

Local Chapter Activity Report

at the 10th UNISEC–Global Meeting

Jyh–Ching Juang

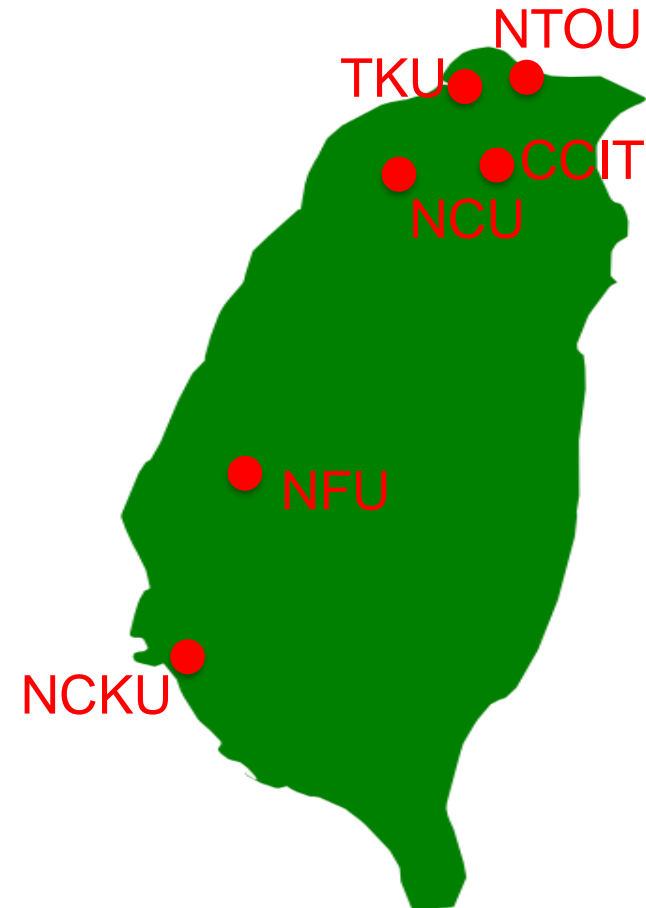
UNISEC TAIWAN

(National Cheng Kung University)



History of Local Chapter Activities

- ◆ Established in 2019
- ◆ Attended UNISEC-GLOBAL Meetings in 2013-2023.
- ◆ Organized MIC seminars
- ◆ Participated in MIC
- ◆ Held several CubeSat (subsystems) competitions.
- ◆ Held HEPTA-Sat training program
- ◆ Six universities and one group
 - National Cheng Kung University
 - National Central University
 - Tam Kang University
 - National Taiwan Ocean University
 - National Formosa University
 - Chung Cheng Institute of Technology
 - Taiwan Space Generation



Activities in 2023-2024

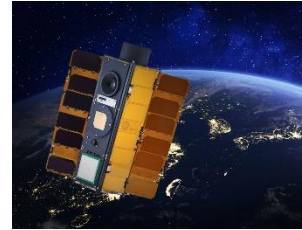
- ◆ Government support remains strong
 - Long term development program
 - Space development law
 - TASA (Taiwan Space Agency) satellites and activities
 - Involvements of local industries

- ◆ CubeSat launches
 - 2014 PACE
 - 2017 PHOENIX
 - 2021 YUSAT and IDEASSat,
 - 2022 IRIS-A and NutSat
 - 2023 IRIS-C, IRIS-C2, PEARL-1C, PEARL-1H, and Liliu-1
 - 2024 IRIS-F1, Nightjar, Toro, TAURUS-2, and ONGLAISAT

Activities in 2023-2024

◆ Lilium-1 CubeSat

- 3U CubeSat developed by NCKU



○ CubeSat systems engineering

○ Ku-band communication

○ Smart remote sensing

○ Space propulsion

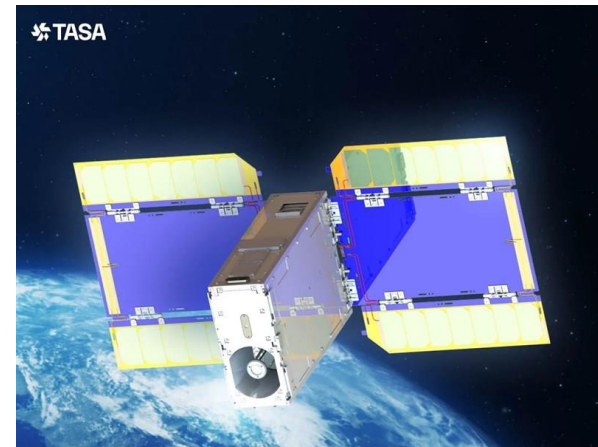
○ Deployment mechanism

○ Collision avoidance

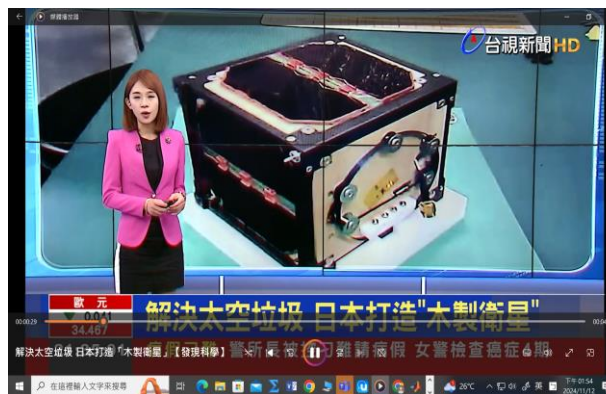
Activities in 2023-2024

◆ ONGLAISAT CubeSat

- 12U CubeSat jointly developed by TASA, The University of Tokyo, and ArkEdge
- Launched on Nov 5, 2024



◆ In the same launch, there is a wooden satellite, LingoSat from Kyoto University



Activities in 2023-2024

- ◆ Scientific sounding rockets
 - NCKU two-stage hybrid rocket
 - NYCU HTTP-3A S2, Asfaloth, SSTO
 - TKU TK-1, Jessie, Polaris
 - FCU SHSR-Aero1, SHSR-Aero2



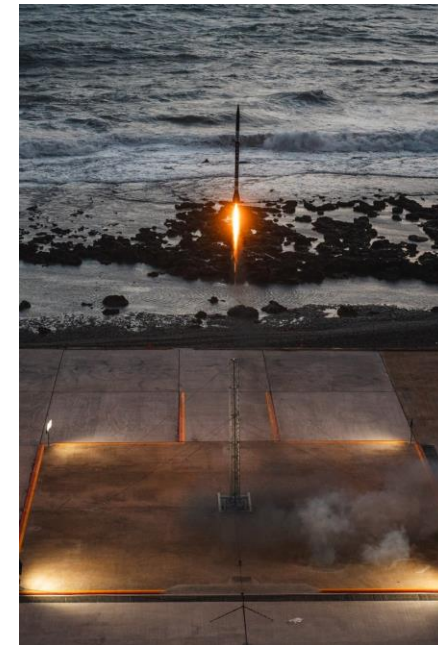
NYCU SSTO



NYCU Asfaloth



NCKU two-stage hybrid rocket



FCU SHSR-Aero2

Activities in 2023-2024

- ◆ UNISEC Mission Idea Contest
 - PreMIC9
 - Nov 27, 2024
 - A Taiwanese team and two joint Indian-Taiwanese teams are finalists
- ◆ CubeSat (Taiwan International Mission Idea Contest on CubeSat) competition
 - A cubesat competition will be held on Dec 02, 2024
 - 13 finalists
 - Main themes
 - B5G communication constellations
 - Deep space exploration programs
 - Applications of artificial intelligence in space technology
- ◆ TASTI 2024 (Taiwan International Assembly of Space Science, Technology, and Industry)
 - Nov 30 – Dec 04, 2024
 - Kaohsiung Exhibition Center

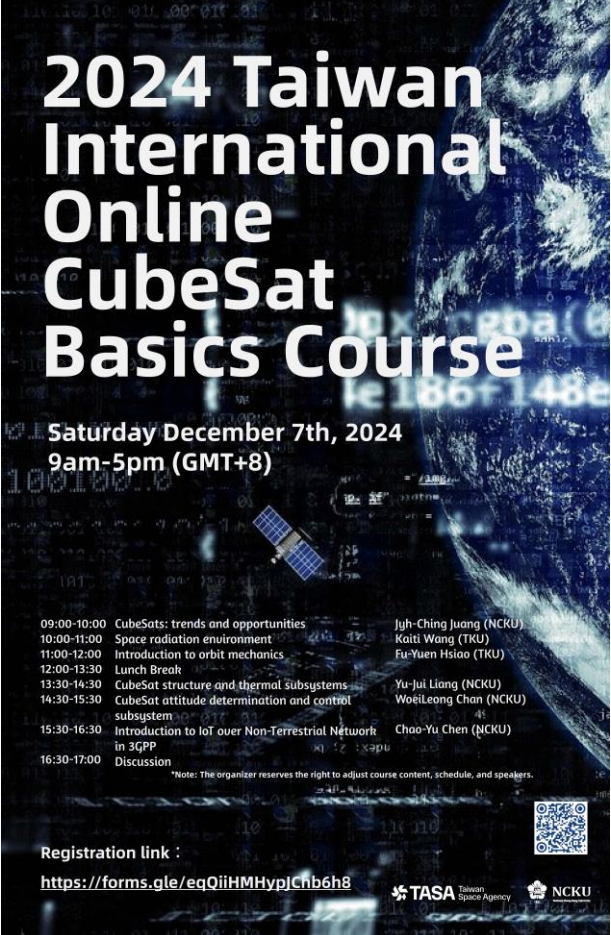
<https://tasti2024.conf.tw/site/page.aspx?pid=901&sid=1584&lang=en>

Activities in 2023-2024

◆ CubeSat lecture (webinar)

- A one-day cubesat lecture (webinar) will be offered on Dec 07, 2024 (Taiwan time; UTC+8)
- Covering
 - Cubesat trends and opportunities
 - Space radiation environment
 - Orbit mechanics
 - Cubesat structure and thermal subsystems
 - Cubesat attitude determination and control subsystem
 - Introduction to IoT over non-terrestrial network in 3GPP
- You are welcome to register

<https://forms.gle/eqQiiHMHypJChb6h8>



2024 Taiwan International Online CubeSat Basics Course

Saturday December 7th, 2024
9am-5pm (GMT+8)

09:00-10:00	CubeSats: trends and opportunities	Jyh-Ching Juang (NCKU)
10:00-11:00	Space radiation environment	Kaiti Wong (TKU)
11:00-12:00	Introduction to orbit mechanics	Fu-Yuen Hsiao (TKU)
12:00-13:30	Lunch Break	
13:30-14:30	CubeSat structure and thermal subsystems	Yu-Jui Liang (NCKU)
14:30-15:30	CubeSat attitude determination and control subsystem	Woeileong Chan (NCKU)
15:30-16:30	Introduction to IoT over Non-Terrestrial Network in 3GPP	Chao-Yu Chen (NCKU)
16:30-17:00	Discussion	

*Note: The organizer reserves the right to adjust course content, schedule, and speakers.

Registration link :
<https://forms.gle/eqQiiHMHypJChb6h8>

TASA Taiwan Space Agency NCKU

Plan for 2024-25 and beyond

- ◆ Additional member universities in UNISEC TAIWAN
- ◆ More cubesat and sounding rocket launches
- ◆ Further collaborations with UNISEC and international partners

Contact

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