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BIOSAT: A SCIENTIFIC EXPEDITION INTO MICROGRAVITY WITH ORBIT NTNU

**Abstract**

Orbit NTNU, a student organization at the Norwegian University of Science and Technology (NTNU), embarks on a transformative journey from vision to reality with its groundbreaking BioSat mission. In the pursuit of fostering hands-on experience and pushing the boundaries of space exploration, Orbit NTNU conceived BioSat as a testament to its commitment to innovation and education in the aerospace industry.

The BioSat mission represents a convergence of vision, technology, and purpose. Envisioned as a 3U mission, BioSat allocates 1U for a payload dedicated to facilitating groundbreaking biological research in microgravity. This innovative approach not only underscores Orbit NTNU's dedication to pushing the frontiers of space research but also reflects its ethos of inclusivity and collaboration.

At its core, the BioSat mission seeks to democratize access to space research by pioneering a low-cost, open-source platform for conducting microgravity experiments. By lowering the barriers to entry and fostering a culture of accessibility, Orbit NTNU aims to inspire a new generation of space enthusiasts and researchers while catalyzing advancements in microgravity research.

The journey from vision to reality has been marked by challenges, triumphs, and invaluable lessons. From conceptualization to implementation, Orbit NTNU has navigated through the complexities of satellite development with agility and determination. Through iterative design processes, collaborative partnerships, and a relentless pursuit of excellence, BioSat emerges as a testament to the organization's resilience and ingenuity. Beyond the confines of academia, BioSat holds profound implications for humanity's quest for knowledge and exploration. By harnessing the potential of microgravity research, BioSat not only opens new avenues for scientific discovery but also addresses pressing challenges on Earth, from food security to resource scarcity.

In this paper, we delve into the genesis, development, and impact of Orbit NTNU's BioSat mission. We explore the technological innovations, collaborative endeavors, and overarching vision that have propelled BioSat from a mere concept to a tangible reality. Moreover, we reflect on the broader significance of BioSat within the context of space exploration and scientific inquiry, envisioning a future where the boundaries of possibility are continually redefined. As Orbit NTNU continues to push the envelope of innovation and education in the aerospace industry, BioSat stands as a beacon of inspiration and progress, illuminating the path towards a more inclusive, accessible, and visionary future in space exploration.