



Associate Prof Yeong Wai Yee

**Winner of TCT Woman in 3D Printing Innovator Award 2019**

Associate Professor, Associate Chair (Students), School of Mechanical and Aerospace Engineering, Nanyang Technological University

Program Director (3DP), HP-NTU Digital Manufacturing Corp Lab

Programme Director, Aerospace & Defence Programme, Singapore Centre for 3D Printing

Research website: [www.yeongresearch.com](http://www.yeongresearch.com)

(Updated July 2021)

### **PROFESSIONAL EXPERIENCE**

Start Year (YYYY)	End Year (YYYY)	Name of organisation	Position held
2018	CURRENT	NTU	Associate Prof
2013	2018	NTU	Assistant Prof
2009	2013	CIBA VISION	Principal Engineer
2008	2009	NTU	Research Fellow

### **ACADEMIC QUALIFICATIONS**

Date Awarded (MM YYYY)	Qualification	Institution Attended and Country
06 2007	Ph.D.	Nanyang Technological University, Singapore
06 2003	B.Eng.	Nanyang Technological University, Singapore

### **RESEARCH AREA**

**3D Printing, Bioprinting, Metal printing, Electronics printing, Machine learning in 3D Printing.**

**H-index: 40, Citation: >6100**, with **14 highly cited papers** as of Mar/Apr 2021. They are in the fields of Engineering, Materials Science, Physics and Clinical Medicine.

### **AWARDS**

- International award- Inaugural **TCT Woman in 3D Printing Award 2019**, for her significant achievement in 3D printing.
- Finalist for **Lush Award 2018 (Science category)** for developing tissue models for animal-free testing.
- PhD student Eric Guntur - Winner of **Outstanding Award** in the Nanxun Innovation & Entrepreneurship Challenge 2019
- PhD student Huang Sheng - Winner of the **Best Oral Presentation Award** at 2019 4th ICCMME
- **Springer Theses Award 2017** won by student (Sing Swee Leong) under my supervision.

## **ACADEMIC RECOGNITION & SERVICES**

- Served as Panel Member for **European Research Council ERC- Advanced Grant 2019**. **ERC Advanced Grants** is one more the most prestigious grant for independent research leaders who have been conducting significant and original research for at least 10 years. [https://erc.europa.eu/sites/default/files/document/file/Panel\\_Members\\_ERC\\_Advanced\\_Grant\\_2019.pdf](https://erc.europa.eu/sites/default/files/document/file/Panel_Members_ERC_Advanced_Grant_2019.pdf)
- **Associate Editor** for international journal **Virtual and Physical Prototyping (VPP)**, Q1 in SCI with impact factor >6.0.
- **Associate Editor** for international journal **International Journal of Bioprinting (IJB)**, Q1 in SCI with impact factor 6.6
- **Conference Technical Program Chair** of International Conference on Progress in Additive Manufacturing 2014 and 2016.
- Organizer of Singapore International 3D Printing Competitions 2014-2018.
- Research featured on **media and news**, including Reuters Science News, Straits Times Channel News Asia and Channel 8.
- Reviewer for **international grants** such as Mitac's Accelerate (Canada), Rostree's Trust Grant (UK), Swiss National Science Foundation (Switzerland).
- Given more than 20 **invited talks** at various platforms including academic conferences and industrial forum internationally (Singapore, China, Japan, USA, Belgium, Europe).

## **INVITED TALKS**

### **Keynote Presentations:**

2022: 3D-Bioprinting, Biofabrication, Organoids & Organs-on-Chips Asia  
May 23-24, 2022, Tokyo, Japan

2021: 4th International Conference on 3D Printing, 3D Bioprinting, Digital and Additive Manufacturing - I3D21  
7 - 8 July 2021 Thessaloniki, Greece

2021: 3D-Bioprinting 2021  
March 18-19 , 2021, Boston, USA

2021: ONLINE 3D Bioprinting Conference (8th edition)  
<https://www.3dbioprintingconference.com/speakers/>

2020: Keynote speech at Disrupting Manufacturing with 3D Printing and Digital Technologies, 03 NOV 2020 Webinar by HP-NTU and SC3DP NTU Singapore.

### **Invited Speakers:**

2021: Invited speaker in Women in 3D Printing first annual conference, TIPE 3D Printing  
Jan 27-28 , 2021

2020: Invited speaker for TCT Japan 2020, 09-11 December 2020, Tokyo Big Sight  
[https://www.tctjapan.jp/index\\_en.html](https://www.tctjapan.jp/index_en.html)

2020: Invited speaker at The Virtual 2nd European Conference on Controversies in Diabetic Foot Management (DiabeticFoot-Europe), 09-10 December 2020.  
<https://diabeticfoot-europe.com/congress-agenda/>

2020: Invited speaker at Materials Research Society MRS Virtual Spring/Fall Meeting & Exhibit, November 28 - December 4, 2020. USA.

## **SUPERVISION OF GRADUATE STUDENTS**

Graduated 9 PhD students, currently supervising 7 PhD students. PhD students moved on to academic positions in universities. These included Assistant Prof Tan Yu Jun at National University of Singapore (NUS); NTU Presidential Post-Doc Fellowship Dr Sing Swee Leong; and Research Assistant Professor Ng Wei Long at NTU.

## **FUNDING AND COLLABORATIONS**

**Secured >US\$10million project funding** since 2013, on joint labs, academic research projects and industrial projects. Collaborations partners include academic groups and companies cross different disciplines.

## **PATENTS**

- Filed 28 Technology Disclosure, 6 patents applications, 14 know-how
- Selected patent applications as follows:
  - Titanium-Tantalum Alloy and Method of Forming Thereof, 2017 (WO2017048199A1)
  - A Hydrogel Composite, 2018 (PCT/SG2018/050094)
  - Digital Manufacturing Of A Microfluidic Platform Integrated With Bioprinted Tissue Model As Organ-On-A-Chip For Cell-Based Alternative Testing Models, 2020 (non-drafted Singapore (SG) provisional patent application)
  - High Speed Homogenization And Pore Mitigation Strategy For In-Situ Alloying Via Laser Powder Bed Fusion (LPBF), 2020 (non-drafted Singapore (SG) provisional patent application)

## **RECENT PAPERS**

*Papers are grouped by topic, followed by evidence of international recognition and impact.*

1. Ng WL, Ayi TC, Liu YC, et al., 2021, Fabrication and characterization of 3D bioprinted triple-layered human alveolar lung models. Int J Bioprint. ( Accepted)
2. J. M. Lee & **W. Y. Yeong** (2020), Engineering macroscale cell alignment through coordinated toolpath design using support-assisted 3D bioprinting, Journal of the Royal Society Interface 17(168), 20200294
3. Shairah Radzi, Heang Kuan Joel Tan, Gerald Jit Shen Tan, **Wai Yee Yeong**, Michael Alan Ferenczi, Naomi Low-Beer, and Sreenivasulu Reddy Mogali (2020), Development of a three-dimensional printed heart from computed tomography images of a plastinated specimen for learning anatomy, Anatomy & Cell Biology, 53(1). Published. DOI: 10.5115/acb.19.153
4. J. M. Lee, W. L. Ng & **W. Y. Yeong** (2019), Resolution and shape in bioprinting: strategizing towards complex tissue and organ printing, Applied Physics Reviews 6(1), 011307
5. W. L. Ng, Y. J. Tan, **W. Y. Yeong** & M. W. Naing (2018), Proof-of-concept: 3D bioprinting of pigmented human skin constructs, Biofabrication 10(2), 025005. doi: 10.1088/1758-5090/aa9e1e.

Paper 1-5 demonstrated expertise in Bioprinting and 3D printing of anatomical relevance construct which requires competency in design, data processing, materials and cell compatibility processing,

insights of the physical process to control resolution and shape of bioprinted tissue; and finally culturing and maturation of tissue construct. Different tissue has been demonstrated including lung, skin and cardiac tissue. Paper 3 and 4 are ground-breaking report, which were followed by media reporting in Channel News Asia, and also Straits Times.

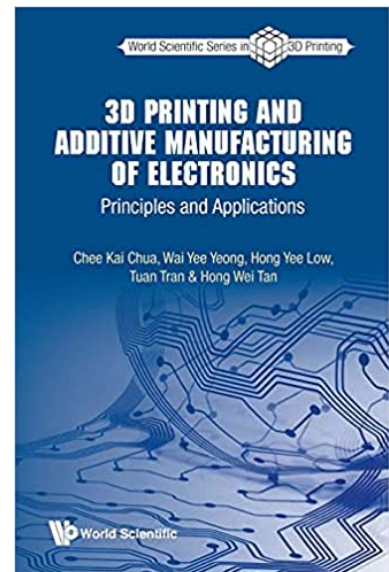
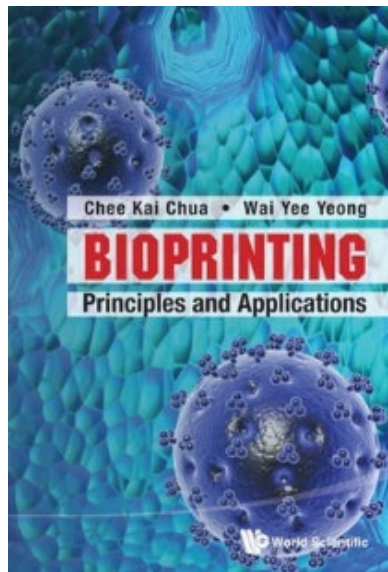
6. G. L. Goh, N. Saengchairat, S. Agarwala, **W. Y. Yeong** & T. Tran (2019), Sessile droplets containing carbon nanotubes: a study of evaporation dynamic and CNTs alignment for printed electronics, *Nanoscale* 11(22), 10603-10614 DOI: 10.1039/c9nr03261d.
7. S. Agarwala, J. M. Lee, W. L. Ng, M. Layani, **W. Y. Yeong** & S. Magdassi (2018), A novel 3D bioprinted flexible and biocompatible hydrogel bioelectronic platform, *Biosensors and Bioelectronics* 102, 365-371.
8. G. L. Goh, S. Agarwala, Y. J. Tan & **W. Y. Yeong** (2018), A low cost and flexible carbon nanotube pH sensor fabricated using aerosol jet technology for live cell applications, *Sensors and Actuators B: Chemical* 260, 227-235

Paper 6-8 demonstrated our research work in printed electronics. We have demonstrated application of printed electronics for life science, created innovative steps to incorporate electronics and electrical circuits into device for smart biomedical applications. We have developed the necessary sintering process and showed the feasibility of a bioelectronics platform. There are also more scope for scientific discoveries in the aspect of droplet science which is the basis for many physiological and physical processes. We made use of droplet dynamic to align CNT towards superior sensing performance. The bioelectronics research also led to new collaboration with CSIRO to develop a 3D printed thermal-based drug delivery platform. Current research on electronics printing include developing new printed sensor for water technology ( funded by PUB), and also printed electronics for aerospace applications.

9. G. D, Goh, S. L. Sing, **W. Y. Yeong** (2020), A review on Machine Learning in 3D printing: Applications, Potential, and Challenges, *Artificial Intelligence Review*, (Impact Factor: 5.747, Q1, Rank: 16/136 Computer sciences, Artificial Intelligence) DOI: <https://doi.org/10.1007/s10462-020-09876-9>
10. Lee, J., Sing, S., & **Yeong, W. Y.** (2020). Bioprinting of Multimaterials with Computer-aided Design/Computer-aided Manufacturing. *International Journal of Bioprinting*, 6(1). doi:<http://dx.doi.org/10.18063/ijb.v6i1.245>

3D printing is a digital technology that is critical for industry 4.0. It is an inevitable trend to see digitization of the life science industry. The challenge is huge, but the gain will be equally remarkable. Paper 9-10 shows my research direction towards incorporating machine learning and computer-aided design thinking to accelerate the research in 3D Bioprinting.

## TEXTBOOKS PUBLICATION



## CITATION

Prof Yeong has demonstrated global leadership in the research of Bioprinting and 3D printing. She has received recognition from the scientific community, presented keynote talks at international conferences, and produced hot paper and highly cited papers in her field of research. In addition, she has been named the winner of the inaugural TCT Women in 3D Printing Innovator Award in 2019, showing her relevance to the industry. Her work has been routinely featured on media, further demonstrating the impact of her work to the society. She excels in innovation and has proven her ability in delivering on multi-million grants. Her area of research is multi-disciplinary and will contribute to multiple pillars of strategic area, including biomedical, advanced manufacturing and cyber-physical connectivity towards a smart nation.