

# Yung-An Chan



M.Sc. Aerospace Engineering

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## EDUCATION

- 10/2014 - current** **Universität Stuttgart**, Stuttgart, Germany  
*Position:* PhD Student in Institute of Space System (IRS)  
*Topic:* Development of Inertial Electrostatic Confinement Device for Space Propulsion
- 09/2009 - 06/2011** **National Cheng Kung University (NCKU)**, Tainan, Taiwan  
*Degree:* M.Sc. in Aeronautics & Astronautics Engineering (GPA: 3.81/4.00)  
*Thesis:* Development of High-Test-Peroxide Mono-propellant Thruster by Using Composite Silver Catalyst bed (Score: 90/100)
- 09/2005 - 06/2009** **National Cheng Kung University (NCKU)**, Tainan, Taiwan  
*Degree:* B.Sc. in Aeronautics & Astronautics Engineering (GPA: 3.4/4.00, Major GPA: 3.9/4.0)

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## WORKING EXPERIENCE

- 04/2015 - current** **Institute of Space System (IRS)**, Stuttgart, Germany  
*Position:* Research Associate
- Development and test for *ESA New Electric Attitude Thruster (NEAT)* project.
  - Development of *Electrostatic probe* and *Interferometry system* for plasma diagnostics
- 10/2012 - 09/2014** **National Space Organization**, Hsinchu City, Taiwan  
*Position:* Research Assistant
- Propulsion Engineer in *Formosa Satellite #7 Mission*: responsible for the development of the thruster, propellant tank, and mechanical structure for RCS system.
  - Development of the *thrust stand* for 1 N scale high-test peroxide monopropellant thruster.
  - Development of production processes for *high purity rocket grade H<sub>2</sub>O<sub>2</sub>*.

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## RESEARCH EXPERIENCE

- 09/2009 - 06/2011** **National Cheng Kung University**, Tainan, Taiwan  
*Position:* Graduate Research Assistant
- Serial Indigenous Propulsion Experiments Onboard Sounding Rockets:**  
*Development of High-Tests-Peroxide (HTP) Monopropellant Propulsion Systems*
- Development of an innovative catalyst bed for *HTP monopropellant thruster*.
  - Development of 1 lb<sub>f</sub> thruster (Phase 0 to D) for *Sounding rocket #8* RCS system.
  - Design and assembly an experimental RCS payload for thruster validation and verification in LEO.

Development and Flight Test of 100 kg<sub>f</sub> thrust level N<sub>2</sub>O/HTPB hybrid rocket systems

- Assisting in development, ground-, and flight-test for 100 kg<sub>f</sub> hybrid rocket motor.

**Research and Development of Indigenous Advanced Satellite Propulsion Technologies:**

- Developing *Advanced HTP thruster* for future *Formosa space mission*.
- Developing of *HTP-Kerosene bi-propellant thruster* with shear-coaxial injection.
- Design and setup the facilities for *Space Propulsion Lab in NCKU*: Ground-test and Vacuum-test facility, Laser-induced-fluorescence for spray and flame diagnostics.

09/2006 - 06/2008

**National Cheng Kung University**, Tainan, Taiwan

*Position: Undergraduate Research Assistant*

**Preliminary Development of Mini Unmanned Aerial Vehicle:**

Project Red Dragonfly (Conf.: Joint Wing) and Project Peregrine (conf.: Canard)

- Aerodynamics design and analysis, structure design and manufacture.

Project Viki (Design configuration: Canard)

- Development of graphite/glass fiber composite materials for super-light vehicle.
- Verification and validation of the design concept.

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**AWARDS & HONORS**

2014 - 2017

**MOE Technologies Incubation Scholarship**

*Ministry of Education, Taiwan*

*3 years full scholarship*

2010 - 2011

**Scholarship for Presentation in International Conference**

*National Science Council, Taiwan*

*47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit  
5th Asian Joint Conference on Propulsion and Power (AJCPP)*

*National Cheng Kung University (NCKU), Taiwan*

*8th Asia Pacific Conference on Combustion (ASPACC)*

2008

**Taiwan Innovative Unmanned Aircraft Design Competition**

*Aeronautics and Astronautics Society of the Republic of China, Taiwan*

Project: Red Dragonfly:

*Overall Champion, 1<sup>st</sup> Place in Aerodynamics Design, 1<sup>st</sup> Place in Loading Capability*

Project: Peregrine:

*Overall 3<sup>rd</sup> Place, 2<sup>nd</sup> Place in Aerodynamics Design*

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**SKILLS**

**Language**

*Mandarin Chinese (Native), Taiwanese (Native), English (Professional proficiency)*

**Software**

*MS office, L<sup>A</sup>T<sub>E</sub>X, Fortran, MATLAB, LabVIEW, AutoCAD, CATIA, SolidWorks, ANSYS Fluent*

**Professional Knowledge**

*Pulsed Plasma Thruster, Gas Dynamics, Jet Propulsion, Combustion, Two-phase Reaction Flow, Catalyst Reaction, Hydrogen Peroxide, Aerodynamics, Reaction Control System*

**Technical Skills**

*Mechanical Design, System Integration, Thermal Vacuum Chamber Design, High Pressure Combusting Chamber Design, Particle Image Velocimetry, Laser Induced Fluorescence*

**Received Training**

*ANSYS Fluent (National Center for High-Performance Computing), Aircraft Maintain (China Airlines), Quality Control (National Space Organization), Graphite / Glass Fiber Application*

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## ACTIVITIES

- 2010 –2012** *Manager/General Manager, I-Ching and Feng-Shui Summer School, Taiwan (Voluntary)*
- 2009** *1st Place, University Rugby Championship, University Sports Federation, Taiwan*
- 2006 - 2008** *2nd Place, University Rugby Championship, University Sports Federation, Taiwan*
- 2005 - 2009** *Member and Fullback leader in Rugby Varsity, NCKU*
- 2006 - 2008** *Member of Unmanned Aerial Vehcile Team, NCKU*
- 2005 – 2006** *Member of Soccer Team, Aeronautics & Astronautics, NCKU*
- 2005 – 2006** *Class Representative, Aeronautics & Astronautics, NCKU*

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## PUBLICATIONS

- **Chan, Y. A.,** Syring, C., Herdrich, G., **Development of Inertial Electrostatic Confinement Devices for Space Propulsion in IRS, 5<sup>th</sup> Space Propulsion Conference, Rome, Italy, May 2-6, 2016.**
- Tseng, K. C., Liu, H. J., Pai, C. K., Kou, T. C., and **Chan, Y. A., Development of Satellite Propulsion Components for Hydrogen Peroxide Propellant, 5<sup>th</sup> Space Propulsion Conference, Rome, Italy, May 2-6, 2016.**
- Herdrich, G., Syring, C., Torgau, T., **Chan, Y. A.,** and Petkow, D., **An Approach for Thrust and Loss in Inertial Electrostatic Confinement Devices for Electric Propulsion Applications, 34<sup>th</sup> International Electric Propulsion Conference, Kobe-Hyogo, Japan July 4-10, 2015.**
- **Chan, Y. A.,** Herdrich, G., and Schönherr, T., **Review of Thermal Pulsed Plasma Thruster: Concept, Categorization, and Application, 34<sup>th</sup> International Electric Propulsion Conference, Kobe-Hyogo, Japan July 4-10, 2015.**
- **Chan, Y. A.,** Liu, H. J., Tseng, K. C., and Kuo, T. C., **Preliminary Development of a Hydrogen Peroxide Thruster, World Academy of Science, Engineering and Technology, issue 79, pp. 1180-1187, 2013.**
- **Chan, Y. A.,** Hsu, H. W., and Chao, Y.C., **Development of an HTP Monopropellant Thruster by Using Composite Silver Catalyst, 47<sup>th</sup> AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, San Diego, CA Jul 31 – Aug 3, 2011**
- **Chan, Y. A.,** Hsu, H. W., Chen, G. B., and Chao, Y. C. **Study of Silver Catalyst Packing for a low-thrust Hydrogen Peroxide Monopropellant Thruster, 8<sup>th</sup> Asia Pacific Conference on Combustion, Hyderabad, India, Dec 10 -13, 2010**
- Chen, G. B., Hsu, H. W., Lee, T. S., Chao, Y. C., and **Chan, Y. A., Indigenous Development of a Nitrous Oxide Bipropellant Propulsion System, Conference on Aeronautics and Astronautics Society of the Republic of China, Taiwan, Dec., 2010.**
- Li, Y. H., Wu, C. Y. **Jhan, T. A.,** and Chao, Y. C., **Flame-Luminosity Thermophotovoltaic Power System, 5<sup>th</sup> Asian Joint Conference on Propulsion and Power, Miyazaki, Japan, Mar 3 – 4, 2010.**