

# The Importance of MOXIE to the Future of Space Exploration

Jenna Cumbers

*Department of Physical Science, College of Southern Nevada*

## **Abstract:**

With the recent landing of the Perseverance rover comes a new generation of technology and great strides in making life multi-planetary. Perseverance is the newest and more technologically advanced rover since Curiosity. A device located within the belly of Perseverance called MOXIE (Mars Oxygen In-Situ Resource Utilization Experiment) is allowing for astronauts to get even farther than we originally imaged. MOXIE intakes the carbon dioxide ( $\text{CO}_2$ ) that overwhelms the Mars' atmosphere and turns it into one of the most important elements to life: oxygen ( $\text{O}_2$ ). The carbon dioxide ( $\text{CO}_2$ ) is pulled in through a pump and goes through an electrochemical process where the oxygen ( $\text{O}_2$ ) and carbon dioxide ( $\text{CO}_2$ ) are separated. As of the most recent experiment, MOXIE was able to create 5.4 grams of oxygen on Mars. MOXIE was important to the future of not only the Artemis generation, but also to future generations of space exploration.