

## Notes: Layers of the Earth

### **Crust**

Outer layer; covers the whole earth; varies in thickness from 5 to 60 Km. Together with the upper mantle, is part of a zone called the **lithosphere**.

There are 2 kinds of crust: **continental crust** and **oceanic crust**.

### **Continental Crust**

- Exists under continents
- Average thickness is 30-50 Km (thickest under mountains), although it can be as thin as 10 Km in places
- Chemical composition: rocks rich in calcium and aluminum silicates  
\*\*Note: a silicate contains the molecule,  $SiO_2$
- Common rock types: granite and rhyolite
- Rocks are less dense, lighter in color than oceanic crust

### **Oceanic Crust**

- Exists under oceans
- Average thickness is 7 Km
- Chemical composition: rocks rich in iron and magnesium silicates
- Common rock types: basalt, obsidian, gabbro
- Rocks are more dense, darker in color than continental crust

### **Mantle** (Chemical Composition: iron & magnesium silicates)

- Lies underneath the crust
- 2900 Km thick
- The **lithosphere** is a **zone** made of the upper mantle and entire crust. It is made of cool, hard rock.
- Most (but not the very upper part) of the mantle is plastic rock: is both solid and molten at the same time. This **zone** is called the **asthenosphere**.
- Underneath the asthenosphere is the mesosphere, which is solid.

The **asthenosphere** has **convection currents**, where matter rises to the top, cools, then comes back down again, in a continuous cycle.

### **Core**

Center of the Earth; ~ 3500 Km thick

#### **Outer Core**

- Made of molten iron and nickel
- 2270 Km thick

#### **Inner Core**

- Made of solid iron and nickel. Is solid because of the extreme pressures it is under.
- 1220 Km thick

#### **As we progress from the exterior to the interior of the Earth:**

- Temperature increases
- Pressure increases
- Density increases
- Chemical composition changes

**Earth may be divided into 3 layers based on chemical composition**

- Crust
- Mantle
- Core

**Earth may be divided into 5 layers based on physical properties**

- Lithosphere
- Asthenosphere
- Mesosphere
- Outer core
- Inner core