

Hazi Mohan Prasad Singh

Department of Chemistry

Dr. L. K. V. D. College, Tarpur, Samastipur, I. N. M. U. Darbhanga.

ALKALINE EARTH METALS

INTRODUCTION

In the previous unit, you studied the general characteristics of Group 1 elements, i.e. alkali metals and their compounds. Group 1 and Group 2 elements belong to the s-block of the periodic table, as they have ns^1 and ns^2 outer shell electronic configuration, respectively. s-Block elements are known to be very reactive metals and generally form ionic compounds. In this unit you will study the elements of Group 2 consisting of beryllium, magnesium, calcium, strontium, barium and radium. Elements Ca, Sr, Ba and Ra are called alkaline earth metals because their earths (earth is the old name for a mineral oxide) are alkaline in nature. However beryllium is not counted as an alkaline earth metal since its earth is not alkaline. Like the Group 1 elements, they show a distinct group relationship in which similarities between the elements are ^{more} pronounced than the differences between them. The first member of the group is 'anomalous' (cf. lithium).

OCCURRENCE, EXTRACTION AND USES

The alkaline earth metals, like alkali metals are very reactive, therefore, do not occur free in nature.

All of them are found in the form of their salts.

These metals are strong reducing agents and therefore it is very difficult to obtain them by chemical reduction methods. All of these find some or the other use in industry.

OCCURRENCE

Beryllium The first member of the group is found in small quantities in the silicate mineral, phenacite, Be_2SiO_4 and beryl, $3\text{BeO} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$. Magnesium (2.76%) and calcium (4.66%) are among the eight most abundant elements in the earth's crust. Magnesium (0.13%) is the second most abundant metallic element next only to sodium (chloride) in sea water. It occurs as magnesite, MgCO_3 ; dolomite, $\text{MgCa}(\text{CO}_3)_2$ Kieserite, $\text{MgSO}_4 \cdot \text{H}_2\text{O}$ and carnallite, $\text{KMgCl}_3 \cdot 6\text{H}_2\text{O}$ in the earth's crust calcium occurs extensively as calcite and limestone (CaCO_3) in many mountain ranges. Calcium and magnesium are very important biologically too. Calcium is found in the bones of animals and human beings.