**UBC Chem-E-Car Battery Proposal**

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| Team Member(s): | Mani Massah  Jaspreet Chahal  Michael White  Edward Wen  Jeffrey Kung  Josh Agustin  Hang Nguyen  Amanda Punch  Naresh Venkat |
| Name of battery reaction: | *What kind of battery i.e. zinc-air, magnesium air, hydrogen fuel cell etc*  *Aluminum Carbon* |
| Why did you choose this reaction? | *For example, highest energy density, easy to assemble, high voltage etc.*  *Easy to assemble, rechargeable* |
| Anode Reaction Equations: | AlCl4- + Cn -> Cn[AlCl4-]+e- |
| Cathode Reaction Equations: | 4Al2Cl7-+3e- -> Al + 7AlCl4- |
| Electrolyte and Separator: | *Do you need a separator for the battery? i.e. Celgard or Viledon*  *Celgard samples available for use* |
| Experimental procedure: | *Write down the steps needed to make the batteries*   1. Cut aluminum foil and graphite sheet into pieces 2. Sandwich the separator between the graphite sheet and the aluminum foil with a tap on the graphite sheet and fold the combination over 3. Add 40% aluminum chloride electrolyte until the carbon paper and separator is fully wet ~4mL 4. Add a tap on the aluminum foil 5. Seal the ends of the aluminum foil with a vacuum sealer (if available) or with glue |
| Safety Concerns: | *Are there any dangerous steps in your experimental procedure? i.e. high concentration acids, exothermic reactions, flammable materials, pressurized vessels etc.*  *Aluminum chloride is very hazardous in case of skin contact, ingestion, inhalation. In case of exposure, rinse exposed area for 15 minutes. Wear proper PPE when handling: nitrile gloves, goggles, lab coat. Work under fume hood when handling electrolyte.* |
| Chemicals or equipment needed: | Based on your experimental procedures, write down a list of chemicals you would need to purchase or any specialized equipment you might need (i.e. *high-temperature furnace*)  **All available:**  Aluminum chloride (Dr.Baldwin’s inventory)  Celgard separator  Aluminum foil  **Need to be ordered:**  Graphite sheets |
| Sketch: | *If you can, sketch a basic design for the unit to go onto the Chem-E-Car. i.e. electrode position, casing, etc* |