**Shell Fabrication**

**Weight:** 2.6 lb

**Material:**
- Prepreg carbon fiber w/honeycomb core
- Pre-impregnated resin does not cure at ambient temperatures
- Voids resin at 230°F for 100 minutes to cure
- Honeycomb core between two plies of carbon offers a higher strength to weight ratio than solid carbon laminates alone

**Method:**
- Male plug constructed out of CNC'd MDF board cross sections [1]
- Plug coated with resin and block sanded to a smooth surface finish
- Two symmetrical female molds made out of molding material [2]
- Melts pulled off of plug and bolted together to form a complete mold [3]
- Carbon plies and honeycomb placed in mold, vacuumed bagged, and cured in home-built oven [4] made from thermo foam and heat lamps

**Power System**

The power diagram illustrates how each component on the pod receives power and is grounded.

**Electronic Components:**
- LiPo (Lithium Polymer) battery (red) to power entire pod
- BMS (Battery Management System) to monitor battery health
- Mechanical emergency stop and electronically controlled power MOSFET (yellow) as active safety mechanisms
- 6V and 5V buck converters to convert power for PCB and sensors
- Circuit breaker and fuses (purple) to protect electronics from over-current
- Sensors for detecting current, battery temperature, pod position
- Universal ground plane (gray) to ground all electronics on pod

**PCB & Sensors**

Custom designed PCB (Printed Circuit Board) block diagram below

**Legend**
- Blue = Computing
- Red = Sensor Ports
- Purple = Motor Ports
- Yellow = Power
- Orange = Wireless Ports
- Green = Communication Ports