



Performance assessment of a Fresnel-based Fiber Optics Solar Collector for Lunar Greenhouse Applications

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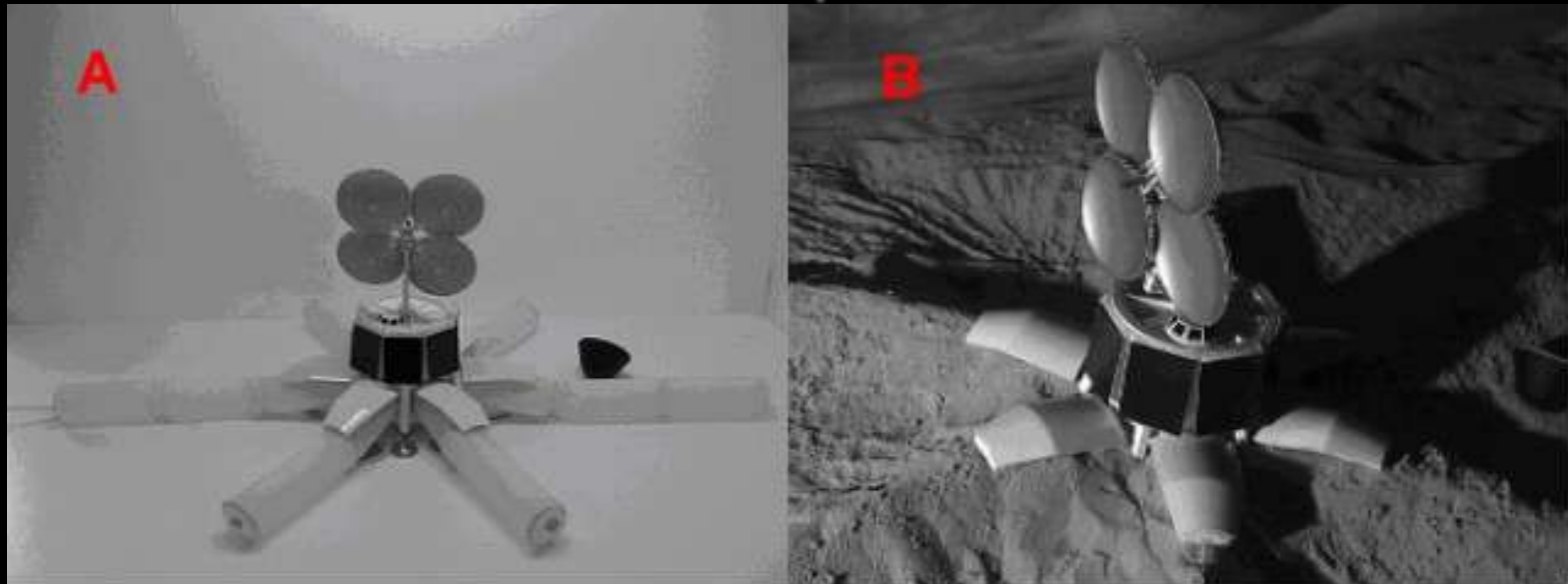
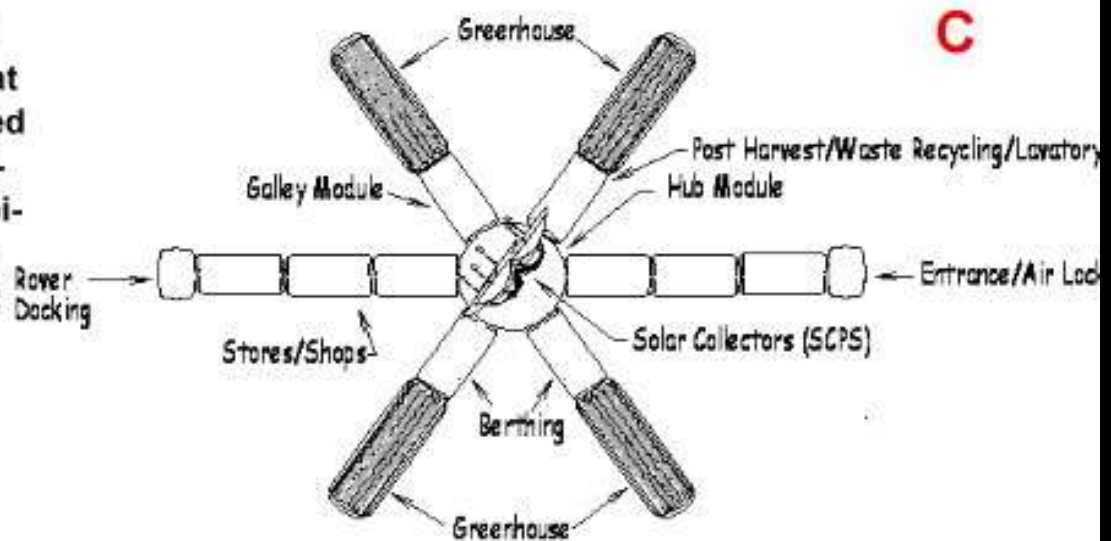
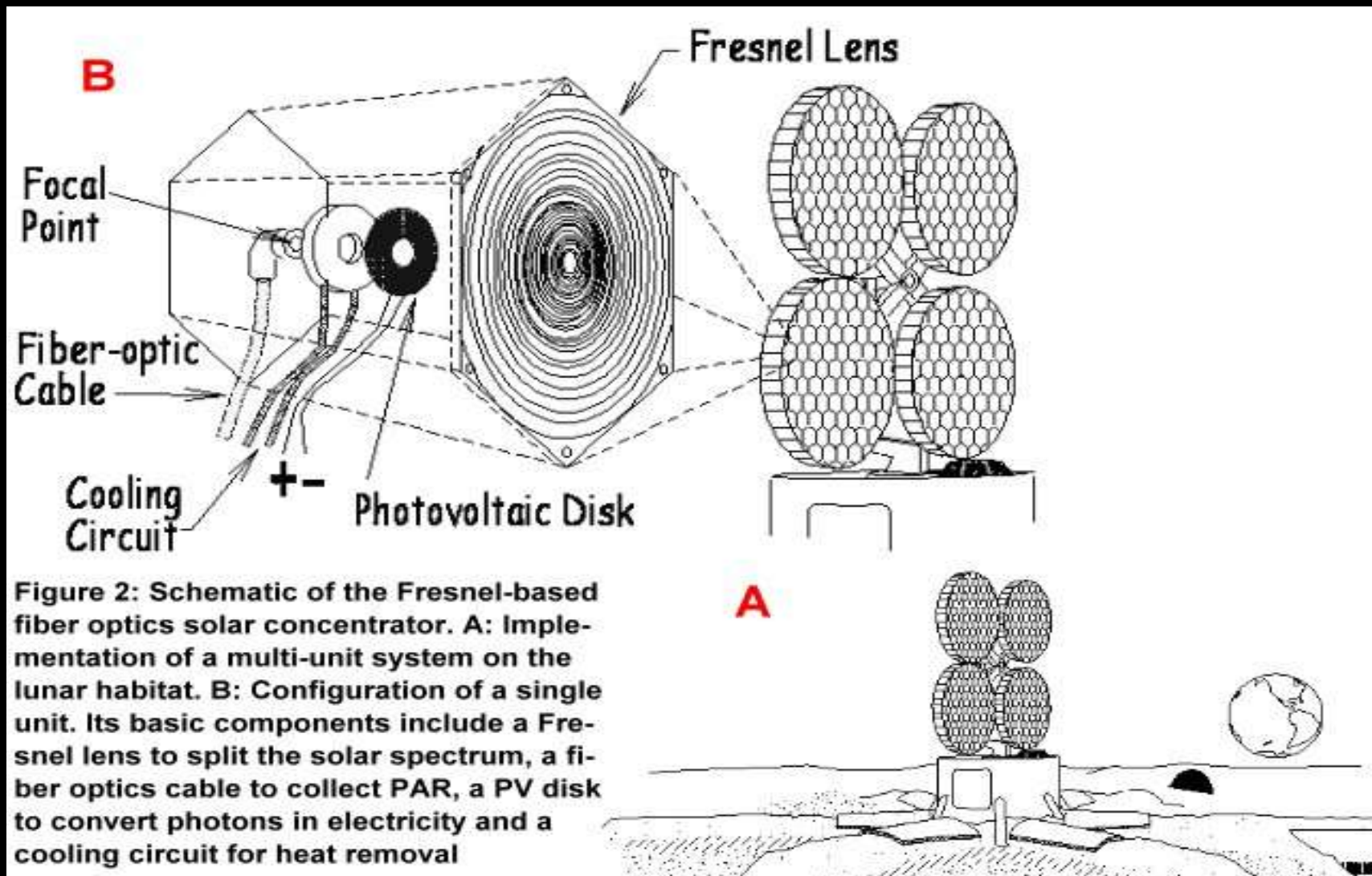


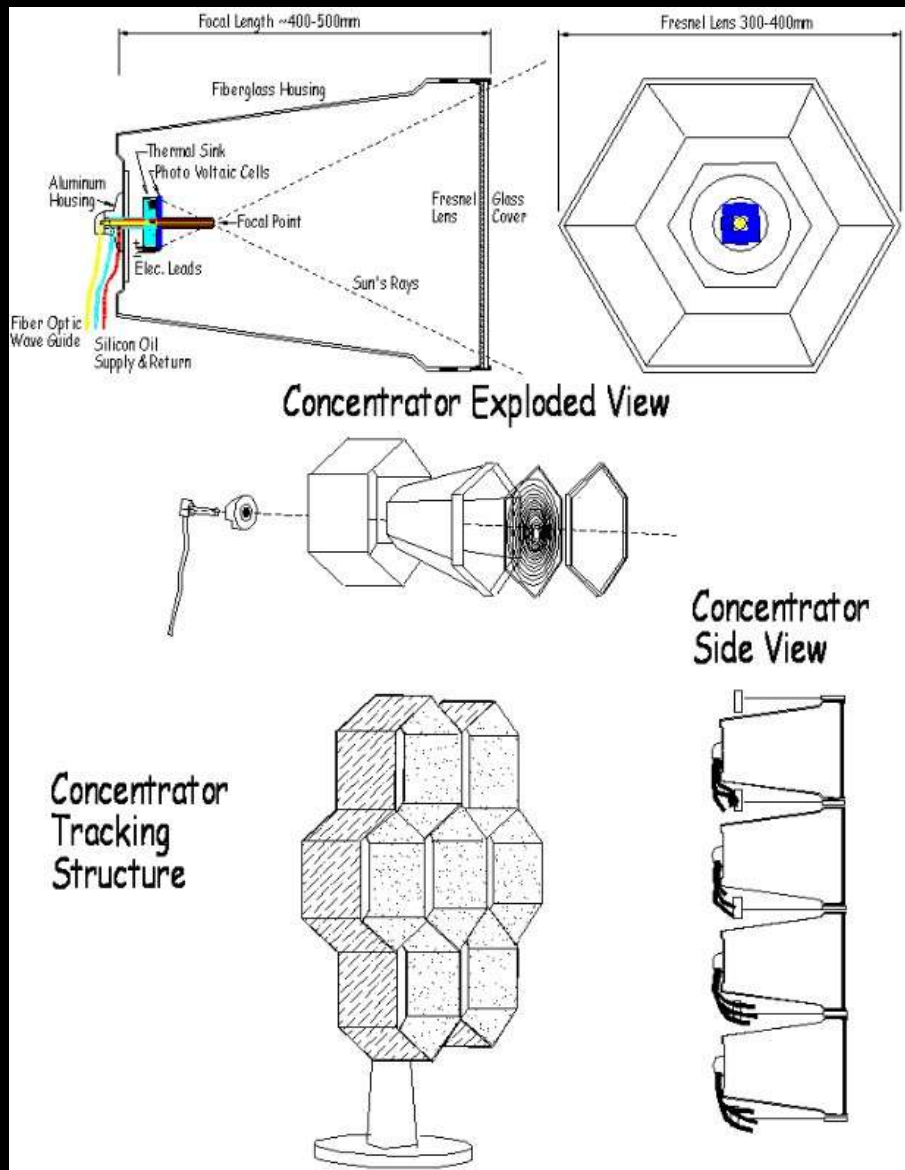
Figure 1: Conceptual model of the proposed lunar habitat (Sadler et. al. 2008). A: scaled model of the proposed inflatable structure. B: lunar habitat after deployment. C: top view (drawing) of the habitat and outline of the modular structure







Himawari System and Its Prospected Evolution for Lunar Base Applications





Derek Wibben

- Undergraduate Student, University of Arizona
 - Biomedical Engineering
- NASA Space Grant Awardee
- Primary Responsibilities
 - Development and programming of the solar tracking system
 - Execute testing plan and analysis





Current Progress



- Stepper Motors installed
- Open Loop tracking system complete
 - Programmed in Visual Basic
 - Based off of Latitude, Longitude, Time, and Date
 - Azimuth and Elevation equations from www.noaa.gov

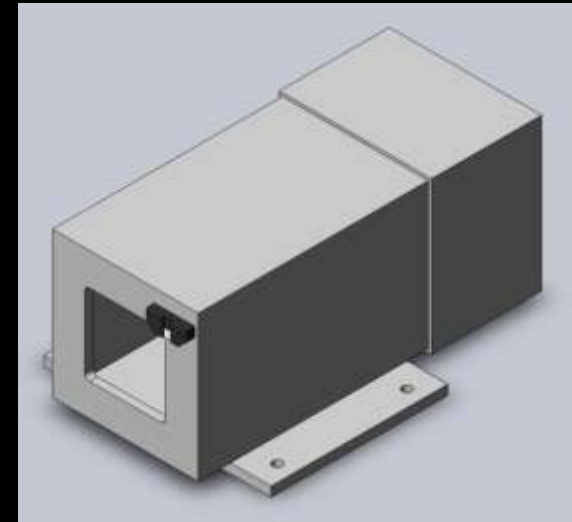




Future Plans



- Testing – PAR and efficiency measurements with Open Loop system
- Implementation of Closed Loop system
 - Photovoltaic Array with feedback
- Final testing with Closed Loop





Testing Plan



- PAR measurements will be taken with a Campbell Scientific Data Logger
- Testing Values:
 - Overall Photosynthetic Efficiency
 - Photosynthetic Spectral Efficiency

