IEEE期刊 & 會議

細說我的投稿經驗

Tips for Thesis Writing and Papers Submission

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Speaker:楊龍杰Lung-Jieh Yang

學歷:

PhD: 國立台灣大學應用力學所工學博士 IAM, NTU (1991-97)

經歷:

- 1997-2018, published (62+94) journal/ conference papers
- EIC, J. of Applied Science and Engineering (ESCI)
- 2016, 國家文官學院13職等決策發展班結業合格
- 2011-15, 淡江大學機械與機電工程學系主任
- 2008-11, 國家實驗研究院企考室兼任研究員
- 2002-08, 淡江大學儀器暨實驗中心主任
- 2000-01, 美國加州理工學院電機系訪問學者

Publish or Perish,…

Contribute to my research field…

… So I submit my paper to academic conferences/journals!

所以我試圖發表學術論文

從角色出發: What's your role?

- Assistant Professors/ Postdoc Researchers:
  - 升等是最重要考量?
    Major concern is to get promotion?
  - 奠定研究基礎更為重要?
    Good basis for research is more important?

從角色出發: What's your role?

- Post-Graduate students:
  - 畢業是最重要考量?
    Major concern is to take the degree?
  - 奠定紮實學養更為重要?
    Solid knowledge/expertise for research is more important?

Two approaches

- 直接法
  - 妥善準備初稿(下頁)
  - 尋求英文潤稿協助
  - 正式投稿
  - 接到修改通知
    - 準備response letter
    - 逐條回應comment
    - 逐條修改於內文
    - 按時回傳revision
  - 接到退稿通知
    - 不要氣餒
    - 偏見部分忽略
    - 修改審查意見再度投稿
- 間接法
  - 先投稿Intl. conference
  - 徵詢大眾意見修改
  - 轉投稿該會議引介之journal
  - 投稿其他journal

(按左側”直接法”要領)

Two approaches

- Direct way
  - Draft preparation
  - Ask help from outside for correction and polishing
  - Paper submission (details)
  - Revision notification
    - Prepare response letter
    - Point-to-point response
    - Substantial improve the text
    - Upload revision on time
  - Reject notification
    - Don’t frustrate
    - Ignore the prejudice
    - Correct according to good comments and re-submit
- Indirect way
  - Firstly submit to International conference (details)
  - Receive comments from the audience
  - Submit papers to the journal suggested by the conference
  - Submit to other journals
  - …(left column)

Direct way

- Details
  - 瞄準可能的journal
  - 詳讀Author guide
  - 想好題目(10字以內)
  - 一篇文章，一個主要重點或貢獻
  - Single column, double space
  - 8-10頁篇幅, 10張以內圖表
  - 開門見山描述, 創新點先說
  - 多用英文主動句, 一句不要超過30字
  - 參考文獻: 一定要詳細檢查格式
    (IEEE? ASME? Chicago format?)

Direct way

- Details
  - Target possible journals
  - Read the “Author guide”
  - Title (within 10 words)
  - Only one main contribution per paper
  - Single column, double space
  - 8-10 pages, 10 figures in total
  - Describe straight forward; the novel point firstly
  - Active voice; no more than 30 words per sentence
  - Strict format of reference
    - IEEE? ASME? Chicago format?

Light flapping micro-aerial-vehicles using electrical discharge wire cutting technique," *Journal of Aircraft*, 46(6), 1866-1874, 2009.

- Draft preparation

A Light Flapping Micro-Aerial-Vehicle (MAV) Using Electrical-Discharge-Wire-Cutting (EDWC) Technique

Lung-Jieh Yang[1], Cheng-Kuei Hsu[1], Min-Wei Gao[1], Chun-Yu Kao[1], Chun-Wei Liao[1], and Fu-Yuen Hsiao[2].

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Abstract

In this work we proposed using electrical-discharge-wire-cutting (EDWC) technique and flexible materials to greatly reduce the body mass of a flapping micro aerial vehicle (MAV). EDWC is accessed to fabricate the main structure of the four-bar linkage gear transmission module, and carbon-fibers, PET (polyethylene terephthalate), and parylene (poly-para-xylylene) films are assigned as the materials of wing frames. We constructed the new flapping MAV of 21.6 cm wing span and with a small body mass of 6-8 g to set a maximum endurance of 107 sec flight record so far while the wingbeat frequency being about 10-15 Hz. The time-averaged lift and thrust coefficients of the MAV have been investigated through wind-tunnel testing to ensure the sufficient aerodynamic supporting forces. Our flexible MAV exhibits the peculiar characteristic in scaling laws with respect to wing loading and wingbeat frequency (versus body mass) respectively.

Keywords: micro aerial vehicle (MAV); flapping flight; flexible wing; electrical discharge wire cutting (EDWC)

1. Introduction

Flapping flight has been a subject of academic interest for at least half a century, but attracts attention in more recent years. A three-year MAV program sponsored by DARPA (Defensive Advanced Research Projects Agency) in 1996 inspired and created some artificial flyers less than 15 cm long for military surveillance. Most of them at then are categorized as fixed-wing or rotary-wing designs (reported by Zbikowski [1]). Several groups therefore developed their flapping micro aerial vehicles (MAVs) with different configurations and actuation principles after DARPA's initiative projects. For examples, Pornsin-sirirak et al.[2] created Caltech's "Micro-Bat" with a 6-min flight record of flapping MAVs using MEMS process and the titanium-parylene material system in 2001. Barrett et al.[3] announced the successful hovering of TU Delft's "Delfly" composed of a pair of dragonfly-like flexible wings in 2005. Otherwise, Jones et al.[4] of Naval Graduate School of US made a fixed-wing type MAV with a scissor-like clapping tail thruster (or flapping-wing propulsor termed by Rozhdestvensky[5] in 2003) and showed its long endurance of 20 min in 2005. Moreover, Banala et al.[6] in Delaware University employed a 5-bar mechanism for generating a prescribed wing motion taken from a hawk moth kinematic flight data in 2005. McIntosh et al.[7] additionally designed a mechanism for biaxial rotation of a wing for a hovering MAV in 2006. Meanwhile, an insect-like flapping wing mechanism was proposed by Zbikowski[8-9] of Cranfield University through the novel idea of a double spherical Scotch yoke in 2005. Yang et al.[10] at Tamkang University also presented a MAV capable of exporting the on-site lift information through its PVDF-parylene composite wing in 2007.

Anyhow, the unsteady flow mechanisms of these successful artifacts were still complicated, and they deserve people to investigate their aerodynamic forces and kinematic motion, like the research way of studying living animals from 1999 to 2007 [11-14]. The advantageous merits of

Light flapping micro-aerial-vehicles using electrical discharge wire cutting technique," *Journal of Aircraft*, 46(6), 1866-1874, 2009.

- Figures

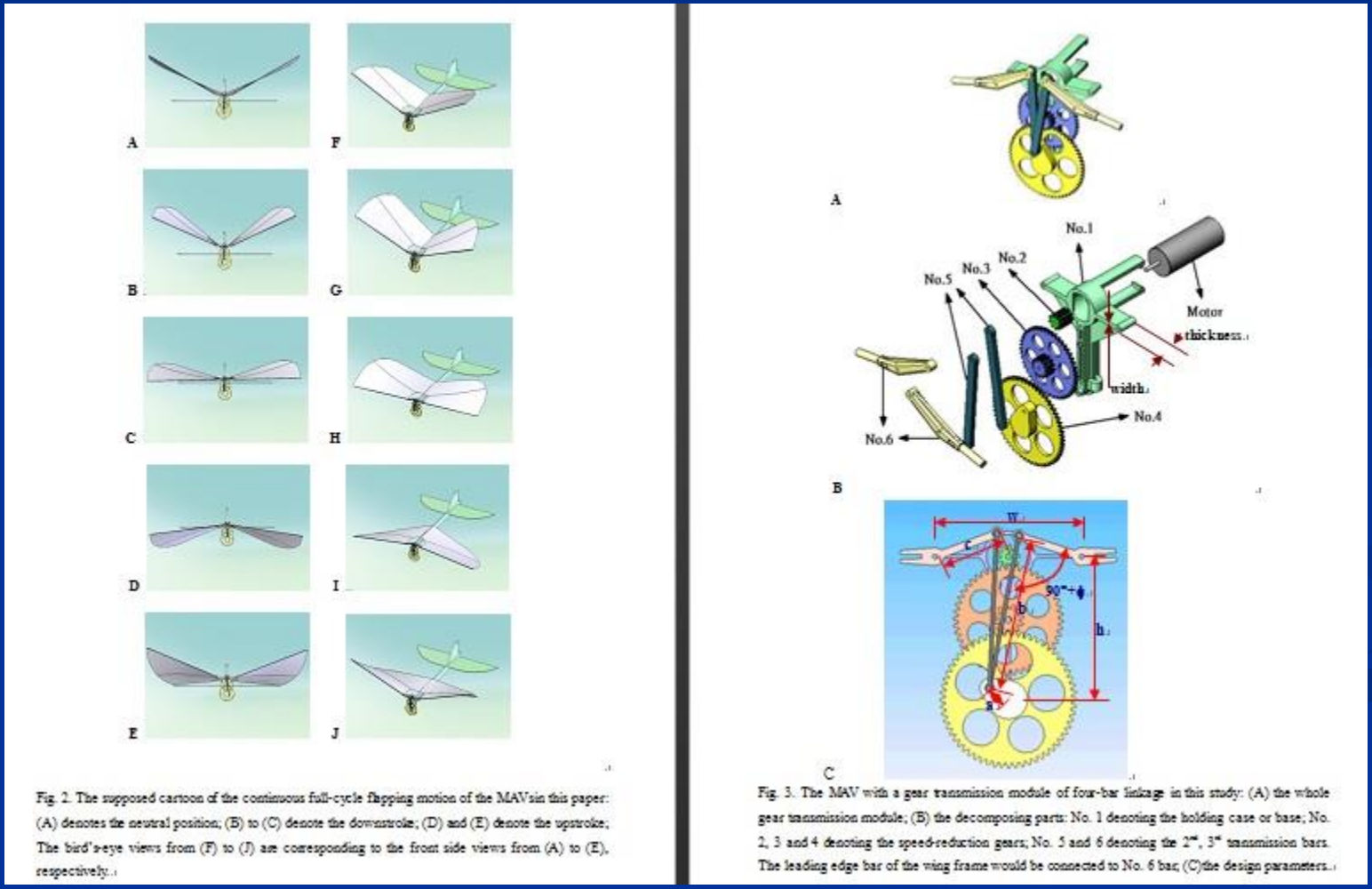

Fig. 2. The supposed cartoon of the continuous full-cycle flapping motion of the MAVsin this paper: (A) denotes the neutral position; (B) to (C) denote the downstroke; (D) and (E) denote the upstroke; The bird's-eye views from (F) to (J) are corresponding to the front side views from (A) to (E), respectively.

Fig. 3. The MAV with a gear transmission module of four-bar linkage in this study: (A) the whole gear transmission module; (B) the decomposing parts: No. 1 denoting the holding case or base; No. 2, 3 and 4 denoting the speed-reduction gears; No. 5 and 6 denoting the 2nd, 3rd transmission bars. The leading edge bar of the wing frame would be connected to No. 6 bar; (C)the design parameters.

Light flapping micro-aerial-vehicles using electrical discharge wire cutting technique," *Journal of Aircraft*, 46(6), 1866-1874, 2009.

- References

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[1] S. Ashley, Palm-Size Spy Plane, *The American Society of Mechanical Engineers*, February (1998) 74.

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[4] T. N. Pornsin-sirirak et al., Flexible Parylene-valved Skin for Adaptive Flow Control, Proceedings of 15th IEEE MEMS conference, Las Vegas, USA, 2002, pp. 101-104.

[5] Website http://www.artificialmuscle.com/.

[6] Website http://fourier.vuse.vanderbilt.edu/cim/projects/crawler.htm.

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[14] C.-K. Hsu, J.-Y. Ho, G.-H. Feng, H.-M. Shih and L.-J. Yang, "A flapping MAV with PVDF-parylene composite skin," Proc. of APCOT-2006 (SASN-A0019), Singapore, Jun. 25-28, 2006, p. 253.

[15] Chang Liu, Foundations of MEMS, Pearson/Prentice Hall, 1st ed, 2006, p.256.

Light flapping micro-aerial-vehicles using electrical discharge wire cutting technique," *Journal of Aircraft*, 46(6), 1866-1874, 2009.

- Review comments & Point-to-point response

WriteTrack Tracking Number: 38862

Title: A Light Flapping Micro-Aerial-Vehicle (MAV) Using Electrical Discharge Wire Cutting (EDWC) Technique

Submitted to: Journal of Aircraft

Authors: Lung-Jieh Yang et al.

The main amended parts corresponding to the reviewers' comments shown below are all typed in red letters in our revised manuscript. The whole article has been checked its grammar and reorganized, but the changed words and phases are too many to be particularly specified.

Reviewer No. 1: This is an interesting paper. The authors have reported their experience in developing a light weight, flapping wing aircraft. Flight test has been conducted along with some scaling analysis. I'll be happy to see this paper published once the authors have addressed these points satisfactorily. The paper offers an interesting case study in a fast growing field.

Comment 1. The flapping angles and frequencies are low compared to biological flyers of similar or even larger sizes. There are commercially available flyers which can perform similarly, if not better. However, this is not a critical shortcoming in my view. It is far more important for the authors to document their design-build-test processes with more details. This can be easily done.

Reply: Thanks the reviewer for his valuable comment.

There's so much know-how that we cannot describe exactly in this single article but will demonstrate our advantageous technology one after another in the follow-up articles. We emphasize in the EDWC work on weight reduction herein.

The flapping frequency of 10-20 Hz for our MAV is close to the value predicted by the scaling law of natural birds (ref. 16), $f_w = 3.87M^{-0.32}$ (M=5.9-9.0 g→f_w=18.6-21.4 Hz.).

On the issue of enlarging the flapping stroke angle to a great extent, the simplest way is to increase the first linkage length of the transmission module in Fig. 3(C). The following attached table shows the possible design of linkage length as well as the corresponding stroke angle, phase lag…, etc.

As we mentioned in pp. 7-8 of the revised manuscript, the flapping stroke and the phase lag between the wing pair grow with the first linkage length **a**. The large phase lag will deteriorate the total lift of MAVs. Moreover, the asymmetry angle ψ in Fig. 3(C) is also influenced as well (the whole mechanism might get stuck as ψ>30°). The resulting fluttering vibration during the operation of the transmission module generates more energy dissipation and needs more powerful (and heavier) driving motor. This is of course against the miniaturization trend of MAVs. By the above consideration, in this study we temporarily adopt the small flapping stroke angle from 38.9°-56.3°. The content mentioned above is added in p. 8 of the revised manuscript (typed in red letters.)

a, 1st bar (mm)	B, 2nd bar (mm)	c, 3rd bar (mm)	Holder width w (mm)	Flapping stroke angle ϕ	Phase lag angle	Asymmetry angle ψ
3	**21**	**9**	**20**	**38.9**	**2**	**21.2**
3.3	**21**	**9**	**20**	**43**	**2.2**	**23.4**
3.65	**21**	**9**	**20**	**47.9**	**2.6**	**26.5**
3	**21**	**7**	**16**	**50.8**	**2.7**	**25.4**
3.3	**21**	**7**	**16**	**56.3**	**3.2**	**28.7**
2.4	20.3	9	20	30.9	1.6	14.9
4	20.3	9	20	52.8	3.2	28.4
5.2	20.3	9	20	70.6	5.2	40.5, fluttering
6.3	20.3	9	20	89.4	7.9	54.6, get stuck
4.9	20	7	16	89.2	6.8	52.1, get stuck

Comment 2. The real challenge of such a flyer is in unpredictable environments, i.e., under wind gust. This aspect should be discussed.

Reply: Thanks the reviewer for the valuable comment.

The maximum forward speed of our MAV in this study is about 3 m/s, comparable to the general tender side wind in outdoors but much less than the wind gust. Therefore our MAV is more suitable for indoor flying rather than outdoors flight. Keep on decreasing the wing span with order improvement of the aerodynamic improvement means, e.g., high lift at high AOA, and might be beneficial to the capability of our MAVs against the unpredictable environment.

Additionally, the capability of MAVs for dealing with the unpredictable wind gust is a matter of robust stability and adaptive flight control for flapping MAVs. It will be very crucial in the development of autonomous MAVs, but not the goal we can reach in this study. Before governing the control law of flapping MAVs, which are still mysterious so far, we must get acquainted with the details of the veiled unsteady aerodynamics at first (in other words, the developing stages of autonomous flapping MAVs is still similar to the history of the mature aircrafts developed in the passing century: breakthrough of the hardware and the manufacture method→aerodynamic modeling and theories→control laws→fully autonomous flight.) Therefore, this big challenge is too early to be questioned in this work.

Comment 3. The control strategies, especially in regard to different forward flight speed, should be discussed.

Reply: Thanks the reviewer for the valuable comment.

As we explained in the reply to Comment 2, we lack the control law of the flapping MAVs so far. All we know about the control strategies are only the empirical experience

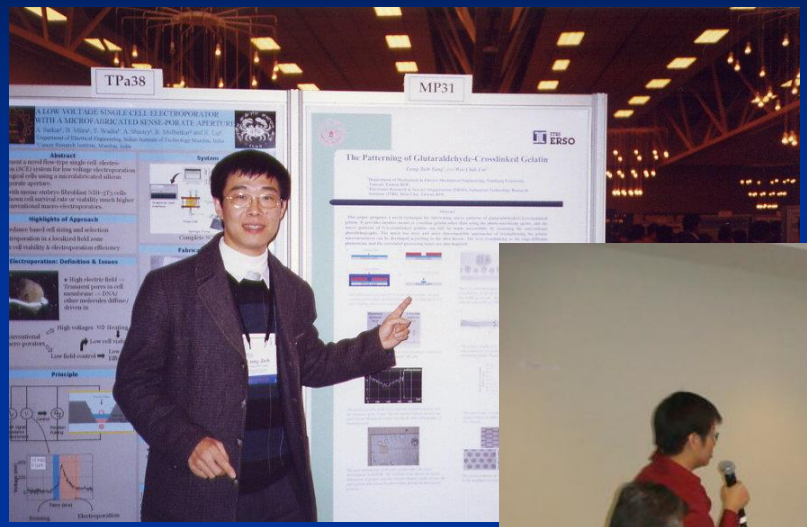
Indirect way

- Details
  - 接受率較高, 培養信心
  - 篇幅4頁較短, 適合研究生起步學習
  - 申請科技部與學務處之國際會議補助
  - 認真參加國際會議, 並上台英文發表論文
  - 徵詢大眾意見, 作為期刊論文修改之依據
- 轉投該會議引介之journal或其他journal
  - 圖文內容與題目須與先前會議論文有明顯差異
  - 尤其摘要與簡介要重寫, 圖文內容要大幅擴充, 以免違反學術倫理

Indirect way

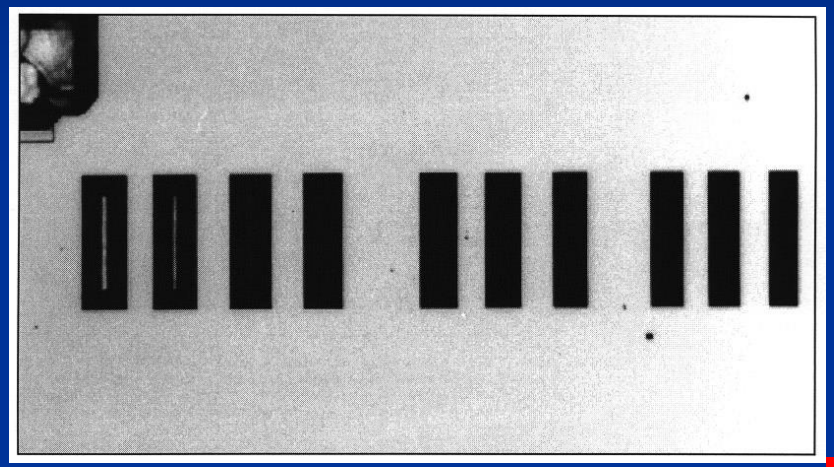
- Details
  - Easier to be accepted→ self confident
  - 4-page, good starting point for PGs
  - Apply travel support from MOST…
  - Be serious about attending the conf. & presentation
  - Collect opinions from audience for paper improving
- Extend content and submit to journals
  - Title and content should be different apparently
  - Rewrite the abstract and introduction, expand the content, to avoid the violation of publication ethics

Example of the indirect way



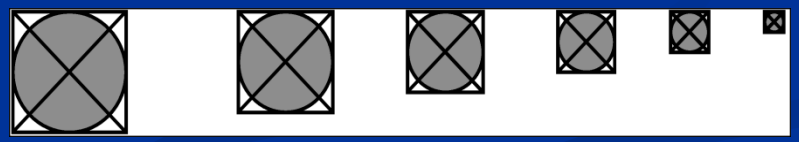
A method using V-grooves to monitor the thickness of silicon membrane with μm resolution, *Journal of Micromechanics and Microengineering*, 8(3), 182-187, 1998

- Sensor 1997



- J. of Micromech. Microeng., 1998

(16 times cited in Scopus)



Suggested by the audience of poster presentation

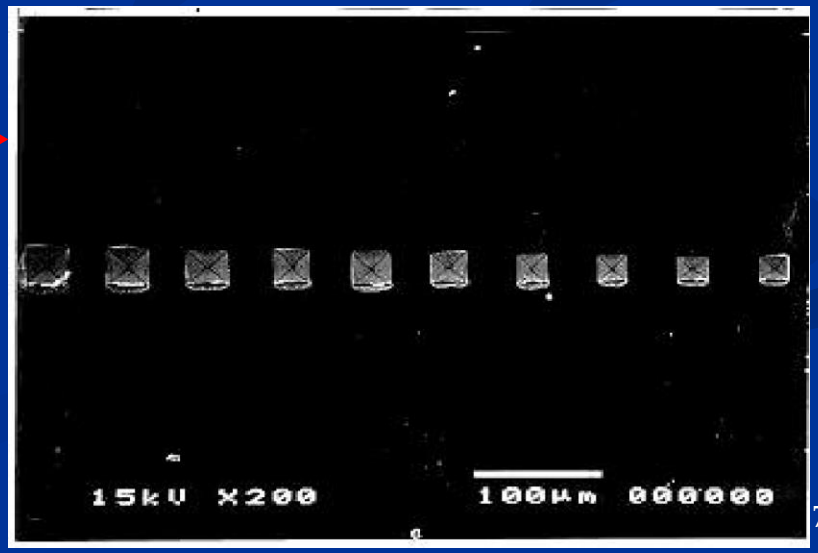
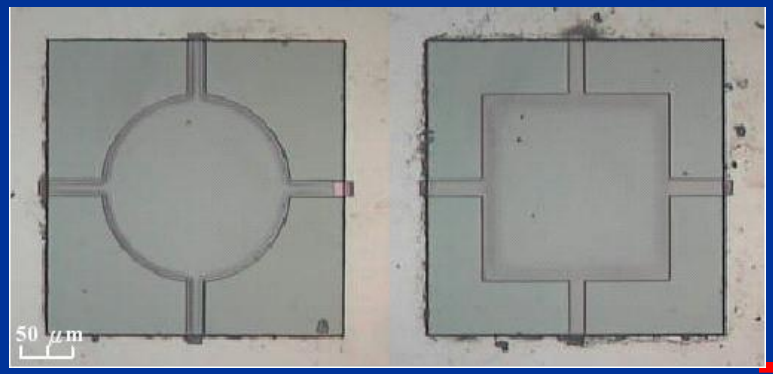


Photo-patternable gelatin as protection layers in surface micromachinings, *Sensors and Actuators A: Physical*, 103(1-2), 284-290

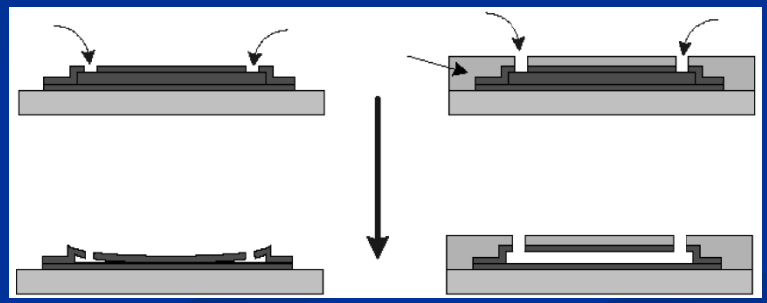
- IEEE MEMS 2002

(25% acceptance only!)

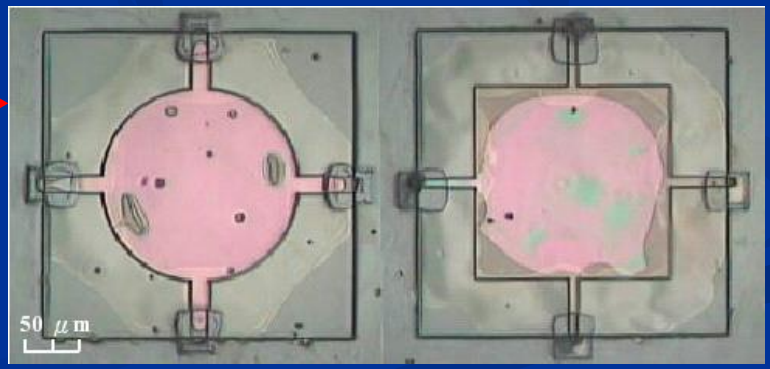


- SNA A: Physcial, 2003

(23 times cited in Scopus)



Challenged by the audience of oral presentation



How to draw figures/ tables

- Excel
  - With marks
  - In black, not in color
  - Monotonous change
  - x-y plot, not curve plot
- Caption:
  - Bottom for figures
  - Head for tables

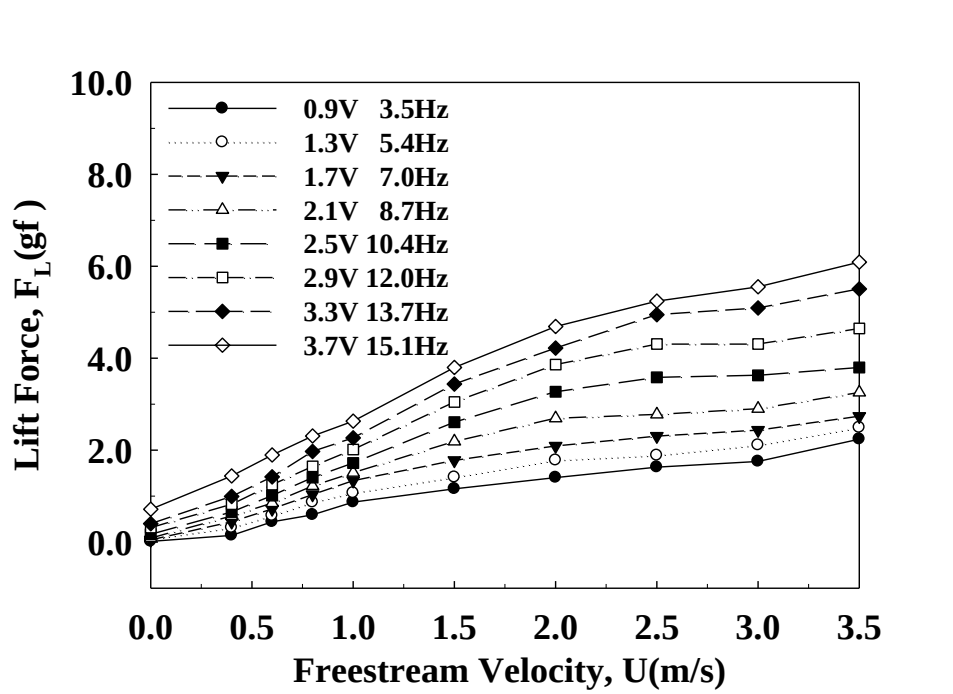


Fig. 6 Lift forces vs. air speed corresponding to different flapping frequencies

Proof reading

- Reply in time (2-3 days), don’t postpone it.
- Print out, hand correction and reply back with an appreciation letter.
- Ask co-authors to help checking together.
- Actively ask the payment way of the publication-reprint fee to speed up your publication.

Acknowledgements

- Project sponsor (MOST,…)
- All helpers other than the co-authors.
- Distribute reprints to all co-authors and helpers after official publication.

Conclusions

- Regarding the technical writing…