

# BRIC-LED



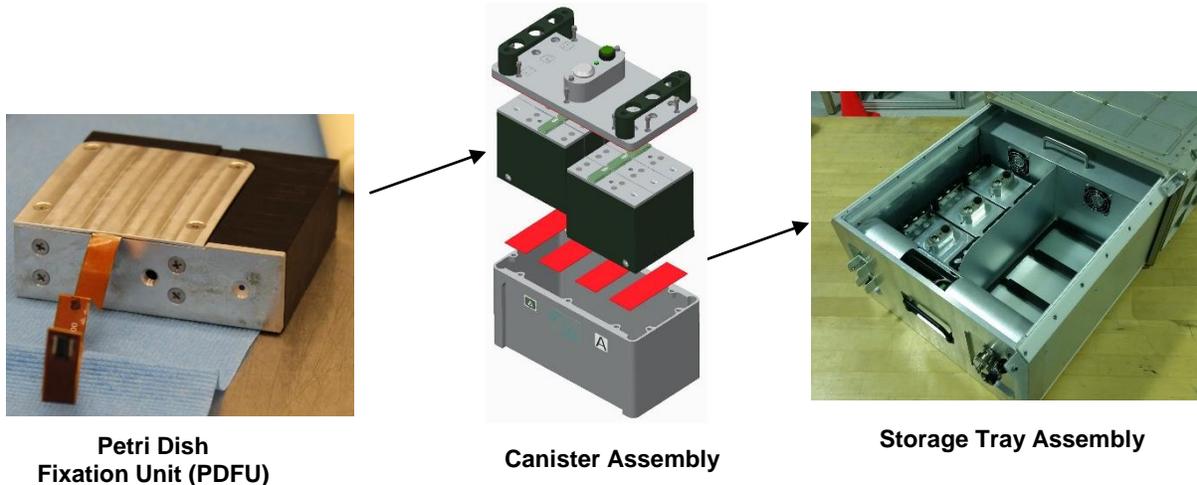
## Biological Research in Canisters (BRIC) – Light Emitting Diode (LED)\*

\*Currently in design certification

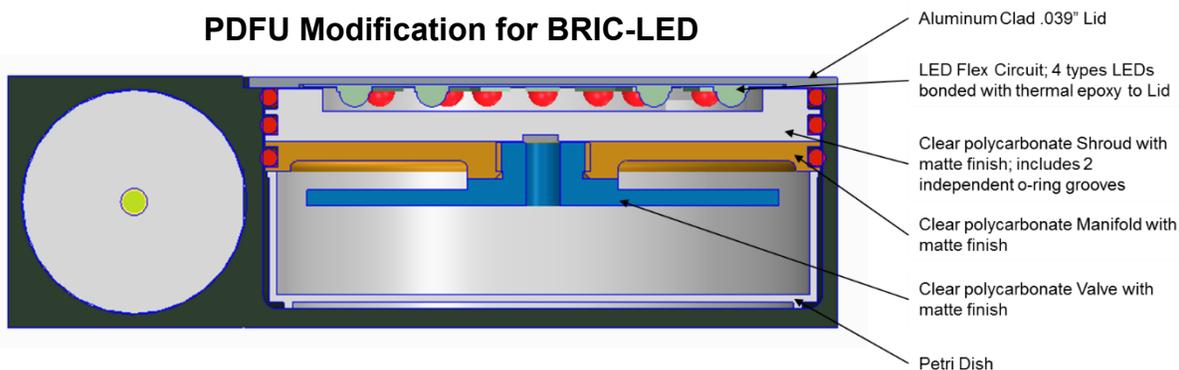
The Biological Research in Canisters – LED (BRIC-LED) is a biological research system that is being designed to complement the capabilities of the existing BRIC-Petri Dish Fixation Unit (PDFU) for the Space Life and Physical Sciences (SLPS) Program. A diverse range of organisms can be supported, including plant seedlings, callus cultures, *Caenorhabditis elegans*, microbes, and others. In the event of a launch scrub, the entire assembly can be replaced with an identical back-up unit containing freshly loaded specimens.

What differentiates this hardware from the BRIC-PDFU series is the customizable discrete lighting that illuminates the individual 60 mm petri dishes. Four different wavelengths of LED's are available for each petri dish (blue, red, far-red and white) and are configured as specified by the investigator. Temperature will be controlled to  $\pm 3^{\circ}\text{C}$  of the surrounding air temperature, with no more than a  $1.5^{\circ}\text{C}$  differential between canisters, using forced air cooling. Additionally, the BRIC-LED will provide temperature and LED status, canister pressure and accelerometer data.

Briefly, biological specimens are placed onto (or into) 60 mm petri dishes containing agar-solidified media, although alternative approaches will be considered. Each petri dish is then placed inside a single Petri Dish Fixation Unit (PDFU) that remains contained within the BRIC canisters during all phases of flight operations. The PDFUs are prepared with either one or two fluids in the reservoir, as specified by the selected investigators, prior to delivery on the ISS. Crew members perform up to two in-flight operations per petri dish to either expose the biology to liquid treatments (determined by the selected investigators) and/or chemically fix the tissues (e.g., Glutaraldehyde, RNALater, Formaldehyde, or other preservatives) on-orbit prior to return. A single BRIC-LED canister is capable of containing six PDFUs. Actuator equipment used to administer fluids is provided for each BRIC-LED experiment.



### PDFU Modification for BRIC-LED



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