Electrochemical Series of Metals (ESM)

Different metals get ionised at different rates. For e.g., metals like sodium when exposed to air combine almost instantly with the oxygen present therein (sodium atom gives up an electron almost as soon as it is in contact with oxygen). On the other hand, metals like gold if exposed to air even for a very long period, do not react with air. Even if gold is dropped into an acid, it remains unaffected.
Based on the ease with which metals lose their electrons and form their ions, the metals are also arranged in a series called Metal Activity Series (MAS). Metals that ionise most easily are placed at the top of the Metal Activity Series, and those that ionise least easily are placed at the lower most end.
Most of the elements of the periodic table can be arranged in such a fashion, which reflects their order of activity. This arrangement of elements in order of their increasing rates of ionisation i.e. oxidising and reducing strength, is also called the activity series or the electrochemical series.

Electrochemical Series
(Ease of discharge increases downwards)

Cations	Anions
K^+ ↓	↓ SO_4^{2-}
Ca^{2+}	
Na^+	NO_3^-
Mg^{2+} ↓	↓
Al^{3+}	OH^-
Zn^{2+}	
Fe^{2+}	Cl^-
Pb^{2+}	↓
H^+ ↓	Br^-
Cu^{2+}	
Hg^{2+}	I^-
Ag^{2+}	↓
Au^{3+} ↓	
Pt^{4+}	

Note: positions of calcium (Ca) and sodium (Na) in the above table are often switched due to authors' standpoint.

Features of the electrochemical series (Activity series)
In the electrochemical series the elements that are lower in the series get discharged (lose their charge to become neutral) more easily than the ones above them.
Hydrogen is also included as a reference point in the series.
The electropositive power and the reducing power of the elements regularly decrease downwards while the electronegative power and the oxidizing power of the elements regularly increase upwards.

Significance of the electrochemical series (Activity series)
This series is an important tool that helps in predicting many electrochemical reactions. All metals placed above hydrogen will displace hydrogen from acids while those below it do not displace hydrogen from acids.
Elements with high electropositive or electronegative power are highly reactive elements.

Metal	Ion	Reactivity	Extraction
K	K^+	reacts with water	electrolysis
Na	Na^+		
Li	Li^+		
Sr	Sr^{2+}		
Ca	Ca^{2+}		
Mg	Mg^{2+}	reacts with acids	
Al	Al^{3+}		
C		included for comparison	
Zn	Zn^{2+}	reacts with acids	smelting with coke (fuel)
Cr	Cr^{2+}		
Fe	Fe^{2+}		
Cd	Cd^{2+}		
Co	Co^{2+}		
Ni	Ni^{2+}		
Sn	Sn^{2+}		
Pb	Pb^{2+}		
H_2	H^+	included for comparison	
Cu	Cu^{2+}	may react with some strongly oxidizing acids	heat or physical extraction
Ag	Ag^+		
Hg	Hg^{2+}		
Au	Au^{3+}		
Pt	Pt^{2+}		

Note: positions of calcium (Ca) and sodium (Na) in the above table are often switched due to authors' standpoint.

Going from bottom to top, the metals:

- increase in reactivity;
- lose electrons more readily to form positive ions;
- corrode or tarnish more readily;
- require more energy (and different methods) to be separated from their ores;
- become stronger reducing agents.