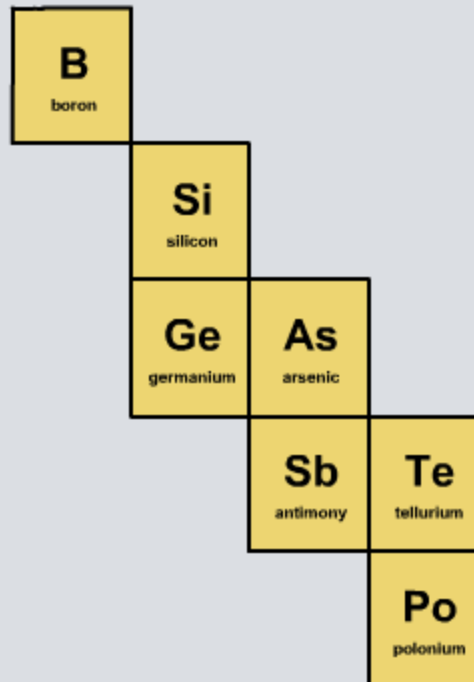


Metalloids



Metalloids

Where in the periodic table can you find the metalloids (sometimes called semi-metals)?

The metalloids are located here.

H hydrogen																					He helium
Li lithium	Be beryllium											B boron	C carbon	N nitrogen	O oxygen	F fluorine	Ne neon				
Na sodium	Mg magnesium											Al aluminum	Si silicon	P phosphorous	S sulfur	Cl chlorine	Ar argon				
K potassium	Ca calcium	Sc scandium	Ti titanium	V vanadium	Cr chromium	Mn manganese	Fe iron	Co cobalt	Ni nickel	Cu copper	Zn zinc	Ga gallium	Ge germanium	As arsenic	Se selenium	Br bromine	Kr krypton				
Rb rubidium	Sr strontium	Y yttrium	Zr zirconium	Nb niobium	Mo molybdenum	Tc technetium	Ru ruthenium	Rh rhodium	Pd palladium	Ag silver	Cd cadmium	In indium	Sn tin	Sb antimony	Te tellurium	I iodine	Xe xenon				
Cs caesium	Ba barium	La lanthanum	Hf hafnium	Ta tantalum	W tungsten	Re rhenium	Os osmium	Ir iridium	Pt platinum	Au gold	Hg mercury	Tl thallium	Pb lead	Bi bismuth	Po polonium	At astatine	Rn radon				
Fr francium	Ra radium	Ac actinium	Rf rutherfordium	Db dubnium	Sg seaborgium	Bh bohrium	Hs hassium	Mt meitnerium	Ds darmstadtium	Rg roentgenium											

Can you predict the properties of the metalloids?

As you might expect, metalloids have properties halfway between those of metals and nonmetals.

Metalloids are solids at room temperature, react in some ways like metals and in some ways like nonmetals, and, perhaps most importantly, act as semi-conductors.

The metalloids are boron, silicon, germanium, arsenic, antimony, tellurium and astatine.



Metal, nonmetal or metalloid?

Are these elements metals, nonmetals or metalloids?

metal

metalloid

nonmetal

francium (Fr)



solve

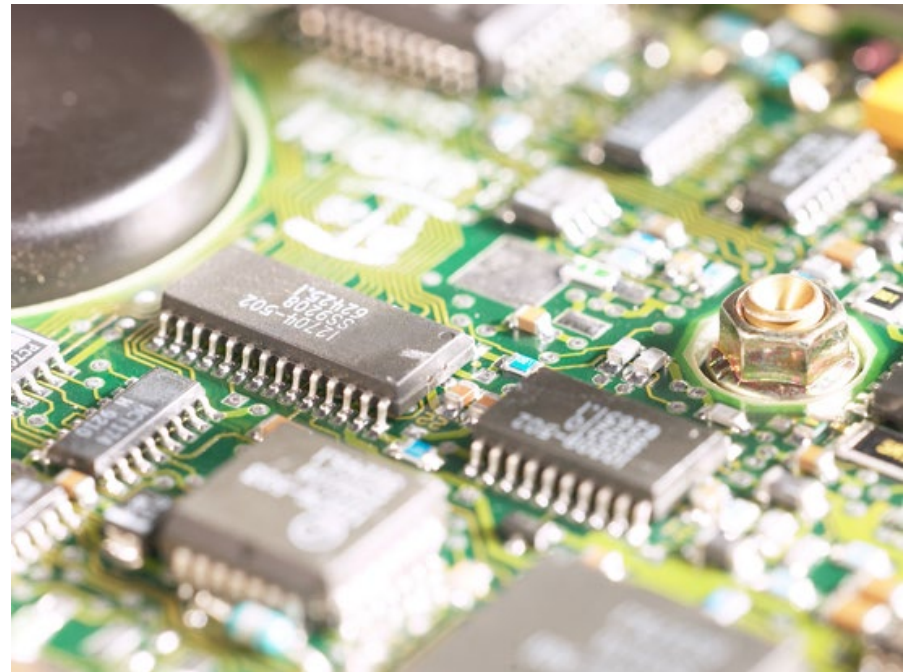


Semi-conductors are neither conductors nor insulators.

Semi-conductors conduct a tiny amount of electricity, but their conductivity can be changed by doping, which means adding a small amount of other substances to the semi-conductor.

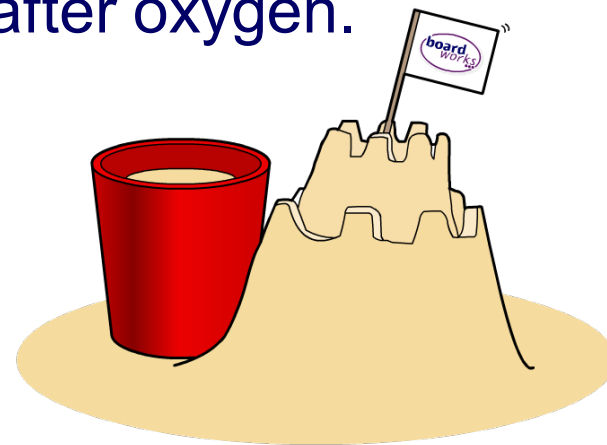
Doping allows scientists to control how much electricity is conducted, and that allows them to build silicon chips.

Silicon chips are used in many appliances, such as computers, cell phones, digital appliances, games consoles and solar panels.

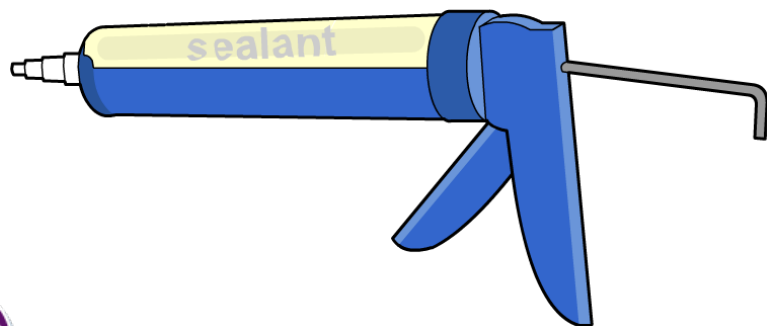


Silicon makes up 26% of the Earth's crust by mass, and is the second most abundant element, after oxygen.

Silicon is found in sand as silicon dioxide, and in glass, cement and ceramics as silicon oxides.



As an element, silicon is thought to be essential for growth in plants, and for the formation of cell walls in microscopic algae.



Silicon compounds are used for waterproofing, sealants and in breast implants.

