Hello students,

My name is Shritesh Mhapsekar,

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You'll be learning about economic geology,

Unit 1, module name,

processes of formation of mineral deposits,

And ore genesis, model number 4.

Outline of the topic.

Systematic study of order deposits, study

of processes of formation of ore deposits.

Learning outcomes from this

students will be able to understand

the processes of ore formation.

Evaluate different processes

of ore formation,

geologic and geographic description.

Explore new mineral deposits.

Processes of formation of mineral deposits,

the formation of mineral deposits

is actually a complex process, they differ

in many features like structure,

texture, etc.

And they are also formed by

diverse processes.

Wherein water plays a dominant

role in the formation of mineral

deposits apart from water.

Other agencies that are responsible

for the formation of mineral deposits, are

temperature, pressure, magmas, gases,

vapors, solids in solution, atmosphere.

Organisms and country rock.

These are some of the other agencies

that plays a very important role

in the formation of mineral

deposits apart from water.

The various processes that has

given the rise to mineral deposits

are magmatic concentration,

sublimation,

Contact metasomatism hydrothermal

Processes which results into cavity

filling and replacement deposits.

Sedimentation bacterial processes.

Submarine exhalative and volcanic

processes evaporation residual

and mechanical concentration.

Oxidation and supergene enrichment

metamorphism.

So these are the different processes.

That has

given the different mineral

deposits of various minerals.

first is a magmatic concentration

so all those deposits that forms

from or crystallizes from magma.

They're called as magmatic deposits

Or they are called crystallization

from magma. wherein it may occur as

a early magmatic deposits that is

all those ore deposits that are formes from

the early stages of a magma crystallization.

Wherein they may occur as a

dissemination segregation.

An injection deposit wherein dissemination

means simple crystallization where

early formed crystals are found

disseminated throughout the host rock.

The example of this type of deposit,

that is a dissemination is diamonds.

Segregation means early formed heavy

crystals sinks to the lower part of

the magma chamber and segregates into

the bodies of a sufficient size.

Example of the segregation deposit

chromite, injection deposits is

the metallic concentrate.

Instead of remaining at the

place of original accumulation,

get injected into the adjacent

solid rock masses,

resulting in injection deposits.

One of the example is magnetite deposits.

The second that involves in the magmatic

concentration is late magmatic deposits.

Where in, In case of a late magmatic deposits,

all those ore deposits that forms

at the later stages or the close

of the magma bodies are termed

as late magmatic deposits.

They may occur as a residual

liquid segregation.

wherein basic magmas undergoing

differentiation may sometimes become

enriched in iron and titanium.

This liquid may segregate and crystallize

within the parent igneous rock.

The second process that involves in a

late magmatic deposits is a residual

liquid injection wherein residual liquid

if subjected to disturbances may be

squeezed out towards the places of less

pressure into the neighboring rock.

Rock mass forming late magmatic injection.

Third deposits that may occur

is immiscible liquid segregation.

Magma of ore and silicate composition

breakdowns during cooling into two

immiscible fractions which accumulates

to form liquid segregation deposits.

Immiscible liquid injection,

wherein immiscible liquid accumulations

before consolidation when subjected

to disturbances gets injected

into surrounding rocks,

resulting into immiscible liquid injection.

The second process that is

involved in the formation of

orel deposits is a sublimation.

It's a very minor process in the

formation of mineral deposits.

this process involves a direct

transition from a solid state to

vapor state or vice versa without

passing through a liquid phase.

And then the sublimation applies only

to the compounds that are volatilized

and redeposited from vapor at lower

temperature and pressure conditions,

many sublimates are deposited

around volcanoes and fumaroles.

Example is sulfur deposits.

Contact Metasomatism is the next

process involved in the formation

of a process is of a different ore.

Deposits. Wherein iIn this case,

what happens is that whenever

an igneous body or a magma body.

Intrudes into a country rock having

relatively lower temperatures.

Undergoes effects of heat and magmatic

fluids and when this effects of heat

and magmatic fluid brings about contact.

Metasomatic changes. metasomatic

reactions with the contact rock forms.

New minerals under conditions of

high temperature and pressures.

Sometimes what happens sometimes when

the magma intrudes a carbonate rock.

So in that case is significant

chemical exchange.

That is a metasomatism takes place

between the magma and the carbonate rock.

Such a metasomatized rock

is referred to as Scarn,

but not all magma intrusions

yields mineral deposits.

So basically for the formation of

a contact metasomatic deposits or

contact metasomatic ore deposits,

the magma must have an ingredient

wherein it should be capable of

forming mineral deposits.

Apart from there it should intrude at

a greater depth not too shallow depth,

and the last one is.

It should intrude a reactive contact

rock then only we will

get a contact metasomatic deposits.

Now these are the different processes

more to come in the next module,

so these are the different processes

that are involved when it comes

to formation of a or the processes

of formation of our deposits.

That is magmatic wherein we have only

magmatic deposits and late magmatic deposits.

we get a different types of deposit.

That is,

they may occur as a disseminated grains,

or they may occur as the injection grains,

or they may occur as a segregated deposits.

Then comes the sublimation wherein.

Direct transition is involved from

a gaseous state to solid

state and the common example,

like I said, is a sulpur.

Similarly the next one is the

contact metamorphism over here

where the temperature and pressure

along with the magmatic fluids,

plays a very important role

which brings about the changes.

In this case,

when the magma body comes in contact with

the parent rock or the country rock,

it forms the new mineral by replacing

the earlier existing minerals and

when these deposits are on the larger

scale or of a sufficient size,

they are mined as a.

Economic important ore deposits

The references that were used for this

Jensen M.L. and Bateman A.M. Economic Mineral Deposits, John Wiley and Sons

Park C.F. and MacDiarmid R.A. Ore Deposits, Freeman and Co.

Anthony Evans, An Introduction To Ore Geology, ELBS Books 1983

These are the three books that were

referred for the processes of

formations that we have studied.

Thank you.