

## Potential Research Topics for Space Technology Collaboration between National Tsing Hua University (NTHU) and Texas A&M University System.

The aim of these projects is to explore the potential of international research collaborations based on Space Technology and bearing common interests between NTHU and Texas A&M University system. The outcomes from these international collaboration projects will be beneficial to the design, fabrication, integration and verification, and flight test of low earth orbit (LEO) satellites with different aspects in Material and Structure, Radiation and Astronomy, Electronic & Mechanical Systems, Satellite System Engineering, Radio-Frequency and Optical Communication, Aerodynamics and Thermal Management. The potential research topics include but are not limited to:

- Material and Structure

High Entropy Alloys, High-Entropy Materials, Material and Manufacturing, Structural Vibration, Structural Damage Identification, Aerospace Structure...etc

- Radiation and Astronomy

Radiation Transport Calculations and Applications, Space Radiation, Radiation Hardening Electronic Component/Sensors/Chips, Nonlinear Plasma Dynamics, Astrophysics...etc

- Electronic & Mechanical Systems and System Engineering

Remote Communications, Circuits for Deep Learning and AI Chips, Space IC Design and Fabrication, Sensor Interface Circuit Design, MEMS Sensors and Actuators, Memristors and Emergent Memory Devices, Neuromorphic Materials, Mechatronic Systems, Space System Engineering, System Reliability Evaluation, Ergonomics, Decision Analysis, Edge Computing Chips for Space, Electrical Propulsion System...etc

- RF and Optical Communication

High-Speed IC Design, Wireless Signal Processing, Communication IC Design, RF Semiconductor Devices, Integrated Circuit Design and Technology, Optical Signal Processing, Circuits for Wireless/Optical Communications, Laser Communication Devices, Quantum Communications...etc

- Aerodynamics and Thermal Management

Micro Thrust Vector Control for Propulsion System, Thermal Radiation, Intelligent Heat Transfer Enhancement and Thermal Management, Satellite Active Heat Removal System, Heat and Mass Transfer in Complex Fluid...etc