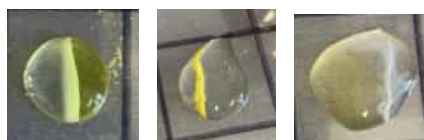
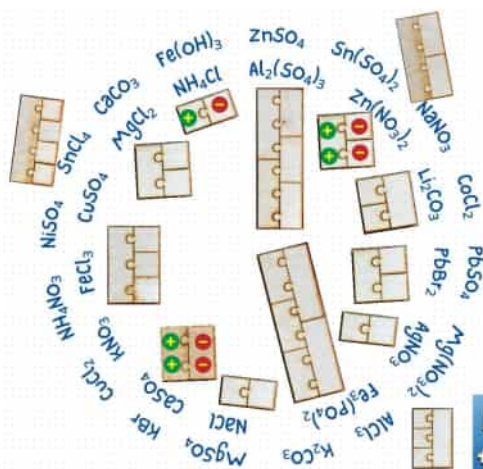


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Drop microchemistry and modeling with wooden ion puzzle

Salt dissolution, precipitation, acid-base and redox reactions

Precipitation in a drop is beautiful, but understanding the role and place of each ion in the reaction is difficult. The purpose of designing wooden puzzle pieces is to touch the salt in whole and in pieces, solid and aqueous, to count the ions, actors and spectators, to understand the reaction: the reactants, the products: their state and place: solid at the bottom or aqueous in the solution; their number in stoichiometric problems with excess or not.



Reaction steps $\dots \text{Mg}^{2+}(\text{aq}) + \dots \text{OH}^{-}(\text{aq}) \rightarrow \dots (\text{s})$

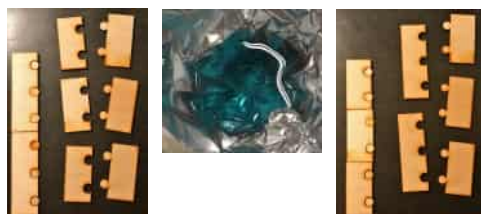
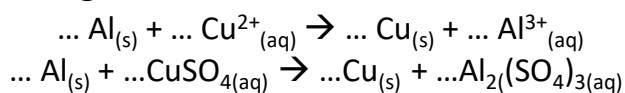
initial	3 mol	7 mol
change		
final		

 $\text{MgSO}_4(\text{aq}) + 2\text{NaOH}(\text{aq}) \rightarrow \text{Mg}(\text{OH})_2(\text{s}) + \text{Na}_2\text{SO}_4(\text{aq})$

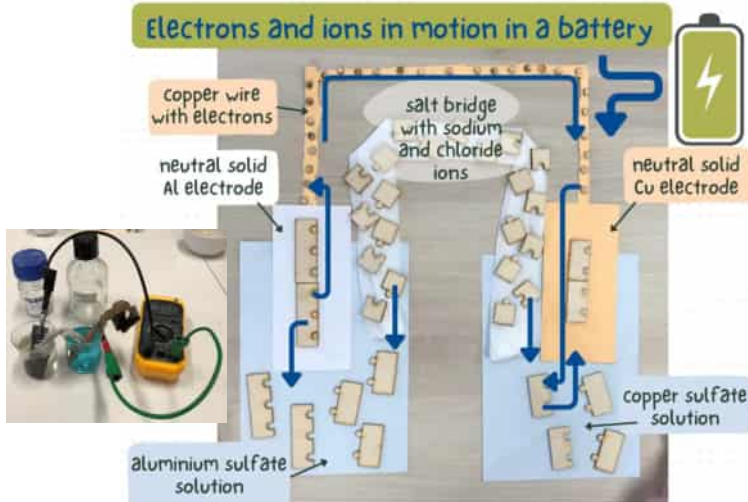
initial	3 mol	7 mol
change		
final		



With the small wooden electrons, we can touch and see the balanced exchange of electrons between metals.



Electrons and ions in motion in a battery



Some students need to touch and see what happens in a chemical reaction.

Many involved ions in solution coming from or forming salts :
dissociation, precipitation, acid-base and redox.

Wooden ion puzzle is useful for both qualitative and quantitative analysis.