

20th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)  
Late breaking abstracts (LBA)

Author: Dr. Abdulaziz Alanazi  
Northern Border University, Saudi Arabia, Saudi Arabia, [abdulaziz.alanazi@nbu.edu.sa](mailto:abdulaziz.alanazi@nbu.edu.sa)

Dr. Wael Alsolami  
Saudi Arabia, [walsolami@jazanu.edu.sa](mailto:walsolami@jazanu.edu.sa)

Dr. Jalal Afifi  
Saudi Arabia, [jaffi@jazanu.edu.sa](mailto:jaffi@jazanu.edu.sa)

A 3U CUBESAT FOR THE GERMINATION OF SEEDS IN SPACE USING NANO PLANT PILLOWS

**Abstract**

Although germination in space is currently possible, new techniques are needed to optimize this process. In this paper, ongoing work involving the development and testing of a 3U CubeSat that includes a planting chamber with nano plant pillows is discussed. The objective is the development of new methods to decrease the size and weight of plant pillows and study the behavior of plants and water through data collected from on board cameras. To this end, hydroponic and aeroponic methods are applied to deliver water and nutrients to plant roots using solutions, and to grow plants in a misty environment. This project aims to support STEM education by including students in a project-based learning experience. CubeSat components include solar panels, batteries, reaction wheels, and a germination chamber with LEDs and two cameras with near and far focus to monitor germination in plants.