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*Concentration of Nickel Hydroxide in a NiMH Battery*

After researching several different types of batteries and their construction, a nickel metal-hydride (NiMH) battery design was chosen to construct and experiment with in an attempt to increase the cell's capacity. A NiMH battery uses nickel hydroxide that is oxidized and reduced as a cathode coupled with a nickel metal alloy that absorbs and desorbs hydrogen atoms on the anode all in an electrolyte of potassium hydroxide and separated by a separator. After preparing quantities of 1.0 molar nickel chloride and sodium hydroxide, 25 ml of nickel chloride solution and 50 ml of sodium hydroxide were mixed and the precipitate was then filtered to obtain nickel hydroxide for the cathode. The first experimental battery was constructed in a glass beaker with a porous ceramic cup separating the cathode and anode, which were immersed in 1.0 molar potassium hydroxide. After attaching the battery to a 9 volt power supply for 5 minutes to charge, a voltage of 1.2 volts was measured across the battery's terminals for a short time. However, increasing the charge time from 5 minutes to 25 minutes failed to increase the voltage and the time the battery held a charge. Post-experimental analysis indicates that the ceramic separator could be the source of the problem, and the next battery will include a separator made from nylon 6-6. The completed battery will then be used as a control to compare other experimental batteries with. These batteries will test different concentrations of nickel hydroxide in the cathode in order to observe any changes in the battery's capacity, measured in ampere-hours.