

IVA *The Carbon Group*

In order of increasing atomic number the members of group IVA of the periodic table are:

carbon,
silicon,
germanium,
tin and
lead.

The elements of this group are characterized by the presence of four electrons in an outer shell. The similarities of chemical behaviour among the members of this group are less striking than hold for some of the other groups (especially the alkali metals or the alkaline earths). However, as more knowledge is gained of silicon, including the element's ability to form "carbon-like" chains with alternating silicon and oxygen atoms, to polymerize, and to form silicones, silanes, etc., the similarity of silicon and carbon emerges more sharply. The semiconductor properties of silicon and germanium in this group are striking, but of course such properties are not limited to elements in this group. Although some of the elements of the group have valences in addition to 4+, all do have the 4+ valence in common. Unlike the alkali metals or the alkaline earths, for example, the elements of the carbon group are not so similar chemically that they comprise a separate group in classical qualitative analysis separations.