Dr. Yi-Ren Wang is a Professor in the Department of Aerospace Engineering at Tamkang University, Taiwan. His research expertise includes aeroelasticity, structural dynamics, nonlinear vibration, and vibration energy harvesting. He received his Ph.D. in Aerospace Engineering from the Georgia Institute of Technology, USA.

Dr. Wang previously served as Chair of the Department of Aerospace Engineering at Tamkang University. He has received numerous academic and innovation awards, including the *Best Paper Award of the Year 2013* from JoAAA, as well as paper awards at the ICAYS-2017 and ICAYS-2019 conferences. He was also honored with the *Distinguished Oral Presentation Award* at the 2021 ISME-ICMAEE Conference. In the field of innovation and invention, Dr. Wang received the *Golden Prize* (2022, 2023), *Silver Prize* (2023, 2024), and *Titanium Prize* (2025) at the Green Idea Invention and Design Fair, an international competition. He further received the *Bronze Prize* at the 2025 Taiwan Innotech Expo and Invention Awards Competition. In late 2025, he was awarded *First Place* in the Best Paper Competition organized by the Astronautical Society of the Republic of China (AASRC). He was also invited by the Ministry of Science and Technology (MOST), Taiwan, to participate in the International Future Science and Technology Exhibition in 2021.

Dr. Wang has been recognized as *Distinguished Teacher of the Year* at Tamkang University in both 2016 and 2023. An active contributor to the academic community, he has authored more than 150 journal and conference papers and serves as an experienced reviewer for numerous international journals. He has served on the academic committee of AASRC and as an Associate Editor of the *Journal of Applied Science and Engineering (JASE)*. In addition, he has been a Guest Editor for *Sustainability* (SCI, 2023–2024) and *Energies* (SCI, 2024–2025).

Dr. Wang is also a post-reviewer for the Ministry of Science and Technology (MOST), Taiwan, and has served as a councilor of both the Association of Helicopter Development and the Aeronautical and Astronautical Society of Taiwan (R.O.C.).

Refereed journal papers (2015~2025)

1. Yi-Ren Wang, S.H. Chen, S.-S. Ma, "A Bio-Inspired Vibration Energy Harvesting System with Internal Resonance and Slapping Mechanism for Enhanced Low-Frequency Power Generation," *Sensors*, *25*, 7222, 44 pages, 2025. **(SCI)**
2. Yi-Ren Wang, Chien-Yu Chen, "Application of machine learning in vibration energy harvesting from rotating machinery using jeffcott rotor model," *Energies*, 18, 4591, 2025. **(SCI)**
3. Yi-Ren Wang, Wei Ting Lin, Bo-Jang Huang, "Rain-induced vibration energy harvesting using nonlinear plates with piezoelectric integration and power management," *Sensors*, Volume 25, Issue 14, 4347, 2025. **(SCI)**
4. Yi-Ren Wang, Po-Chuan Huang, "A Magneto-Electric Device for Fluid Pipelines with Vibration Damping and Vibration Energy Harvesting," *Sensors*, Volume 24, Issue 16, 5334, 2024. **(SCI)** (NSTC113-2221-E-032-011) https://doi.org/10.3390/s24165334.
5. Yi-Ren Wang, Yu-Han Ma, "Application of Deep Learning Models to Predict Panel Flutter in Aerospace Structures," *Aerospace.* Volume 11, Issue 8, 677, 2024. **(SCI)** (NSTC113-2221-E-032-011) https://doi.org/10.3390/aerospace11080677
6. Yi-Ren Wang, Jin-Wei Chang and Chen-Yu Lin, "Analysis of a wind-driven power generation system with root slapping mechanism," *Appl. Sci.* Vol. 14, 482. 26 pages, 2024. **(SCI)** (NSTC 112-2221-E-032-042) https://doi.org/10.3390/app14020482
7. Yi-Ren Wang, Pin-Tung Chen, "Energy harvesting analysis of the magneto-electric and fluid-structure interaction parametric excited system," *Journal of Sound and Vibration*, Vol. 569, article number 118087, 26 pages, 2024. Available online 10 October 2023. **(SCI)** (MOST 111-2221-E-032-017) ISSN 0022-460X, https://doi.org/10.1016/j.jsv.2023.118087.
8. Yi-Ren Wang, G.-W. Chen, "Predicting Multiple Numerical Solutions to the Duffing Equation

Using Machine Learning," *Appl. Sci.* Vol. 13, article number 10359, 32 pages, 2023. **(SCI)** (NSTC 112-2221-E-032-042) https://doi.org/10.3390/app131810359

9. Yi-Ren Wang, Chun-Hsiao Kuo, "Enhancing Electrical Generation Efficiency through Parametrical Excitation and Slapping Force in Nonlinear Elastic Beams for Vibration Energy Harvesting" *Sensors*, *23*, No. 17, article number 7610, 30 pages, 2023. https://doi.org/10.3390/s23177610. https://www.mdpi.com/1424-8220/23/17/7610. **(SCI)** (NSTC 112-2221-E-032-042)
10. Yi-Ren Wang, Pin-Tung Chen, and Yen-Te Hsieh, "Analysis of double inverted flag energy harvesting system in pipe flow," *Sustainability*, Vol.15, No.1, 20 pages, 2023. **(SCI)** (MOST 110-2221-E-032-026) https://doi.org/10.3390/su15010704.
11. Yi-Ren Wang, C.K. Feng , C.H. Cheng, P.T. Chen, "Analysis of a clapping vibration energy harvesting system in a rotating magnetic field," *Sensors*, Vol. 22, No.18, Article number 6916, 20 pages, 2022. **(SCI)** (MOST 111-2221-E-032-017) https://doi.org/10.3390/s22186916.
12. Yi-Ren Wang, Chien-Chun Hung, and Hsin Huang, "Vibration reduction of continuous moving loads on a nonlinear simple beam resting on an elastic foundation," *Journal of Applied Engineering Science*, Vol.20, No.1, article 903, pp53~62, 2022. (MOST 109-2224-E-006-004) http://www.engineeringscience.rs/article/2022/Volume_20_1/30916.
13. Yi-Ren Wang, and Ming-Ching Chu, "Analysis of double elastic steel wind driven magneto-electric vibration energy harvesting system," *Sensors*, Vol. 21, No.21, Article number 07364, 26 pages, 2021. (**SCI**) (MOST 110-2221-E-032-026)
14. Yi-Ren Wang, and Yi-Jyun Wang, "Flutter speed prediction by using deep learning," *Advances in Mechanical Engineering*, Vol.13, No.11, 15 pages, 2021. (**SCI**) (MOST 110-2221-E-032-026)
15. Yi-Ren Wang, Chien-Chun Hung, and Jung-Ting Tseng, "Transverse vibration energy harvesting of double elastic steel," *International Journal of Structural Stability and Dynamics*, Vol. 21, No.8, Article number 2150113, 30 pages, 2021. https://doi.org/10.1142/S0219455421501133 (**SCI**) (MOST 109-2221-E-032-011)
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17. Yi-Ren Wang, and Yun-Shuo Chang, "Study of primary and internal resonance on 3D free-free double-section beam," *Advances in Technology and Innovation*, Vol.5, No.4, 2020, pp.270-291.
18. Yi-Ren Wang, and Y. H. Wei , "Internal resonance analysis of a fluid-conveying tube resting on a nonlinear elastic foundation," *Eur. Phys. J. Plus*, Vol. 135, Article number 364, 2020. https://doi.org/10.1140/epjp/s13360-020-00353-4 (**SCI**)
19. Yi-Ren Wang, Ming-Syun Wong and Bo-Yan Chen, "Analytical and experimental studies of double elastic steel sheet (DESS) vibration energy harvester system," *Energies*, Vol. 13, Article number: 1793, 2020. (**SCI**) (MOST 107-2218-E-006-044)
20. Yi-Ren Wang, and Zi-Wei Hsu, "Effects of nano-particle dampers on multi-walled carbon nanotubes with internal resonance," *Journal of Applied Science and Engineering*, Vol. 22, No.1, 2019, pp.103-117. (**ESCI**)
21. Yi-Ren Wang, and Wan-Chi Hsiao, "Vibration Reduction of Damping Rings on 3D Nonlinear Multi-loaded Slender Beams," *Journal of Chinese Society of Mechanical Engineers*, Vol. 40, No.4, 2019, pp. 327-339. (**SCI**)
22. Yi-Ren Wang, C.K. Feng and S.Y. Chen, "Damping effects of linear and nonlinear tuned mass dampers on nonlinear hinged-hinged beam," *Journal of Sound and Vibration*, Vol. 430, 2018, pp. 150-173. (**SCI**) (MOST 106-2221-E-032-037)
23. Yi-Ren Wang, Chi Tang and Chien-Chih Chiu, "The effects of wake dynamics and trailing edge flap on wind turbine blade," *Journal of Applied Science and Engineering,* Vol. 21, No. 1, 2018. pp.105-115. (**ESCI**)
24. Yi-RenWang, and Hsueh-Ghi Lu, "Damping performance of dynamic vibration absorber in nonlinear simple beam with 1:3 internal resonance," *International Journal of Acoustics and Vibration*, Vol. 22, No.2, 2017, pp.167-185. (**SCI**) (MOST 103-2221-E-032- 047)

25. Yi-Ren Wang and Li-Ping Wu, "Effects of tuned mass damper on fixed-fixed 3d nonlinear string resting on nonlinear elastic foundation," *International Journal of Structural Stability and Dynamics*, Vol.17, No.4, 2017, Article ID 1750047 (33 pages). (**SCI**)
26. Yi-RenWang, and Shu-Chien Tu, "Influence of tuned mass damper on fixed-free 3D nonlinear beam embedded in nonlinear elastic foundation," *Meccanica*, Volume 51, Issue 10, 2016, pp 2377-2416. (**SCI**)
27. Yi-RenWang, and Ting-Hung Kuo, "Effects of a dynamic vibration absorber on nonlinear hinged-free beam," *ASCE Journal of Engineering Mechanics*, Vol. 142, No 4, Article ID 04016003, 25 pages, 2016. (**SCI**)
28. Yi-Ren Wang, and Ting-Yu Lin, "Vibration reduction of a double-layer system sandwiched with elastic medium," *International Journal of Structural Stability and Dynamics* (IJSSD), Vol.16, No.10, 1550065 (14pages), 2016. (**SCI**)
29. Yi-RenWang, and Tzu-Wen Liang, "Application of lumped-mass vibration absorber on the vibration reduction of a nonlinear beam-spring-mass system with internal resonances," *Journal of Sound and Vibration*, Vol. 350, 2015, pp. 140-170. (**SCI**) (MOST 103-2221-E-032-047)
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31. Yi-Ren Wang, and Chi-Wei Fang, "Study on vibration in elastic beam with nonlinear supports at both ends," *Journal of Applied Mechanics and Technical Physics*, Vol. 56, No.2, 2015, pp. 337-346. (**SCI**)

Conference papers (2015~2025)

1. 王怡仁、余陳彥，"基於聲學黑洞理論之彈性樑應用於複合式彈性鋼片減振及獵能系統"，2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese) **論文競賽第一名 (First place in the Best Paper Competition)**
2. 王怡仁、陳仙宣，"附生植物拍擊概念之仿生振動擷能系統"，2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
3. 王怡仁、林嘉美、黃怡靜、陳沛宸，"以數值模擬評估雙聲學黑洞橫樑之減震及發電效應"，2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15。(in Chinese)
4. 王怡仁、易則希，"以機器學習分析轉動不平衡之現象"， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
5. 王怡仁、林宏孟，"使用機器學習分析複合材料層板之拉伸強度"， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
6. 王怡仁、林杰，"飛行器連接件環境腐蝕因素之探討"， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
7. 王怡仁、彭堯羿，"新冠肺炎之航空業因應對策–以中華航空為例"， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
8. 王怡仁、劉哲宇，"旋翼葉片尖端外形效益分析"， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)

9. 王怡仁、鍾竹軒，“大型遙控直升機主旋翼主軸承螺栓受力分析”， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
10. 王怡仁、蘇育正，“直升機主旋翼葉片振動調校之準則分析”， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
11. 王怡仁、張簡介棠，“以機器學習（ML）及失效模式與效應分析（FMEA）方法研究多功能顯示器損壞原因”， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
12. 王怡仁、吳岱諺，“以機器學習評估風速氣象對於各式直升機適航勤務之影響”， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
13. 王怡仁、葉詠青，“二維三自由度氣彈振動體之減振分析”， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
14. 王怡仁、陳政憶，“多減振器排列位置於振動平板減振之研究”， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
15. 王怡仁、藍昱丞、歐德樑，“全槽式聲學黑洞減振樑於減振及電能轉換之分析”， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
16. 王怡仁、謝心蘋、陳建宇，“基於共振原理之旋轉系統振動發電效益實驗研究”， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
17. 王怡仁、黃嚴樂，“倒錘式拉伸及擺動振動擷能系統”， 2025 中華民國航太學會學術研討會，淡水，淡江大學，中華民國 114 年 11 月 15 日。(in Chinese)
18. 王怡仁、黎承勳，“單一彈簧連結之雙層橫樑減振及振動擷能系統”， 2025 中華民國力學學會學術研討會，苗栗，聯合大學，中華民國 114 年 11 月 22 日。(in Chinese)
19. 王怡仁、李振榮，“蜻蜓拍翼啟發之雙樑振動機構擷能系統”， 2025 中華民國機械學會學術研討會，新竹，陽明交通大學，中華民國 114 年 12 月 5 日。(in Chinese)
20. 王怡仁、黃柏璋，“固定鉸接自由邊界平板之亂數外力激擾之發電研究”， 2024 中華民國航太學會學術研討會，台南，成功大學，中華民國 113 年 12 月 7 日。 (in Chinese)
21. 王怡仁、林威廷，“雨-振動-電 能量擷取裝置：提升振動能發電效率的設計”，中國機械工程學會第四十一屆全國學術研討會論文集，論文編號: C5-008，國立高雄科技大學 第一校區，高雄市，中華民國113年11月15~16日。 (in Chinese)
22. 王怡仁、陳建宇，“以機器學習預估馬達振動能量轉換電能之效益”，中國機械工程學會第四十一屆全國學術研討會論文集，論文編號: C5-007，國立高雄科技大學 第一校區，高雄市，中華民國113年11月15~16日。 (in Chinese)
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24. Yi-Ren Wang, Chun-Hsiao Kuo, Chen-Long Lee, and Shian-Hsuan Chen, “Axial parametric

excitation and slapping force in nonlinear elastic beams for vibration energy harvesting systems," *The 48th National Conference on Theoretical and Applied Mechanics* (CTAM 2024) & *The 3rd International Conference on Mechanics* (3rd ICM), November 29-30, 2024, National Tsing Hua University, Hsinchu. **Invited Speaker**.

25. Yi-Ren Wang, Min-Xuan Gong, "Nonlinear vibrations and mitigation strategies for multiple- stage rocket structures", 2024 *International Symposium on Engineering and Technology Innovation*, July 4-6, 2024, Osaka, Japan.
26. Yi-Ren Wang, Min-Xuan Gong, "Exploring internal resonance in vibrations of three-stage beam structures", *International Conference on Advances in Mathematics, Engineering & Technology* (ICAMET – 2024), April, 16-17, 2024, Nagoya, Japan. Paper ID: SAIRAP_02_05_78053
27. 王怡仁、龔敏瑄，"多節橫樑之內共振分析", 中華民國力學學會第四十七屆全國力學會議 (CTAM 2023)， 結構振動論壇， 論文編號: S020 ，中華民國一一二年十一月十七~十八日。(in Chinese)
28. 王怡仁、張晉維 、林宸宇、許阡妤、黃柏詮、馬育瀚，"應用於無人機的風力-磁力-壓電振動獵能裝置"， 2023 中華民國航太學會學術研討會，論文編號:1081，台中，逢甲大學，中華民國 112 年 11 月 25 日。(in Chinese)
29. 王怡仁、黃柏詮， "流體-磁-電能量擷取裝置：提升振動能發電效率的設計"， 中國機械工程學會第四十屆全國學術研討會論文集，論文編號: C5-003，台中，彰化市，國立彰化師範大學 彰化市，中華民國112年12月1~2日。(in Chinese)
30. 王怡仁、馬育瀚，"以機器學習方法預估小流片振顫速度"， 中國機械工程學會第四十屆全國學術研討會論文集，論文編號: C5-004，台中，彰化市，國立彰化師範大學 彰化市，中華民國112年12月1~2日。(in Chinese)
31. Hsin-Cheng Ni and Yi-Ren Wang, "Progress in small sounding rocket development: accomplishments and future initiatives", 2023 Taiwan International Assembly of Space Science, Technology, and Industry (TASTI), Session: Space Transportation, PO084, Taipei Nangang Exhibition Center Hall 2, Oct. 30~Nov.3, 2023.
32. Yi-Ren Wang, Pin-Tung Chen and Yen-Te Hsieh, "Experimental analysis of double inverted flag vibration energy harvester in pipe flow," *Proceedings of the 3rd International Conference on Advances in Energy Research and Applications (ICAERA'22)*, paper number: ICAERA 105, Seoul, South Korea-Virtual Conference, October 27 - 29, 2022. (MOST 111-2221-E-032-017).
33. 王怡仁、陳品彤，"磁電及流固耦合參數激擾之能量擷取系統分析，"2022 中華民國航太學會學術研討會，台中，朝陽科大，中華民國 111 年 11 月 5 日，**論文競賽第三名 (Third place in the Best Paper Competition)**。(MOST 110-2221-E-032-026). (in Chinese)
34. 王怡仁、郭俊孝，"軸向參數激擾之能量擷取系統，"2022 中華民國航太學會學術研討會，台中，朝陽科大，中華民國 111 年 11 月 5 日。(in Chinese)
35. 王怡仁、鮑光晟，"小型探空火箭研發 – 固態推進劑製作，"2022 中華民國力學學會(STAM)，【科研火箭研製】技術論壇，台中，逢甲大學，中華民國 111 年 11 月 7 日。(NSPO-P-111021). (in Chinese)
36. 王怡仁、朱銘敬、陳品彤，"風力及磁力驅動之壓電能量擷取系統研究，" 中國機械工程學會

第三十八屆全國學術研討會，國立成功大學 台南市，中華民國 110 年 12 月 3~4 日。(MOST 110-2221-E-032-026). (in Chinese)

37. 王怡仁、朱銘敬，“風力及磁力驅動之壓電獵能系統研究，”2021 未來科技獎入圍參展，台灣創新技術博覽會-未來科技館，網路參展，中華民國 110 年 10 月 14~24 日。(MOST 110-2221-E-032-026). (in Chinese)
38. 王怡仁、陳品彤、郭俊孝、陳冠維、許榮楊、張晉維， “遙控直升機動態響應及分析，”2021 中華民國航太學會學術研討會，雲林，中華民國 110 年 10 月 30 日。(MOST 110-2622-E-032-001). (in Chinese)
39. 王怡仁，王義竣，陳冠維，“以深度學習方式預測振顫速度之生成，”2021 中華民國航太學會學術研討會，雲林，中華民國 110 年 10 月 30 日。(in Chinese)
40. Yi-Ren Wang, Chin-Han Cheng and Pin-Tung Chen, “Analysis of energy harvester system with piezo-patch in magnetic field”, *2021 International Conference on Mechatronic, Automobile, and Environmental Engineering*, 22-24 October, 2021, Hualien, Taiwan.
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Projects (2018~2025)

Project title	Grant or commission	Start and end date	Progress of the project	Position held in the project	Funding (NTD)
Bio-inspired epiphytic plant slapping vibration energy harvesting system (NSTC 114-2221-E-032-008)	National Science and Technology Council (NSTC)	2025/08/01~ 2026/07/31	in progress	principal investigator	1,185,000
Research on nonlinear flat plate systems combining vibration reduction and vibration energy harvesting (NSTC114-2813-C-032-031-E)	National Science and Technology Council (NSTC)	2025/07/01~ 2026/02/28	in progress	advisor	58,000
Study on flow-induced vibration reduction and magneto-electric bistable vibration energy harvesting system (NSTC 113-2221-E-032-011)	National Science and Technology Council (NSTC)	2024/08/01~ 2025/07/31	closed	principal investigator	1,053,000
Elastic steel vibration reduction and energy harvesting system installed in composite elastic vibration device (NSTC 113-2813-C-032-077-E)	National Science and Technology Council (NSTC)	2024/07/01~ 2025/02/28	closed	advisor	58,000
Theoretical and experimental analysis of clapping energy harvesting system with axial excitation (NSTC 112-2221-E-032-042)	National Science and Technology Council (NSTC)	2023/08/01~ 2024/07/31	closed	principal investigator	953,000
Analysis of energy harvesting for Magneto-electric and fluid structure coupling parametric excitation system (111-2221-E-032-017-)	Ministry of Science and Technology (Taiwan)	2022/08/01~ 2023/07/31	closed	principal investigator	893,000
Development of small sounding rocket (A) (NSPO-P-111021)	Taiwan Space Agency (TASA)	2022/01/12~ 2025/06/11	closed	principal investigator	8,991,000
Analytic and experimental study of wind driven magnetic piezoelectric vibration energy harvesting system (110-2221-E-032-026-)	Ministry of Science and Technology (Taiwan)	2021/08/01~ 2022/07/31	closed	principal investigator	996,000
Verification of unmanned helicopter main rotor frequency and dynamic response (110-2622-E-032-001-)	Ministry of Science and Technology (Taiwan)	2021/01/01~ 2021/12/31	closed	principal investigator	449,000

Industry-University Cooperation Program - Verification of unmanned helicopter main rotor frequency and dynamic response	Sovereign Technology CO.	2021/01/01~ 2021/12/31	closed	principal investigator	202,680
Effects of fixed-fixed double-steel-sheet vibration energy harvesting system (109-2221-E-032-011-)	Ministry of Science and Technology (Taiwan)	2020/08/01~ 2021/07/31	closed	principal investigator	866,000
Afterburner hybrid sounding rocket test and verification platform rocket development (3/3) (109-2224-E-006- 004-)	Ministry of Science and Technology (Taiwan)	2020/08/01~ 2022/07/31	closed	co- principal investigator	21,400,000
Afterburner hybrid sounding rocket test and verification platform rocket development (2/3) (108-2218-E-006- 021-)	Ministry of Science and Technology (Taiwan)	2019/08/01~ 2021/07/30	closed	co- principal investigator	21,349,000
Remote control helicopter rotor blade design principles and experimental verification (107-2622-E-032-008-CC3)	Ministry of Science and Technology (Taiwan)	2018/11/01~ 2019/10/31	closed	principal investigator	700,000
Industry-University Cooperation Program – Remote control helicopter rotor blade design principles and experimental verification	Sovereign Technology CO.	2018/11/01~ 2019/10/31	closed	principal investigator	297,320
Afterburner hybrid sounding rocket test and verification platform rocket development (1/3) (107-2218-E-006- 044-)	Ministry of Science and Technology (Taiwan)	2018/08/01~ 2019/10/31	closed	co- principal investigator	21,400,000
Vibration and stability analysis of the nonlinear vibration aborber (nonlinear energy sink) on a nonlinear beam (106-2221-E-032-037-)	Ministry of Science and Technology (Taiwan)	2017/08/01~ 2018/07/31	closed	principal investigator	548,000