Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (First Year)

Subject: Geology

Paper Code: GEG- 101

Paper Title: Minerals and Rocks

Unit: 3

Module Name: Metamorphic rocks- Types of metamorphism

Module No: 22

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Notes

Metamorphism

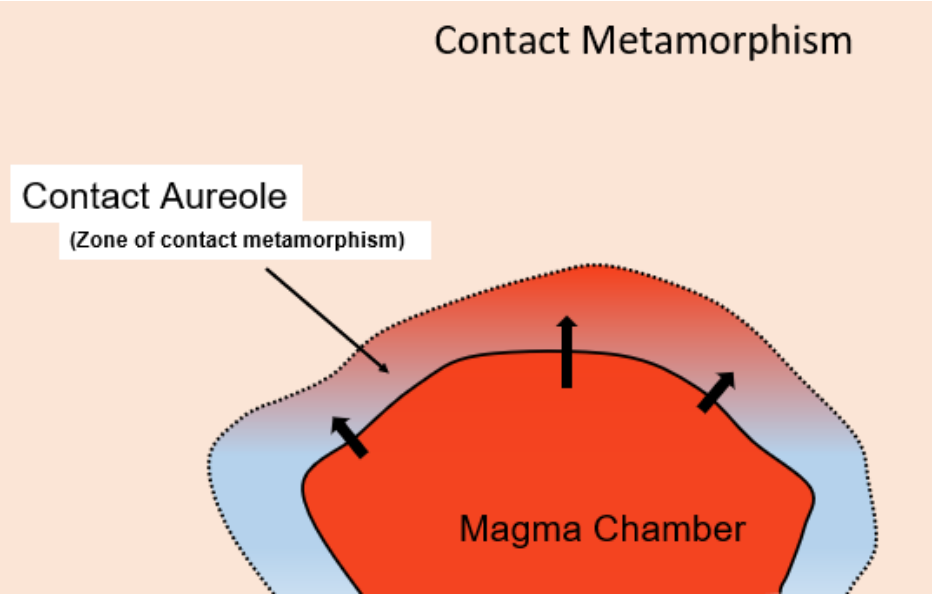
Metamorphism is the change that takes place within a body of rock as a result of it being subjected to high pressure and/or high temperature. The parent rock or protolith is the rock that exists before metamorphism. As pressure and temperature progressively increase a new metamorphic rocks gets formed from old one. The term parent rock is typically applied to the initial unmetamorphosed rock, rather than referring to each metamorphic rock that formed as metamorphism progresses.

Types of Metamorphism

1. **Contact Metamorphism**
2. **Dynamic / Cataclastic Metamorphism**
3. **Regional Metamorphism**

Contact Metamorphism

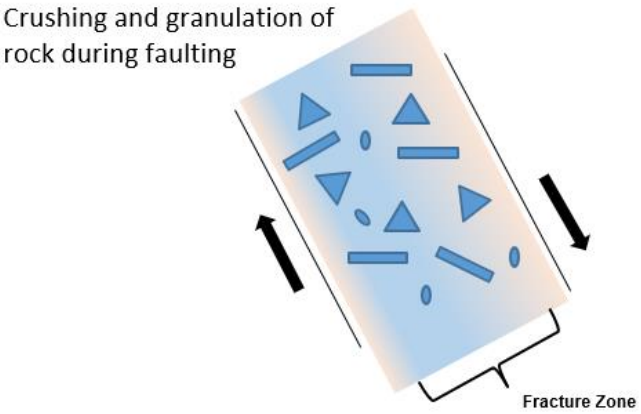
It is localized in the immediate envelope of an intrusive and directly related to the event of intrusion. It is based mainly on heat and temperature. Rocks showing its effects are confined to a contact aureole bordering the intrusive contact. Country rocks loose their character of with changing texture and grain size developing new mineral assemblages that are clearly metamorphic. Metamorphism that takes place as a result of heat is called contact metamorphism.



Dynamic / Cataclastic Metamorphism

Dynamic metamorphism occur near or found close to major fault thrust planes. It is a high-pressure metamorphism that results from the **crushing and shearing of rock** during tectonic movement. It is a micro-structural phenomenon associated with deep-seated faulting, unlike contact metamorphism in which rocks are found close to igneous intrusions. Dynamic

metamorphism is the result of very high shear stress, such as occurs along fault zones. Dynamic metamorphism occurs at relatively low temperatures compared to other types of metamorphism, and consists predominantly of the physical changes that happen to a rock experiencing shear stress. It affects a narrow region near the fault, and rocks nearby may appear unaffected.



Regional Metamorphism

As the name itself suggests that the metamorphism takes place over a large part of the earth hence it is called Regional metamorphism. Unlike contact and dynamic metamorphic rocks, in this case the principal process operating cannot be determined easily as field occurrence are obscured.