

# Julia M. Worrell

---

(330) 612-6121—julia.worrell1@gmail.com

---

## Education

B.S. Chemical Engineering| December 2016| Florida Institute of Technology| G.P.A. 3.12

## Work Experience

*Universities Space Research Association (USRA) Intern/ NASA, Johnson Space Center (JSC)*

Crew and Thermal Systems, EC3 Branch, Advanced Exploration Systems January –August 2015

Microgravity Flight Experiment: Thin film development as a function of pumping rate through a microchannel reactor

- Acted as a Co-Investigator, aiding in experiment design, test rigging, and data acquisition system design to satisfy requirements and contribute to the technology development of a micro-gravity compatible liquid CO<sub>2</sub> scrubbing system
- Directed mechanical and electrical technicians during the build-up of test cart to ensure its compliance with safety standards for flying aboard JSC's C9 aircraft
- Led and contributed to the mechanical build-up of the test cart and conducted various load testing to ensure safety and NASA experiment development compliance
- Engineered on-the-spot modifications and solutions to the cart pre-flight to ensure the continuation of the mission
- Worked with fellow investigators on the submission of a Test Equipment Data Package that included a hazards analysis, experiment background, procedures, and structural verification
- Successfully operated the experiment on two parabolic micro-gravity flights and ensured the needs of the investigation were met
- Worked closely with teammates to ensure success as a group despite time constraints

Brine De-Watering Test Stand Design, Procurement, and Build-up: Creation of drying system around a capillary brine containment technology call Brine Residuals In-Containment, or BRIC

- Produced a prototype of a brine-dewatering system, laying the groundwork for the system to be flown as a functional part of the water reclamation system aboard the International Space Station
- Acted as the go-to test engineer and consulted with the customer and communicated system requirements to technicians for incorporation into the stand
- Designed, procured, and built-up test stand and allowed for JSC to participate in an agency-wide technology down select of brine dewatering technology
- Initiated a preliminary thermal analysis of a test stand component, preliminary trade studies on tube sizing, and designed tests to feed into a more intelligent design of future drying systems
- Assembled detailed Visio drawings, parts list, and descriptions for test stand documentation
- Worked with other engineers to modify Creo drawings and directed the 3D printing of prototype drying trays to be used in baseline demonstrations and testing of the system
- Developed and implemented experiments that led to a better understanding of drying behavior in capillary structures

Cascade Distillation System (CDS)- A robust system designed to allow for a high water recovery rate during deep space exploration missions

- Organized and conducted a Test Readiness Review to allow for test risk buy down for the 2.0 prototype build-up of the Cascade Distillation System
- Coordinated test safety personnel, test engineers, and customer requirements which allowed for very few action items coming out of the review session
- Aided in preparing test readiness review documentation including the modification of technical drawings of the system
- Supported system experts in developing and documenting a space flight-forward concept of operations for the CDS 2.0 prototype
- Presented *Water Reclamation Technology and the Cascade Distillation System* at a technical symposium hosted by the American Institute of Aeronautics and Astronautics

*USRA Intern/ JSC/ Crew and Thermal Systems, EC2 Branch*

August –December 2014

- Supported a team of engineers during an integration test of a converted 20' diameter vacuum chamber into a closed environment for the examination of elevated CO<sub>2</sub> levels on human performance
- Developed EASY5 models to simulate how various system would interact to allow for more intelligent testing
- Performed analysis and evaluated system performance and consumable usage
- Documented models and created a final report including graphical results, analysis, conclusions and recommendations to support future testing
- Conducted inter-division coordination, communication, and project integration
- Developed modeling and analysis skills such as determining model relevance and real-world grounding of the model

### **Skills**

*Technical and Computer:* Apsen Plus, EASY5, Matlab, Microsoft Office, Google Documents, Data Fit, Polymath, LoggerPro, C++, Atomic Force Microscopy, Scanning Electron Microscopy, Ultraviolet Visible Spectrophotometer , Prototyping, Mechanical drawings, Test design, Test risk mitigation

*Soft Skills:* Written and Oral Communication, Documentation, Writing Procedures, Test Plan Writing, Team work, Leadership, Presentation, Problem Solving

### **Affiliations**

Society for the Advancement of Material and Process Engineering  
American Institute of Chemical Engineers, Student Chapter  
Alpha Phi Omega National Service Fraternity

January 2014-Present  
August 2011-Present  
January 2012-May 2013