

Introduction: Sodium ion battery is a type of rechargeable metal-ion battery. It has very high potential in the power. Because sodium is far more abundant in the earth compare to the other metals which can be used to make up battery. Not like other metals, sodium can transport safety and the production of sodium ion battery might not produce pollution. Lithium-ion material is the most common metal which uses in produce battery, and sodium ion materials can be used same as the lithium-ion materials which means that Li-ion manufacturing can be used to make sodium ion battery. There will be many profits if we start to use sodium ion battery. But why there is still no one use sodium ion battery? I want to research drawback of sodium-ion battery.

Experiment: In order to make my own battery sodium is very common in our life like salt can be considered as sodium chloride. In chemical knowledge salt is a kind of salt means that it is production from acid and metal reaction. So that when sodium chloride solute dissolve in water, there will be sodium ion in solution. In order to improve the water's conductivity, we need to increase the acidity so that we add vinegar in solution. The metals which has conductivity are very common in our world like coins. In USA one quarter coins are made of

Hypothesis: In my opinion, the concentration will influence the strength of current. I assume that the experiment which have higher concentration of salt should have bigger current anyway. Because the more salt in the solution means that the more free electrons in the battery, therefore the current should be higher.

Experiment: I want to make battery by myself and then I can know how battery can produce current. As we know that current is flow of electric charge in electric circuits this change is often carried by moving electrons in wires. Therefore the most important in the battery is the free electrons. I think that the solution which add salt and vinegar is perfect choice. Salt water have enough free electrons and vinegar is weak acid that means it has conductivity. And I use the pennies and nickels to transfer the current. Because they are produced by metal.

	concentration of vinegar	mass of salt (gram)	total valume of solution	mass of sodium ion
solution 1	20 ml 5% vinegar	2.5	50ml	0.982905983
solution 2	20 ml 5% vinegar	5	50ml	1.965811966
solution 3	20 ml 5% vinegar	10	50ml	3.931623932
	solution 1	solution 2	solution 3	
first research	0.6ma~0.4ma	0.33ma~0.19ma	0.8ma~0.4ma	
second research	0.13ma~0.14ma	0.33ma~0.19ma	0.8ma~0.4ma	

Sodiation is the property of sodium battery. This word means that the current of sodium-ion battery is unstable therefore this might be one problem of spreading sodium-ion battery.

I am trying to decay knowledge to do next research about sodium-ion battery, also I am going to calculate the how much sodium we need to keep enough voltage in order to search about the convenience of sodium-ion battery. I heart that there will be very big battery if we use sodium to be the electrolyte.