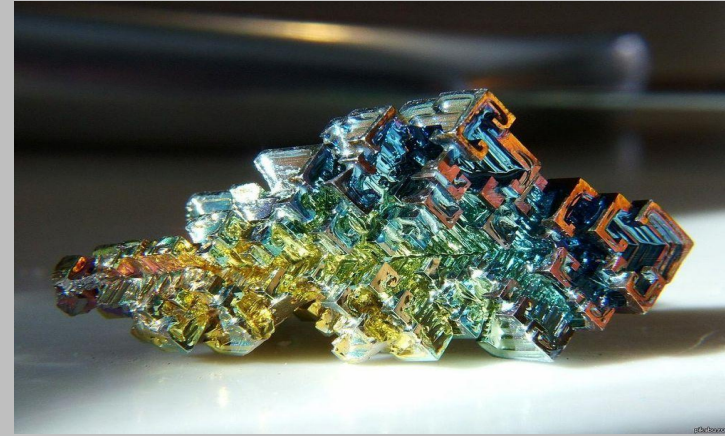


# Metals

## Properties and compounds



Metals (from Latin metallum - mine, mine) are a group of elements in the form of simple substances with characteristic metallic properties, such as high thermal and electrical conductivity, positive temperature coefficient of resistance, high plasticity and metallic luster.



ГРУППЫ		ПЕРИОДИЧЕСКАЯ СИСТЕМА ХИМИЧЕСКИХ ЭЛЕМЕНТОВ Д. И. МЕНДЕЛЕЕВА										В		VIII		В		
ПЕРИОДЫ		A I II III IV V VI VII A VIII B										VIII		B				
1	1s	[Blank]										[Blank]		[Blank]		[Blank]		
2	2s 2p	Li	Be	[Blank]						B	C	N	[Blank]		[Blank]			
3	3s 3p	Na	Mg	[Blank]						Al	Si	P	[Blank]		[Blank]			
4	4s 3d 4p	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	[Blank]		[Blank]		[Blank]		
5	5s 4d 5p	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	[Blank]		[Blank]		[Blank]		
6	6s 4f 5d 6p	Cs	Ba	La*	Hf	Ta	W	Re	Os	Ir	Pt	[Blank]		[Blank]		[Blank]		
7	7s 5f 6d	Fr	Ra	[Blank]						Sg	Bh	Hs	Mt	Ds	[Blank]			
Высшие окислы		[Blank]										RO <sub>2</sub>		RO <sub>3</sub>		RO <sub>4</sub>		
Летучие водородные соединения		[Blank]										H <sub>2</sub> R		HR		[Blank]		
*		Ce	[Blank]										[Blank]		[Blank]		[Blank]	
**		Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	[Blank]		
***		[Blank]										[Blank]		[Blank]		[Blank]		
5f		[Blank]										[Blank]		[Blank]		[Blank]		

Non-metals

Metals

Examples of metals:

Heavy (for example: Lead, Copper, Mercury, Cadmium, Cobalt)

Refractory (for example: Molybdenum, Tungsten)

Non-Ferrous (for example: Lead, Copper, Tin, Zinc, Nickel)

Noble: Gold, Silver and platinum group metals

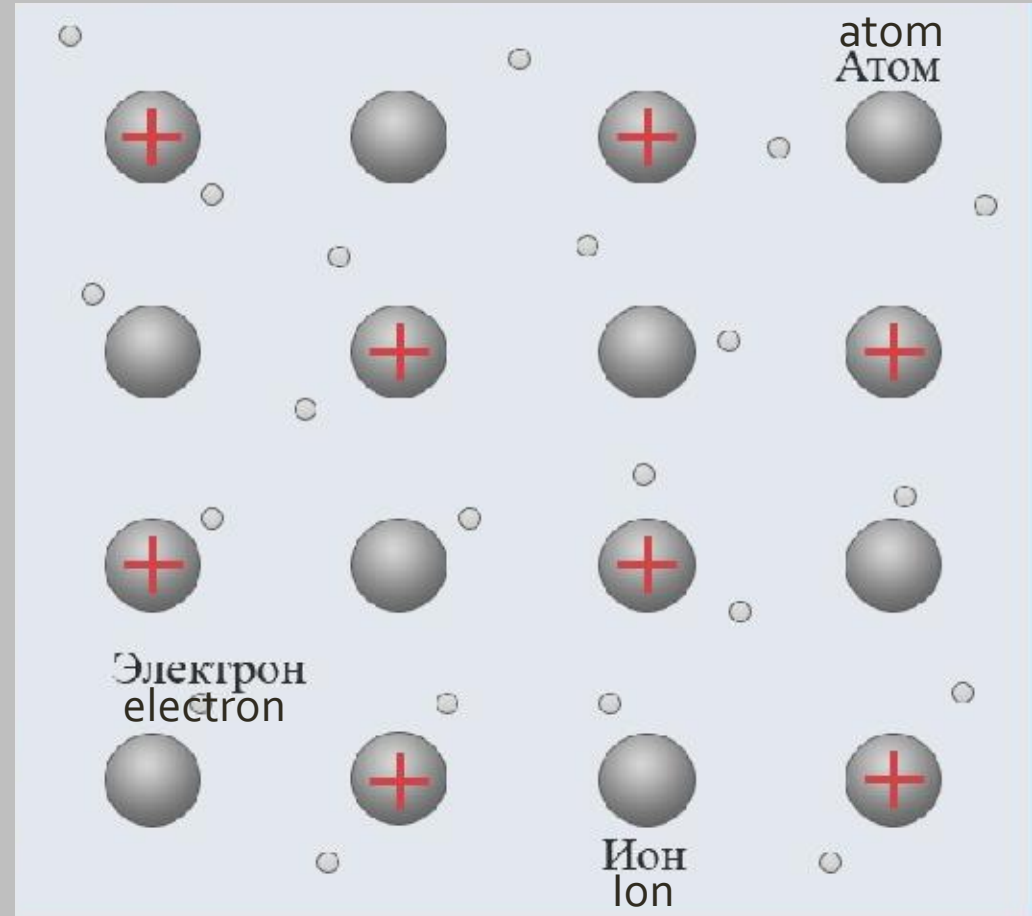


## Physical properties of metals

- Electrical conductivity
- Metallic luster
- Metallic ringing
- Boiling
- Point Hardness
- Density
- Melting
- point Thermal conductivity



chemical bond between atoms and ions in a metal crystal arising from the socialization of their valence electrons



# methods of obtaining metals

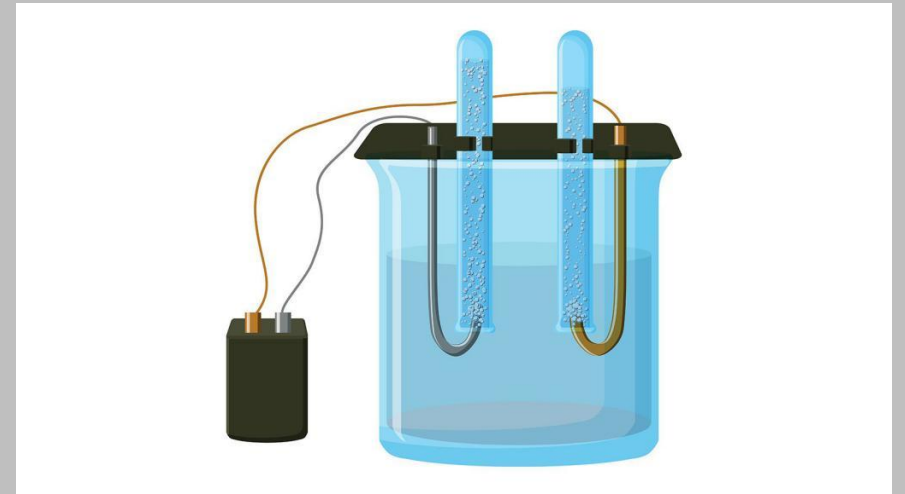
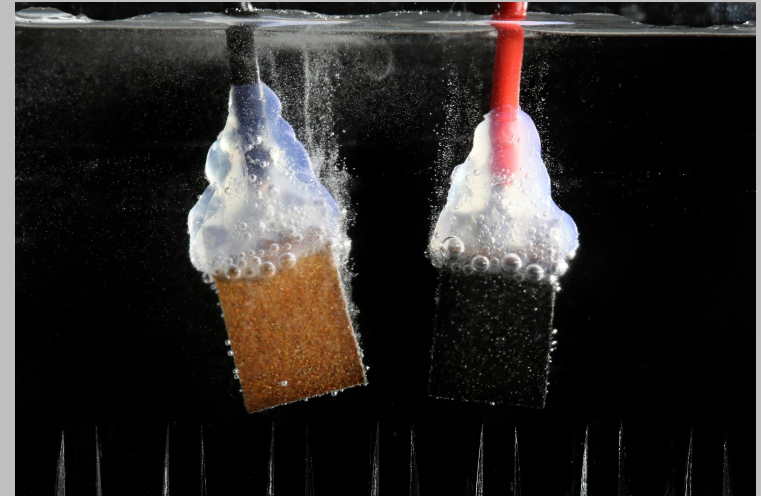
- Recovery by coal or carbon monoxide (carbothermy)



- recovery by active metals (metallothermy)



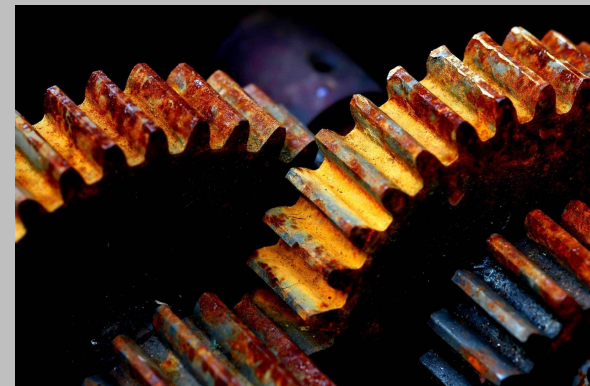
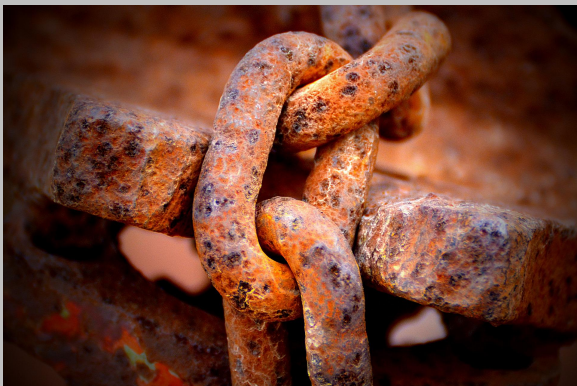
- electric shock recovery (electrolysis)





## methods of protecting metals from corrosion

- protection with more active metal
- separation of metal from aggressive environment
- use of corrosion retardants
- electrical
- protection passivation of metals
- production of metals resistant to corrosion



The End

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