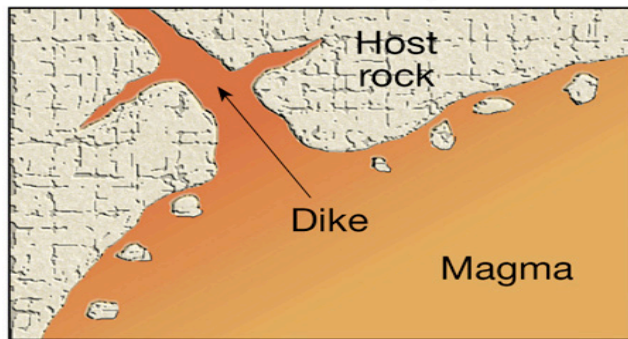
Magma = molten minerals



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Formation of Magmas

Assimilation of country rock



Crystallization and settling

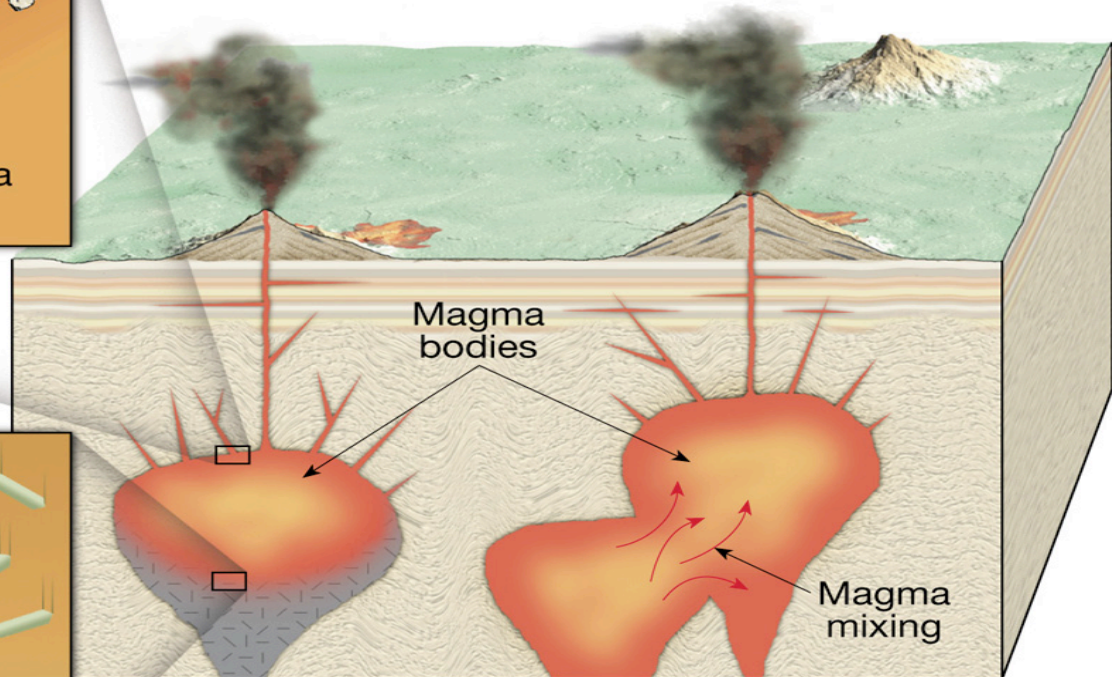
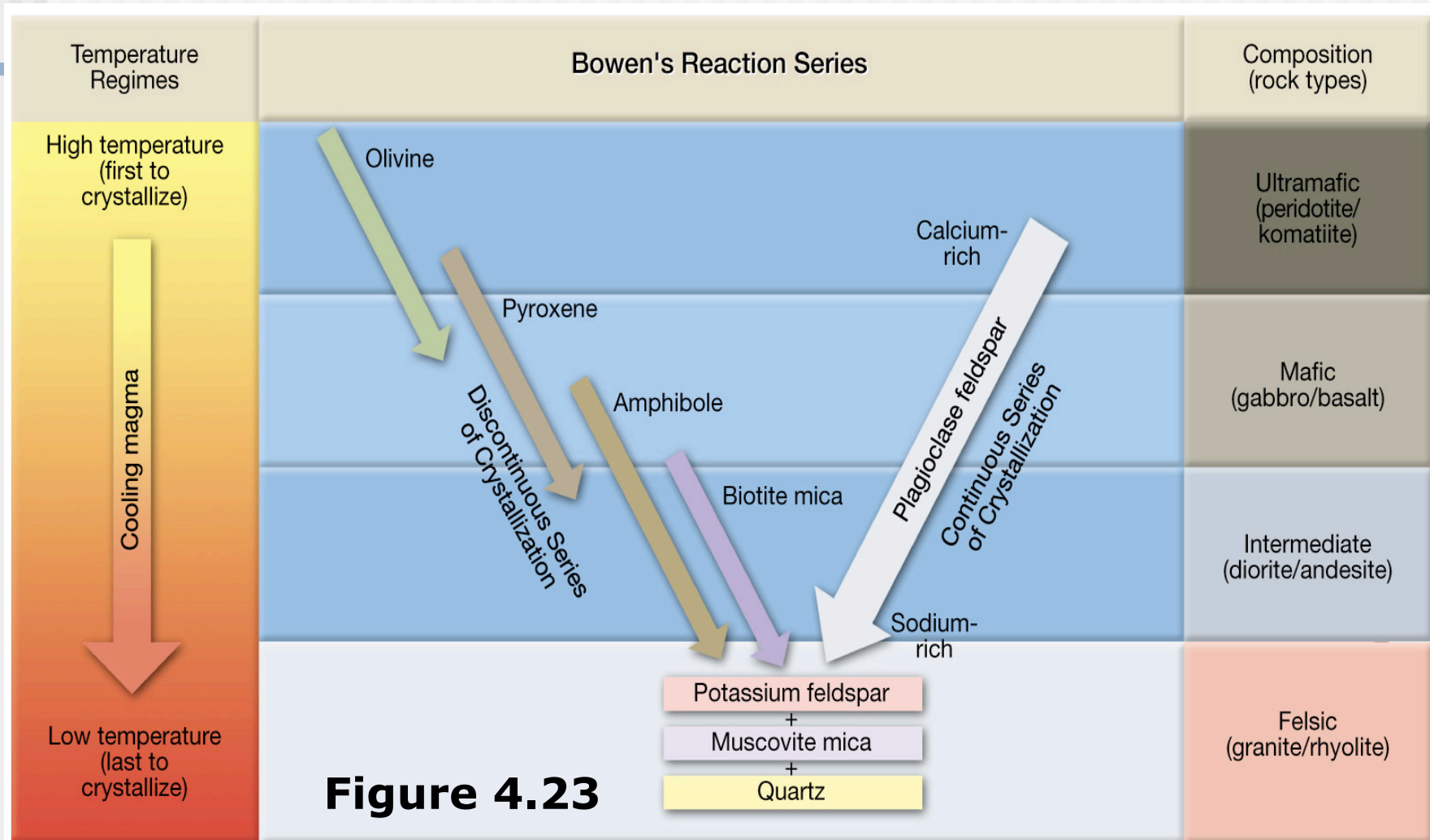
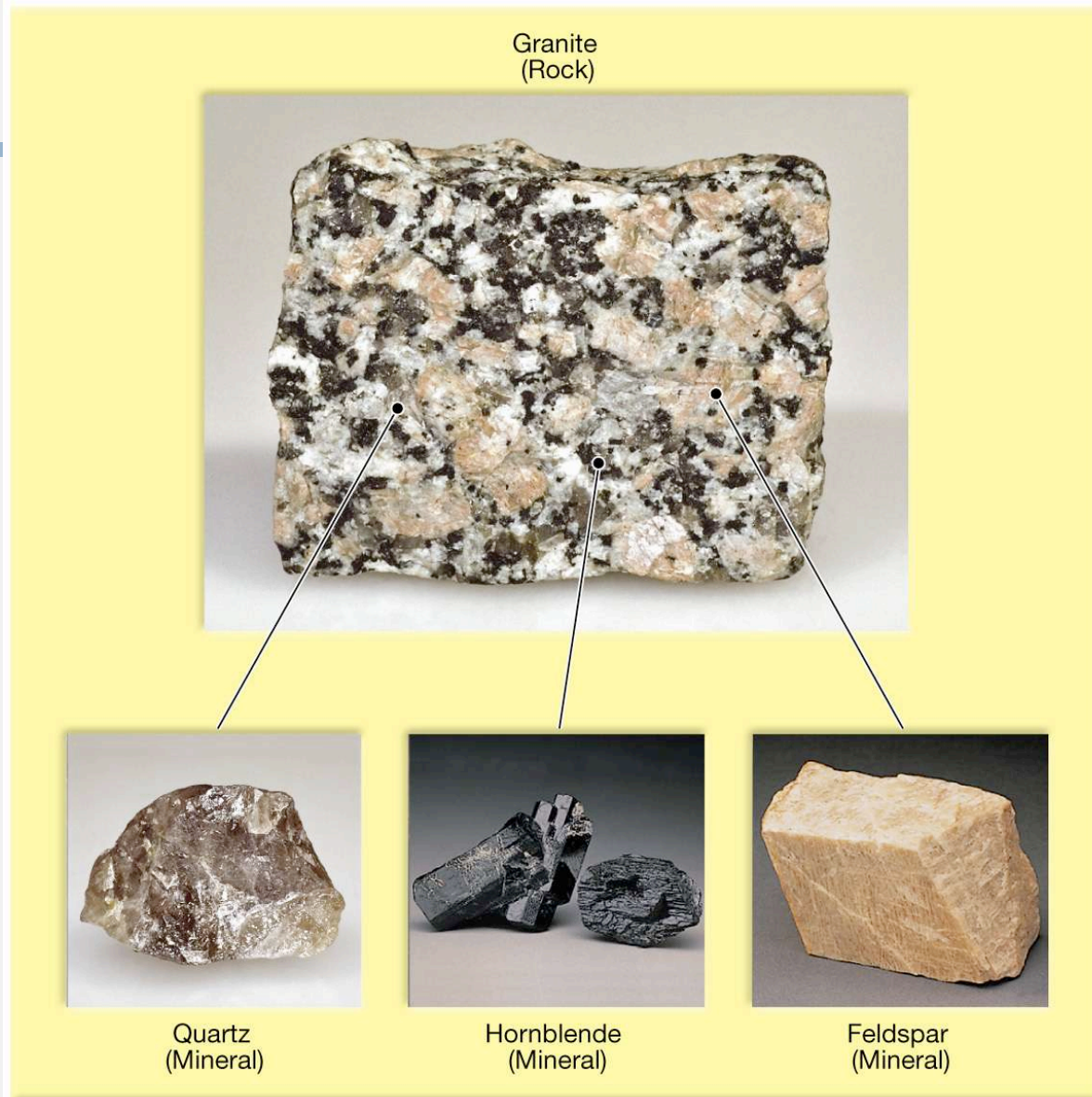


Figure 4.25

Bowen's reaction series



Rocks = assemblage of minerals



Two Possible Histories



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Intrusive

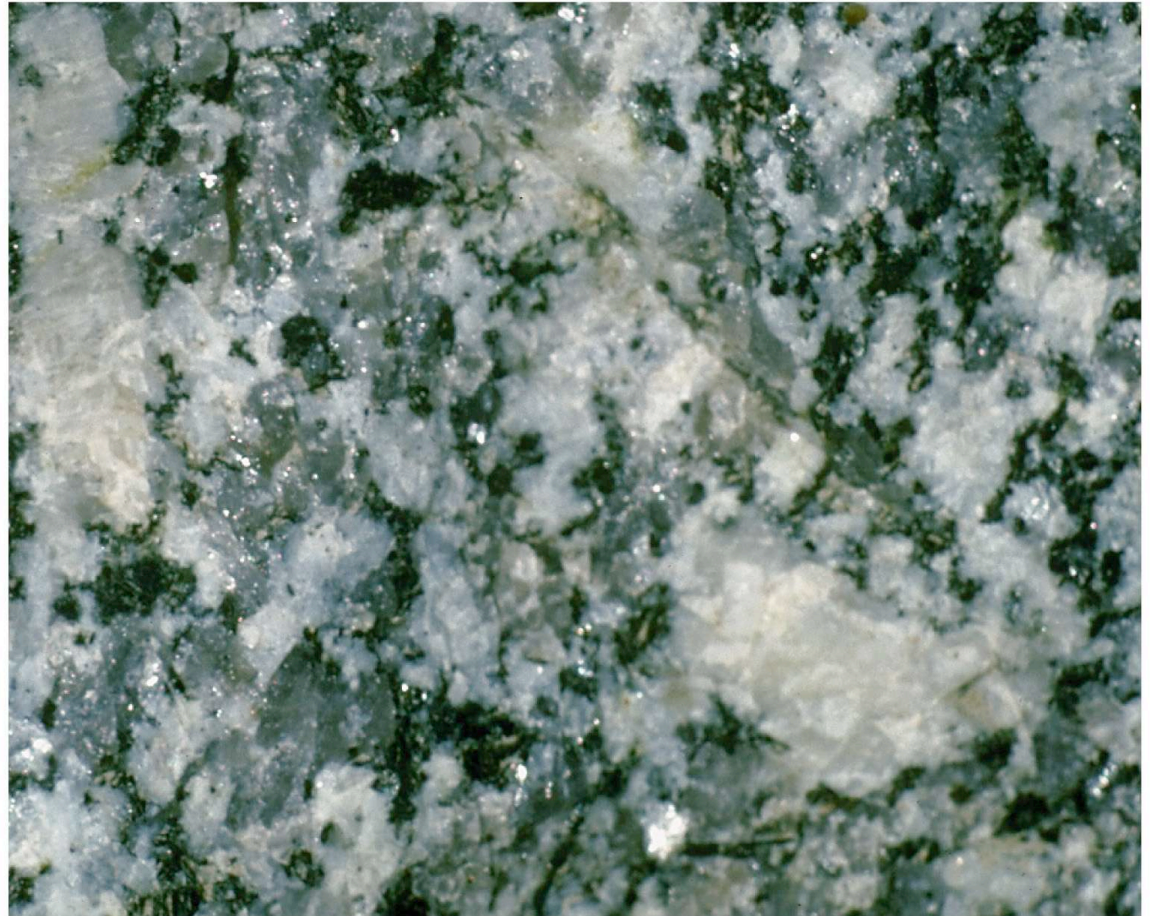


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Extrusive

Igneous textures

- **Phaneritic**
- **Aphanitic**
- **Glassy**



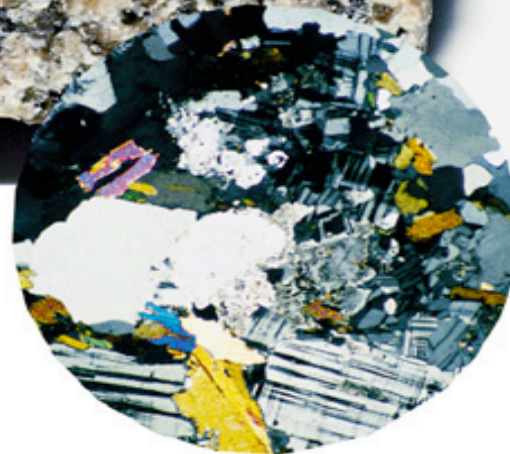
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Phaneritic texture

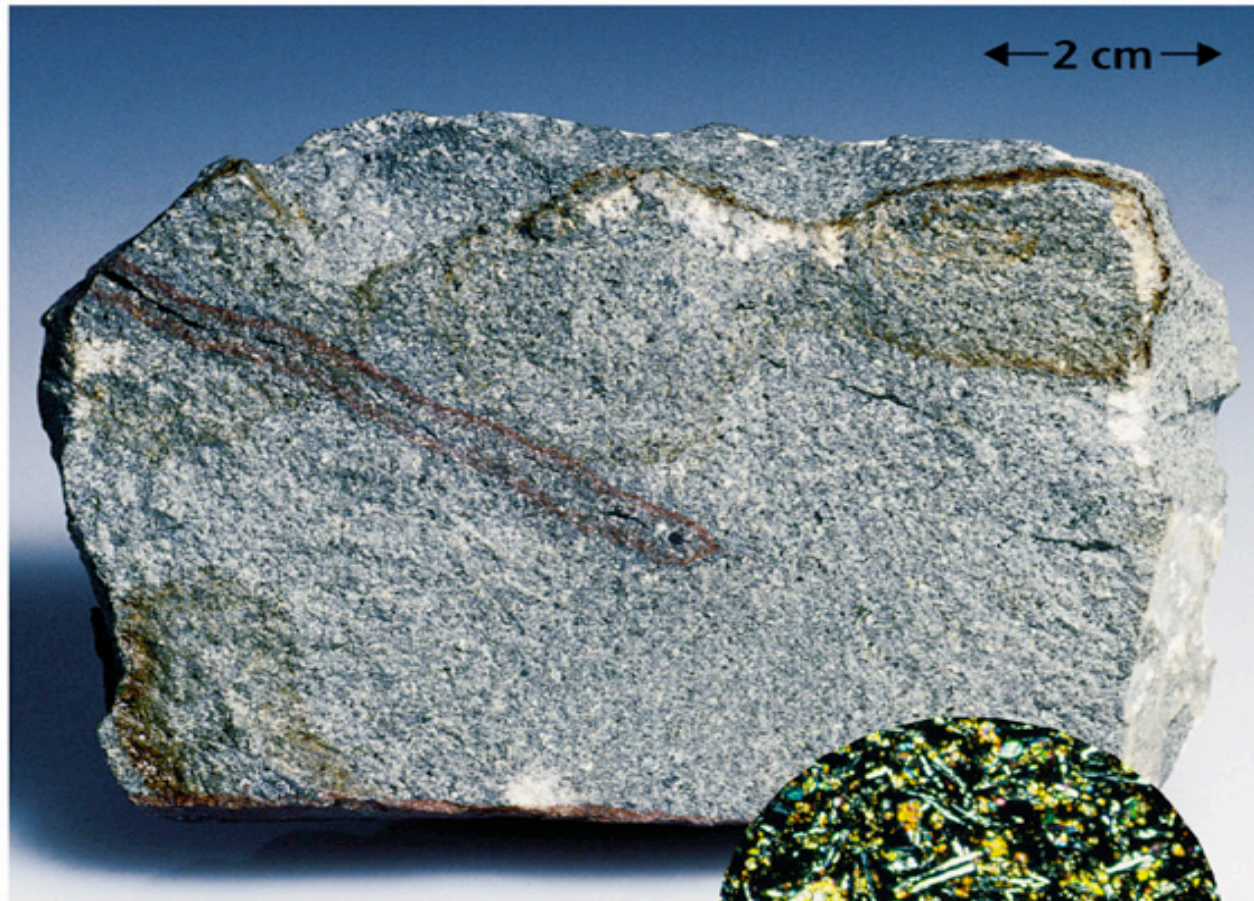


B. Phaneritic

Figure 4.3 B



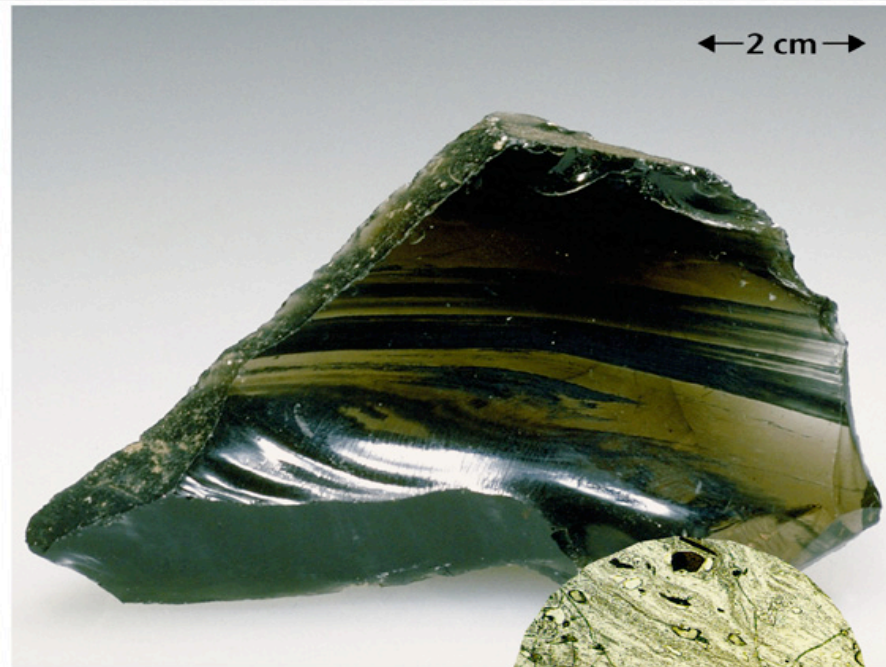
Aphanitic texture



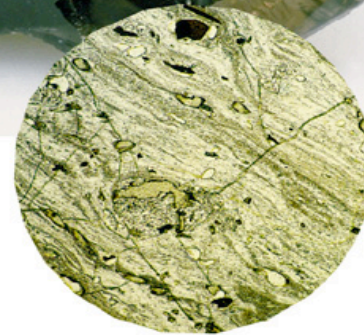
A. Aphanitic

Figure 4.3 A

Glassy



D. Glassy



Obsidian

Igneous textures

■ **Other igneous textures**

- **Porphyritic texture**



A. Andesite porphyry

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- **Pegmatitic texture**



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Intrusives

Texture and Chemistry

Granite

Diorite

Gabbro

Felsic

Quartz

Intermediate

No Quartz

Mafic



Granite



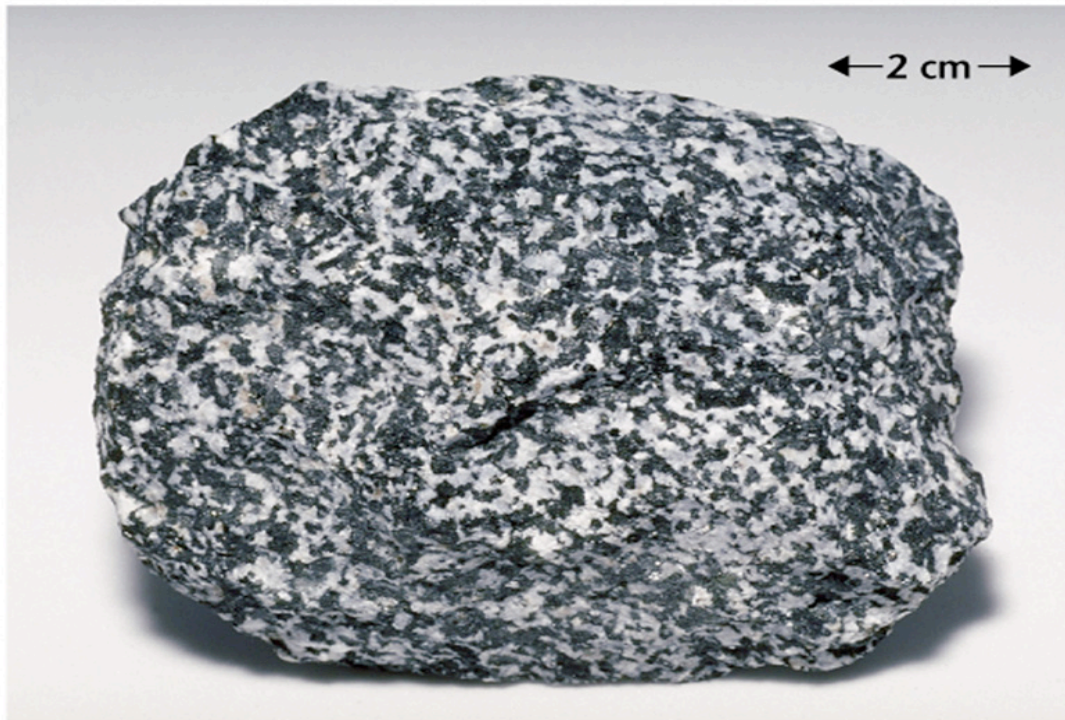
A. Granite

Close up



Figure 4.9 A

Diorite



Diorite

Close up

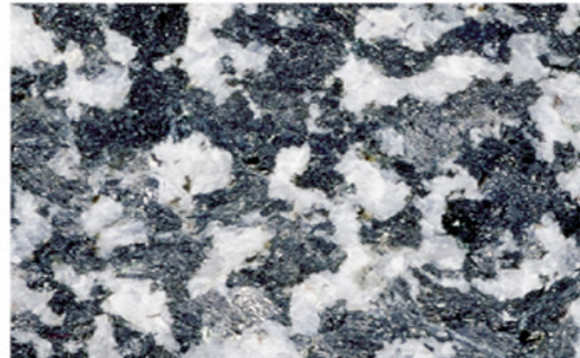


Figure 4.14

Gabbro



B. Gabbro

Extrusives

Texture and Chemistry

Rhyolite

Andesite

Basalt

Felsic

Quartz

Intermediate

No Quartz

Mafic



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Rhyolite



B. Rhyolite

Close up



Figure 4.9 B

Andesite



A. Andesite porphyry

B. Close up

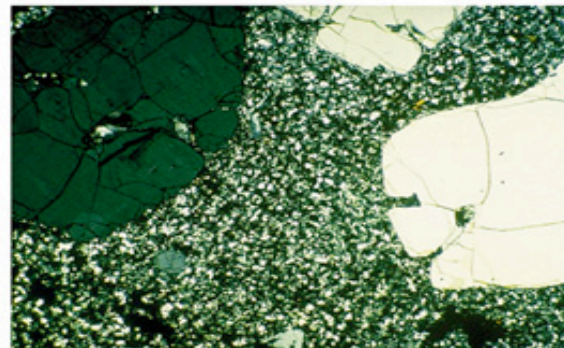
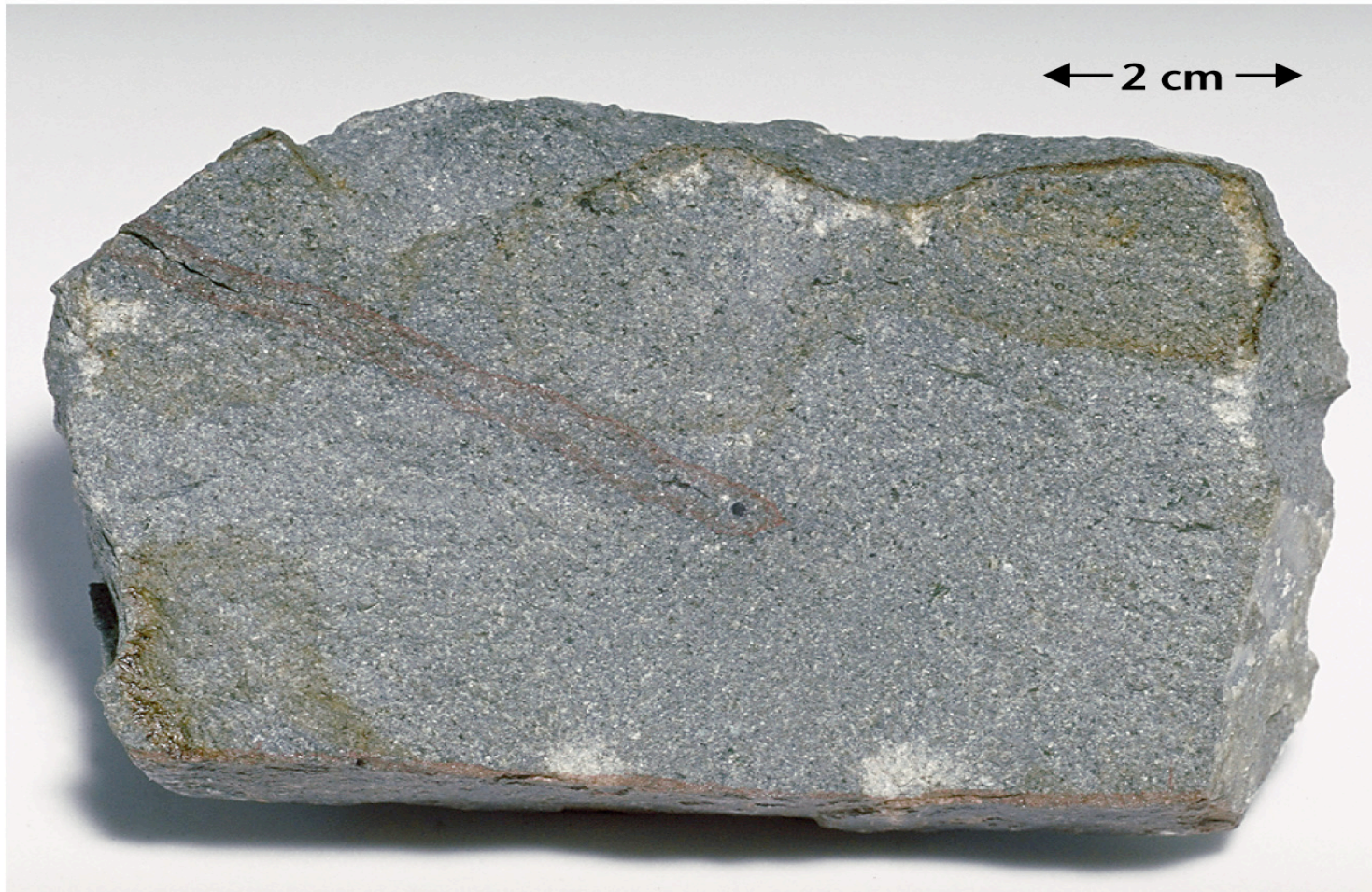


Figure 4.13

Basalt



A. Basalt

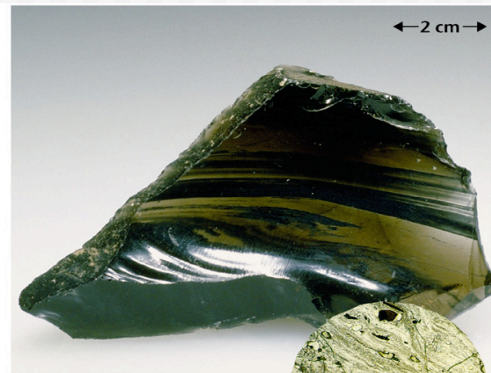
Figure 4.15 A

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Igneous compositions

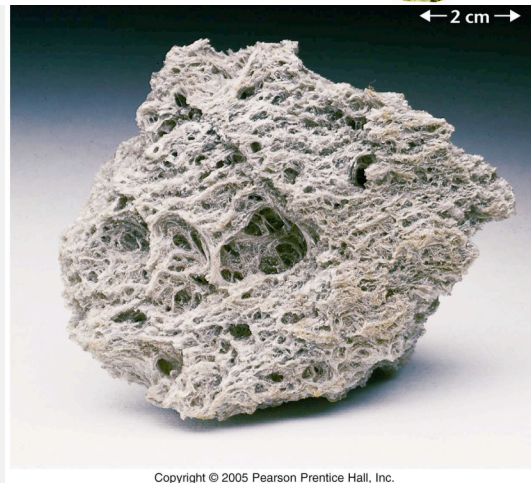
■ **Other**

- **Obsidian**



D. Glassy

- **Pumice**



Igneous Rock Chart

- Granite
- Rhyolite

Diorite
Andesite

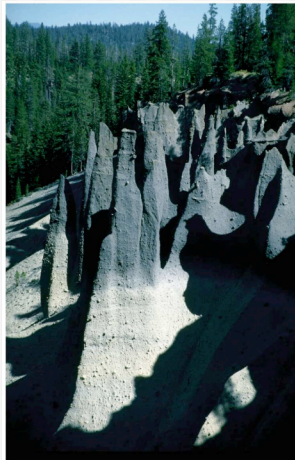
Gabbro
Basalt

Felsic
Quartz

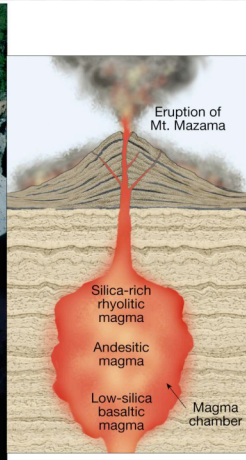
Intermediate
No Quartz

Mafic

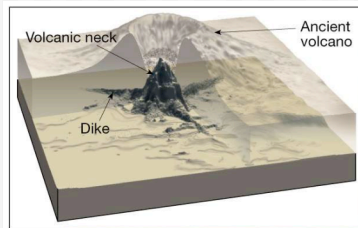
Importance of Igneous Rocks



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