

IAF MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)
Microgravity Sciences on board ISS and beyond (6)

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MICROGRAVITY RESEARCH IN THE UAE

Abstract

Microgravity research has been undertaken by many international partners for more than 20 years, which allowed scientists and researchers around the globe to study the impact of absence of gravity on life sciences, materials, and fluids. Perhaps with the presence of the International Space Station in orbit, thousands of experiments have been conducted in the microgravity orbiting laboratory which yield in many research accomplishments that solved technological, biological and physiological issues related to the survival of human beings in space. Despite existing studies and roadmaps, the space sector in the UAE still lacks a roadmap for microgravity research that would serve as an engine to drive the RD efforts in this domain. Thus far, the UAE has excelled in the field of human spaceflight with its achievements in sending an Emirati astronaut to the International Space Station (ISS) and sending experiments to the ISS via “Tests in Orbit” which is a microgravity experiment competition for university students in the UAE, launched by the UAE Space Agency in collaboration with DreamUp, the Higher Colleges of Technology (HCT), and Nanoracks. The objective of this study is to develop an integrated microgravity research guide in synergy with the Science, technology and Innovation (STI) roadmap of the UAE’s space sector. There is a strong motivation to expand on the microgravity research activities notably; by first assessing the current status, conducting a general benchmarking study with the international practices in this domain, and then addressing the steps that the UAE can take in order to further excel in the field of microgravity research. To set this into motion, inputs from the scientific community will be solicited in order to engage with science experts and researchers in the different disciplines. Eventually, identification of the research priorities and key issues will be done. These key issues represent challenges of human space exploration and hence, knowledge gaps and research needs associated with them would be addressed to suggest potential investigations. Past results from the ISS experiments program in the UAE will be mentioned, and future avenues for experiments and research will be presented as well.